Decision Report

Application for Works Approval

Part V Division 3 of the *Environmental Protection Act 1986*

Works Approval Number	W3188/2026/1
Applicant	Craig Mostyn Farms Pty Ltd
Application number	APP-0033085
Premises	CM Farms - Mogumber Piggery Lot 501 Fynes Road RED GULLY 6503 WA
Date of report	2 April 2026
Status of report	Final

1. Decision summary

This report documents the assessment of potential risks to the environment and public health associated with the proposed infrastructure at the premises, including emissions and discharges during construction and operations. Following this assessment, works approval W3188/2026/1 has been granted.

2. Scope of assessment

2.1 Application details

Background

Craig Mostyn Farms Pty Ltd (CM Farms) (the applicant) owns and operates a piggery at Lot 501 Fynes Road, Red Gully within the Shire of Gingin. The piggery was established by Western Savannahs Piggeries in 1998 and was acquired by CM Farms in 2010.

CM Farms hold licence L8000/2000/5 for an intensive piggery with an assessed design capacity of 26,000 pigs, issued under Part V Division 3 of the *Environmental Protection Act 1986*.

The site is serviced by a four-stage effluent pond system which receives piggery waste from the sheds. The effluent is sent to a balance tank then a fan separator which removes solids from the effluent. Pond 1 is anaerobic with Ponds 2 and 3 facultative, incorporating aerobic/anerobic processes to further reduce biomass. Pond 4 is evaporative, using aeration blowers to aid the evaporation processes.

Pond 1 has accumulated sediment, impacting the required 600 mm freeboard. In response, CM Farms has elected to decommission and replace Pond 1 with two heavily loaded anaerobic (HLA) pond. The existing Pond 1 will be taken out of service and allowed to dry naturally over the next two years.

Groundwater beneath the site forms part of the Mirrabooka Aquifer, an intermediate aquifer system within the Northern Perth Basin. Standing water levels typically range between 20 to 100m below ground level (bgl), with the licensed production bore at the site recording approximately 30m bgl. CM Farms holds a groundwater licence authorising abstraction of 271,000 kL per year from this aquifer to support operational needs.

Application summary

On 24 December 2025, CM Farms submitted an application for a works approval to construct two new HDPE-lined anaerobic ponds at the premises, which will increase on-site capacity by 42,000 kL.

The premises relates to the category and assessed production capacity under Schedule 1 of the Environmental Protection Regulations 1987 which are defined in works approval W3188/2026/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in W3188.

2.2 Regulatory framework

In completing the assessment documented in this decision report, the department has considered and given due regard to its regulatory framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the

potential source, pathway and impact to receptors in accordance with the *Guideline: Risk Assessments* (DWER 2020).

To establish a risk event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction/ operation which have been considered in this decision report are detailed in Table 1 below. Table 1 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Operation – HLA Ponds			
Nutrient rich effluent	Structural failure of ponds, damaged or improperly installed HDPE liner.	Leakage, spills, runoff, seepage, infiltration or unexpected discharge	Constructed according to Works Approval & engineering specification Engineering audit & certification Factor of Safety to be modelled at 1.2 or higher for long term safety. Daily inspections during construction and operation
Nutrient rich effluent	Pond overtopping	Pond capacity exceedance from stormwater inflow may cause overflow, leading to effluent infiltrating soils or surface runoff	Total freeboard of 600 mm will be maintained as a minimum Designed to contain min. 1 in 100 year, 72-hour event Daily visual inspection of HLA freeboard
Nutrient rich effluent	Seepage	Stored effluent seeping through the base of ponds causing discharge of effluent into the environment.	Ground preparatory works to create impermeable layers for HLA construction Daily inspection of HLA Pond HDPE lined
Operation - Sludge drying beds			
Nutrient rich effluent	Overtopping	Overtopping of drying beds due to stormwater or overfilling causing discharge of effluent to the environment via surface runoff and infiltration to ground.	Containment/contingency are provided by freeboard being maintained
Nutrient rich effluent	Seepage	Seepage of effluent through base of drying beds entering the environment. Infiltration to ground.	Drying beds constructed to 32Mpa strength and sealed to maintain impermeability to 1x10-9 m/s
Nutrient rich	Structural failure	Containment loss of concentrated effluent and	Constructed according to Works Approval & engineering

Emission	Sources	Potential pathways	Proposed controls
effluent		sludge causing discharge to the environment.	specification Engineering audit & certification to 32mpa structural grade Daily inspections during construction and operation

3.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020), the Delegated Officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

Table 2 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental Siting* (DWER 2020)).

