

Development licence assessment report

Environment Protection Act 2017



Application No.	APP001686
Applicant Name	Water Sustainability Farm Pty Ltd
Registered address	1324 Blue Ribbon Road Kalkee Victoria 3401 Australia
Development activity, address and proposal	A04 Industrial Wastewater Treatment Lanes Avenue, Quantong <ul style="list-style-type: none">Construct two solar drying evaporation basins for the processing of brine waste a food manufacturing by-product.

INTERNAL USE ONLY

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Date of peer review	15/3/2022
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Approval number	DL000300011

Development licence assessment report

Environment Protection Act 2017

Contents

Executive summary.....	5
1 Background information.....	7
1.1 Applicant information.....	7
2 Proposal overview.....	8
2.1 EPA response to application submission.....	8
Scope of this development application.....	8
2.2 Activity summary.....	9
Brine Acceptance and deposition.....	9
Brine processing.....	9
Site activity & design considerations.....	10
Brine evaporation, harvesting and disposal.....	10
3 Consultation.....	13
3.1 Community engagement and public comments.....	13
Advertisement.....	13
Information session.....	14
20B conference.....	14
3.2 External referral comments.....	16
Horsham Rural City Council.....	16
3.3 Internal referral comments.....	16
3.3.1 Regional assessment.....	16
Advice sort from science.....	20
4 Assessment of proposal.....	21
4.1 EPA assessment methodology.....	21
4.2 Statutory matters for assessment.....	21
4.3 Fit and proper person.....	21
Credit check and managerial history.....	22
Conclusion.....	22

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

4.4	Compliance with the general environmental duty.....	22
4.5	Impact of the activity on human health and the environment	24
4.5.1	Climate change impacts.....	24
	Application	24
	Assessment.....	25
	Conclusion.....	25
4.5.2	Noise impacts.....	26
	Application	26
	Assessment.....	26
	Conclusion.....	26
4.5.3	Air and odour impacts.....	27
	Application	27
	Assessment.....	27
	Conclusion.....	27
4.5.4	Land and groundwater impacts.....	27
	Application	27
	Assessment.....	29
	Conclusion.....	29
4.5.5	Surface water	29
	Application	29
	Assessment.....	30
	Conclusion.....	30
4.6	Principles of environment protection.....	30
	4.6.1 Principle of integration of environmental, social and economic considerations.....	30
	4.6.2 Principle of proportionality.....	30
	4.6.3 Principle of primacy of prevention.....	30
	Application	30
	Assessment.....	30
	4.6.4 Principle of shared responsibility.....	31

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

4.6.5 Principle of polluter pays	31
4.6.6 Principle of waste management hierarchy	31
4.6.7 Best available techniques and technologies	31
Evaporation options.....	33
Clay and geomembrane options.....	33
Evaporation pond design.....	33
Conclusion.....	35
4.7 Proposal consistency with the Act and the Regulations.....	35
4.8 Prescribed referrals.....	36
4.9 Other matters for assessment.....	36
4.10 Activity risk mapping.....	37
4.11 Summary of assessment.....	38
5 Recommendation	39
6 Post-approval compliance plan	40
Prior to commencement of works.....	40
Construction plan.....	40
6.2 Post completion of works	40
6.3 Operating Licence.....	40
6.4 Second development license	40
Appendix A List of application documents and information.....	42
Appendix B – Draft Conditions.....	43

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Executive summary

Water Sustainability Farm Pty Ltd applied for a development licence from the Environment Protection Authority Victoria (EPA) on 5/3/2021. The application was reviewed and accepted as an in-flight application on 1 July 2021 under Section 50(1)(c)(i) of the *Environment Protection Act 2017* (the Act). The proposal aims to build two (2) evaporation basins initially followed by a further two evaporation basins in 10 years' time. The evaporation basins will receive a saline brine waste generated from Australian Plant Protein, a food manufacturing plant in Horsham.

This assessment is for the development period of the first two dams only. In order to discharge waste, the Water Sustainability Farm will need an operating licence to be operate. In order to build the next two evaporation basins another development licence will be required in 10 years.