Table 2: Sensitive human and environmental receptors

Human receptors	Distance from prescribed activity
Residential Premises	3 km northeast from proposed HLA ponds
Environmental receptors	**Distance from prescribed activity**
Groundwater (Mirrabooka Aquifer)	10 to 30m bgl
Surface water – Moore River	3.8 km north of Lot 501
Surface water – Red Gully Creek	9 km south of Lot 501
Flora and vegetation – Fyne's Reserve	Directly north of Lot 501 sharing boundary

4. HLA Ponds - HDPE Geomembrane Specifications

Minimum HDPE geomembrane material specifications will apply to ensure the effluent containment system is constructed in accordance with recognised industry performance standards. These requirements are based on the internationally recognised GRI-GM13 Standard Specification for HDPE Geomembranes, which sets out minimum physical and mechanical properties for geomembranes used in environmental protection applications.

Material Density Requirements

The GM13 standard requires HDPE geomembranes to have a formulated sheet density of ≥ 0.940 g/cc, confirming the material is high-density polyethylene and providing enhanced chemical resistance and structural integrity suitable for wastewater containment. This density requirement has been placed on the works approval (W3188/2026/1) to ensure the liner installed for the HLA ponds are capable of withstanding prolonged exposure to nutrient-rich effluent.

Melt Flow Index and Stress Crack Resistance

To ensure long-term mechanical stability, GM13 also specifies that the HDPE resin must have a melt flow index of ≤ 1.0 g/10 min tested as per ASTM D1238. This limit ensures the polymer has a high molecular weight and adequate resistance to environmental stress cracking, a critical performance requirement for liners exposed to sustained loading and settlement. The Department has therefore included this melt index threshold as a minimum regulatory control.

UV Resistance and Carbon Black Content

UV resistance is essential for maintaining liner durability, particularly during installation and operational exposure. GM13 specifies a carbon black content of 2–3% to achieve optimal UV stabilisation and prevent photo-oxidative degradation. The Department requires this carbon black loading to ensure the geomembrane retains its mechanical performance over time.

Tensile Strength Requirements

Mechanical strength requirements are also drawn from GM13. The standard specifies a minimum tensile strength at yield of 16 kN/m and a tensile strength at break of 30 kN/m, providing assurance that the liner can resist deformation, tearing and rupture under expected operational stresses. These tensile strength values are applied to ensure the liner can tolerate settlement and load variations within the containment structure.

Elongation Properties

Finally, elongation properties are critical to the liner's ability to deform without failure. GM13 requires minimum elongation values of ≥ 12% at yield and ≥ 700% at break, enabling the geomembrane to accommodate strain, differential settlement and subgrade irregularities. The Department imposes these elongation criteria to provide assurance of the liner's ability to maintain integrity under variable field conditions.

Collectively, these HDPE geomembrane specifications represent a set of minimum regulatory controls applied by the Department to ensure the containment system is designed and constructed in accordance with best practice and consistent with the performance expectations established under the GM13 standard.

4.1 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

W3188/2026/1 authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 3 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A risk assessment for the operational phase has been included in this decision report and the infrastructure on works approval W3188/2026/1 will need to be transitioned to licence L8000/2000/5 through a licence amendment application, however licence conditions will not be finalised until the department assesses the application.

Table 3: Risk assessment of potential emissions and discharges from the premises during construction and time-limited operations

Infrastructure	Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls
	Source/ Activities	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Category 2: Intensive piggery									
Construction/Installation									
HLA ponds Sludge drying beds	Vehicle movement on access roads and earthworks	Dust and noise	Construction activities present a low risk of impacting sensitive receptors. Risk event screened out.						
Operations									
HLA Ponds	Structural failure of ponds, damaged or improperly installed HDPE liner.	Nutrient rich effluent	Failure of pond walls may result in effluent discharge to the environment, causing surface runoff and infiltration to the ground. Receptors: Groundwater (Mirrabooka Aquifer – 30m bgl); Fynes Nature Reserve (adjacent).	**Refer to section 3.1.1, Table 1: Proposed applicant controls**	**Major** Environment Off-site impacts (local scale): mid-level off-site impacts (wider scale): low-level short-term impact to an area of high conservation value or special significance	**Rare** May only occur in exceptional circumstances	**Medium**	HDPE lining requirements included to ensure the HLA Ponds are fit for purpose. These requirements will need to be reported in the Environmental Compliance Reports alongside certification by a qualified engineer to prove compliance with the works approval. A major consequence rating is applied due to the proximity of Fynes Nature Reserve to the premises.	**HDPE lining requirements as per GRI GM13 – Standard Specifications applied in Table 2, Condition 2**
	Overtopping	Nutrient rich effluent	Pond capacity exceedance from stormwater inflow may cause overflow of effluent, leading to infiltration into soils or surface runoff. Receptors: Groundwater (Mirrabooka Aquifer – 30m bgl); Fynes Nature Reserve (adjacent).	**Refer to section 3.1.1, Table 1: Proposed applicant controls**	**Moderate** On-site impacts: mid-level	**Rare** May only occur in exceptional circumstances	**Low**	N/A	**Low risk, no controls**

	Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls
Infrastructure	**Source/ Activities**	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
	Seepage	Nutrient rich effluent	Stored effluent may seep through pond bases, discharging to the environment via infiltration to the ground and vertical percolation. Receptors: Groundwater (Mirrabooka Aquifer – 30m bgl); Fynes Nature Reserve (adjacent).	**Refer to section 3.1.1, Table 1: Proposed applicant controls**	**Slight** **On-site impacts: minimal**	**Possible** Could occur at some time	**Low**	N/A	**Low risk, no controls**
Sludge drying beds	Overtopping	Nutrient rich effluent	Overtopping of drying beds due to stormwater or overfilling may cause effluent discharge, resulting in surface runoff and infiltration to the ground. Receptors: Groundwater (Mirrabooka Aquifer – 30m bgl); Fynes Nature Reserve (adjacent).	**Refer to section 3.1.1, Table 1: Proposed applicant controls**	**Moderate** On-site impacts: mid-level	**Rare** May only occur in exceptional circumstances	**Low**	N/A	**Low risk, no controls**
	Seepage	Nutrient rich effluent	Seepage of effluent through drying bed bases may discharge to the environment through infiltration to the ground. Receptors: Groundwater (Mirrabooka Aquifer – 30m bgl); Fynes Nature Reserve (adjacent).	**Refer to section 3.1.1, Table 1: Proposed applicant controls**	**Slight** On-site impacts: minimal	**Possible** Could occur at some time	**Low**	N/A	**Low risk, no controls**

	Risk Event								
Infrastructure	**Source/ Activities**	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**	**Consequence rating[1]**	**Likelihood rating[1]**	**Risk[1]**	**Reasoning**	**Regulatory controls**
	Structural failure	Nutrient rich effluent	Loss of containment of concentrated effluent or sludge may result in environmental discharge through surface runoff and infiltration to the ground. Receptors: Groundwater (Mirrabooka Aquifer – 30m bgl); Fynes Nature Reserve (adjacent)	**Refer to section 3.1.1, Table 1: Proposed applicant controls**	**Minor** On-site impacts: minimal	**Rare** May only occur in exceptional circumstances	**Low**	N/A	**Low risk, no controls**

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk Assessments* (DWER 2020).

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

5. Decision

The delegated officer has determined the proposal to construct two new anaerobic ponds and six sludge drying beds at the premises does not pose an unacceptable risk to onsite and offsite impacts. This determination is based on the following:

- The two HLA ponds provide a combined storage capacity of 42 ML, which is sufficient to accommodate effluent generated at the facility for an estimated two-year period before requiring desludging.
- The HLA ponds must be constructed with a geomembrane liner that meets the GRI-GM13 standard specification for HDPE geomembranes, ensuring appropriate containment and compliance with international standards.
- The site has a substantial groundwater separation distance, with groundwater occurring between approximately 10 to 30 metres below ground level (mbgl), providing a natural buffer reducing the likelihood of seepage impacts. If constructed and operated in accordance with the required specifications and controls, the risk of discharges or releases impacting sensitive receptors is considered low.
- The works approval authorises the construction of six sludge drying beds, noting that the applicant intends to use them seasonally during summer months for sludge drying.
- Time-limited operation of the HLA ponds and any operational use of the sludge drying beds will only be authorised once construction compliance documentation has been submitted and accepted in accordance with the works approval conditions.
  No waste may be placed into the ponds or drying beds until compliance with construction requirements has been demonstrated.

Based on the assessment in this decision report, the delegated officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Craig Mostyn Group. 2026. *Licence Amendment Application Form.*
2. Craig Mostyn Group. 2026. *Works Approval Application - Heavily Loaded Anaerobic Ponds, LOT 501 FYNES ROAD RED GULLY 6501 WA – V2.*
3. Geosynthetic Institute. 2021. *GRI - GM13 Standard Specification*

Appendix 1: Summary of applicant's comments on draft conditions

Condition	Summary of applicant's comment	Department's response
Condition 1, Table 1 – HLA Ponds	*"A minimum 300 mm protective soil cover must be placed over the liner and compacted to avoid damage to the liner."* Clarify that desludging will be undertaken using an unmanned dredging system rather than excavators, with dredged material pumped directly to the dewatering area at approximately 120 m³ per hour. Confirm that excavators will not be used for desludging and that all pumping equipment will be fully floating, thereby minimising the risk of damage to the liner. Note that the approved design does not include a 300 mm protective soil cover over the liner.	The protective soil cover requirement was removed, as desludging will be undertaken using an unmanned, fully floating dredging system and the risk of liner damage is considered low.
Condition 6, Table 3 – Time-limited operations (HLA Ponds)	"*Any sludge removed from the HLA ponds must be transported offsite to a licenced facility."* Dried sludge to be used for compost during operations not removed offsite to a licenced facility.	The proposal to reuse dried sludge on site for composting was accepted, and conditions were amended to remove the requirement for offsite disposal.