Permission Activity	Location	Description
A04 – Industrial wastewater treatment (Discharging or depositing industrial wastewater generated at another site, exceeding a design or actual flow rate of 5000 litres per day or on any day).	Lanes Avenue, Quantong, VIC	Construct two solar drying evaporation basins for the processing of brine waste a food manufacturing by-product.

In assessing the applicant's proposal, the lead assessing officer consulted with EPA's applied science division and the EPA's North-Western regional office. This assisted in understanding noise, groundwater and technical design considerations of the proposal.

Three requests for further information were sent to the applicant :

- 1st request – 16/4/2021 and accepted the response 14/5/2021
- 2nd request – 6/7/2021 and accepted the response 14/1/2022
- 3rd request – 3/3/2022 and accepted the response 28/3/2022

The statutory due date was determined to be 1 April 2022 pursuant to section 50(4)(b) and section 69(1) of the Act.

Prohibited Person and Fit and Proper Person test was completed. The applicant was accepted as a Fit and Proper Person in accordance with Section 66 of the Act.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

The EPA assessment process considered a range of environmental aspects associated with the proposed prescribed activity including the following key aspects:

The impacts on the environment in terms of climate change, noise and odour were regarded as acceptable.

- The noise impacts were assessed against EPA Publication 1826.4 and was regarded as acceptable considering the separation distance between the facilities and the nearest sensitive receptor.
- The odour impacts were evaluated based on the brine's Biological Oxygen Demand (BOD) and EPA Publication 1518 guidelines were used to calculate the necessary separation distance, confirming the odour would be acceptable.
- As 57 tonnes CO₂ equivalent emissions per annum is estimated to be generated from the proposed activities, the climate impacts of the activity are expected to be minimum.

Groundwater and land contamination

The application proposes to build a clay liner to a hydraulic conductivity of 1×10^{-9} m/s, under this permeability target the clay liner is known to result in significant seepage of 61 – 96 mm/annum compared to a natural recharge rate of 6-19 mm annum. This could lead to a plume to form below the evaporation basin until it reaches the water table, creating a perched water table and ground salinity.

According to the guidelines in the Landfill BPEM a clay pond of the size proposed in this application will need to demonstrate a permeability of less than 6×10^{-11} m/s, this will reduce any potential risk to surrounding groundwater & soils.

The applicant has claimed that according to initial onsite test of the clay, a hydraulic conductivity of 6×10^{-11} m/s can be achieved.

As such, the environmental risk to groundwater and land contamination can be addressed by setting this target as a condition for the application.

The applicant has made efforts to be consider the GED (section 25.4) and principles of environmental protection (Part 2.3) as defined in the Act. However, most detailed considerations outline operational concern and do not include the environmental risks associated with construction. Condition DL_R4 requires the applicant to provide the EPA an environmental management plan which will allow the applicant to consider their GED in the construction phase of this project.

Given the conditions outlined above, the application will be consistent with the requirements of the Act and the Regulations.

Accordingly, this report recommends that the Authority **approves** the issue of the development licence, pursuant to Section 69(1)(a) of the *Environment Protection Act 2017*.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

1 Background information

1.1 Applicant information

Water Sustainability Farm Pty Ltd (WSF and the applicant) is a new company (Australian Business Number active from 5 March 2021). However, WSF are affiliated with Australian Plant Proteins (APP), the proposed producer of the brine to be processed by WSF. APP currently operate a food manufacturing plant in Horsham which produces high-grade protein from pulses. The APP operation is approximately 15 km from the site.

The site is currently utilised for dry land farming and therefore does not have an existing licensed operation.



Figure 1: Aerial photograph of the Site (source Google Earth)

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Compliance history/ interactions with EPA

It is important to note that the proponent had begun construction of evaporation ponds on the site at the corner of Lindners Rd and Lanes Ave in 2020. Following reports by the community, EPA investigated and an official warning was issued to WSF for commencing construction without a Works Approval. Construction ceased as a result and the official warning issued by EPA remains on the record.

2 Proposal overview

The proposal consists of building four evaporation basins with sufficient capacity to accept the brine (saline waste) from the APP facility. The first two basins will be constructed to take the first 10 years of saline waste and the second two basins will be constructed after this period, providing the evaporation area required for the 30-year life of the facility.

2.1 EPA response to application submission

EPA received the application for assessment on 5/3/2021. The list of documents submitted as part of the application can be found in Appendix A.

On 2/4/21, the EPA issued a notice of application for the development licence in accordance with Section 19B(3)(b) of the Environment Protection Act 1970. The public comment period closed on 30 April 2021.

On 16/4/2021, the EPA issued a notice for further information was made, under Section 22 of the Environment Protection Act 1970. The EPA accepted the response on 14/5/2021.

Following the consultation process, outlined in section 3 of this report, the EPA received a letter from Water Sustainability Farm on 24 May 2021, informing of a change in scope of the Works Approval Application. The change of scope removed dewatered sludge management from the proposal and changed the entry road access from Lanes Avenue to Lindners Road.

The EPA made a new request for information on 6/7/2021 and accepted the response on 14/1/2022.

The EPA made a new request for information on 3/3/2022 and accepted the response on 28/3/2022.

The statutory deadline for this application is 1/4/2022.

Scope of this development application

This application is an application which outlines both the development of basins over time (two basins now), two basins in 10 years' time, as well as the operations of the deposition of waste brine for the duration of the project.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

The application therefore requires both a development licence to build the evaporation basins and an operating licence to be regarded as a lawful place to accept the waste product.

In this assessment, the EPA will only assess the first stage of the development, building two dams to set up the initial facilities of the Water Sustainability Farm. An operating licence will be required to operate the ponds and associated discharge activities. A second development application will be required in order to build two more evaporation basins in 10 years' time.

2.2 Activity summary

Brine Acceptance and deposition

Brine produced from the APP facility will be transported from Horsham to the property where it will be discharged in the evaporation basins. An average of 57,600 L/day will be transported to the property and discharged into evaporation basins (approximately 21 ML/year).

The brine waste is a by-product of the Reverse Osmosis (RO) process. The RO system is required for treating the water to a standard suitable for trade waste discharge or onsite reuse, thereby the brine stream is unavoidable.

The brine stream is characterised with relatively high concentrations of Na, K, Cl, HCO₃, and a neutral pH. Other organic levels include

BOD:	<20mg/L
COD:	100 – 200mg/L
TP:	<5mg/L
TSS:	<10mg/L
TN:	<20mg/L
Ammonia:	<5mg/L

The original proposal included the drying of sludge from the APP but this aspect of the proposal was removed by the change of scopes of the work approval application received on 24 May 2021.

Brine processing

Once on site, the brine will remain in the evaporation ponds for the life of the project. Basins 1 and 2 will have the capacity to take the brine deposited for the first 10 years, at which stage the next two basins will be built to take the remaining brine.

The evaporation within these basins will concentrate salts creating a super saline waste liquid over a 30-year period.

The evaporative basins are designed to provide an adequate surface area to achieve the desired evaporation rates. Evaporation rates take into the local climate (its average

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

evaporation rate of 11 ML/ha), the salinity effect (decreasing evaporation rates as salinity increases) and the oasis effect (where evaporation decreases as the volume of water increases).

These considerations led have the following evaporation pond specifications:

- Pond 1 - designed to have an area of 118 m x 118 m, with a water depth of 1.23 m.
- Ponds 2 to 4 - designed to have an area of 104 m x 104 m, with a water depth of 0.57 m.
- Each pond will have a compacted clay base with a minimum thickness of 0.6 m.
- Construction is to be supervised by a geotechnical engineer while testing at intervals will occur to ensure the clay meets the required compaction ratings.
- All ponds are to be designed with 0.5 m of freeboard to account for high rainfall events, wind and wave action.
- The ponds will operate as 'turkey's nest' features and will store wastewater and incident rainfall only. No catchment runoff will contribute to pond storages.

Site activity & design considerations

The site will be unattended most of the time and trucks will access the site during daylight hours only (7am-4pm, 7 days/week).

The RO retentate will be delivered to the site by tanker trucks. A hose will be connected to the tanker truck and RO retentate will be discharged from the hose directly into an evaporation basin. Trucks will enter and exit the site via the gates and single access road. Tanker discharge into the basins will be at the direction of the site manager.

The basins will receive RO retentate on a sequential basis, to maximise evaporation of the water fraction. Trucks can discharge from any point along the access road which is adjacent to the basins.

Shelter belts in strategic locations inside the perimeter of the property and along the edge of the drying facility itself will be installed to visually screen the site, suppress dust and generally soften the development from neighbouring properties.

A barrier fence is installed around the evaporation lagoons to prevent wildlife such as kangaroos from entering the lagoons.

Brine evaporation, harvesting and disposal

During the evaporation period, RO retentate/super saline material will be left in situ until the maximum basin volume is reached or the site is to be decommissioned. No vehicle access for windrowing or moving material is expected during the evaporation period.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Access will only be used for RO retentate harvesting. Prior to this, individual basins will be taken off-line (that is, will receive no further fresh RO retentate) to allow for maximum crystallisation of the residual material. Harvesting is expected to occur at the end of summer or when dry.

Following production, the super saline waste liquid will likely be disposed to landfill, however, due to the extended residence time at the premises (i.e. 30 years), this was not confirmed at the time of WAA submission. The fate of the super saline waste would be determined closer to harvest date.

Site location considerations

The property is zoned as Farming (FZ) under the Horsham Rural City Council planning scheme. Industrial wastewater treatment is not a prohibited use under the planning scheme.

Seven house dwellings and three dams are located within 500 m of the proposed development as outlined in Figure 3 below.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

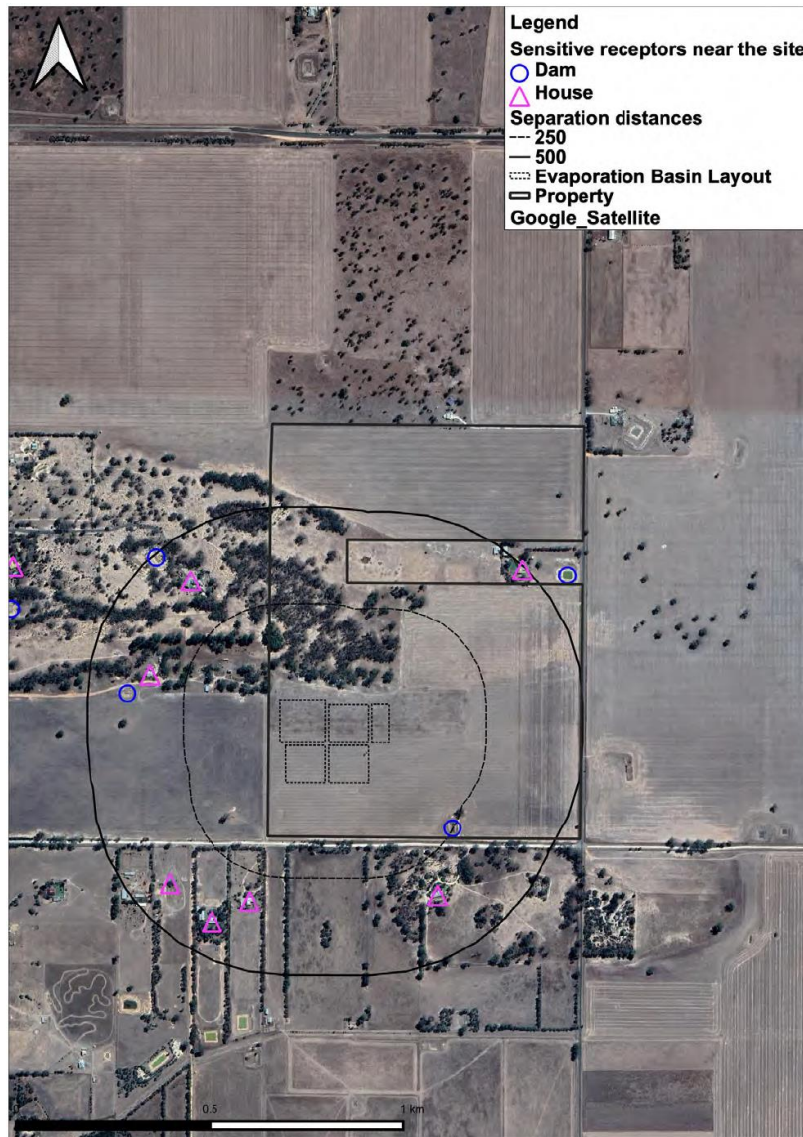


Figure 3: Site location with proximity to sensitive receptors (source WAA)

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

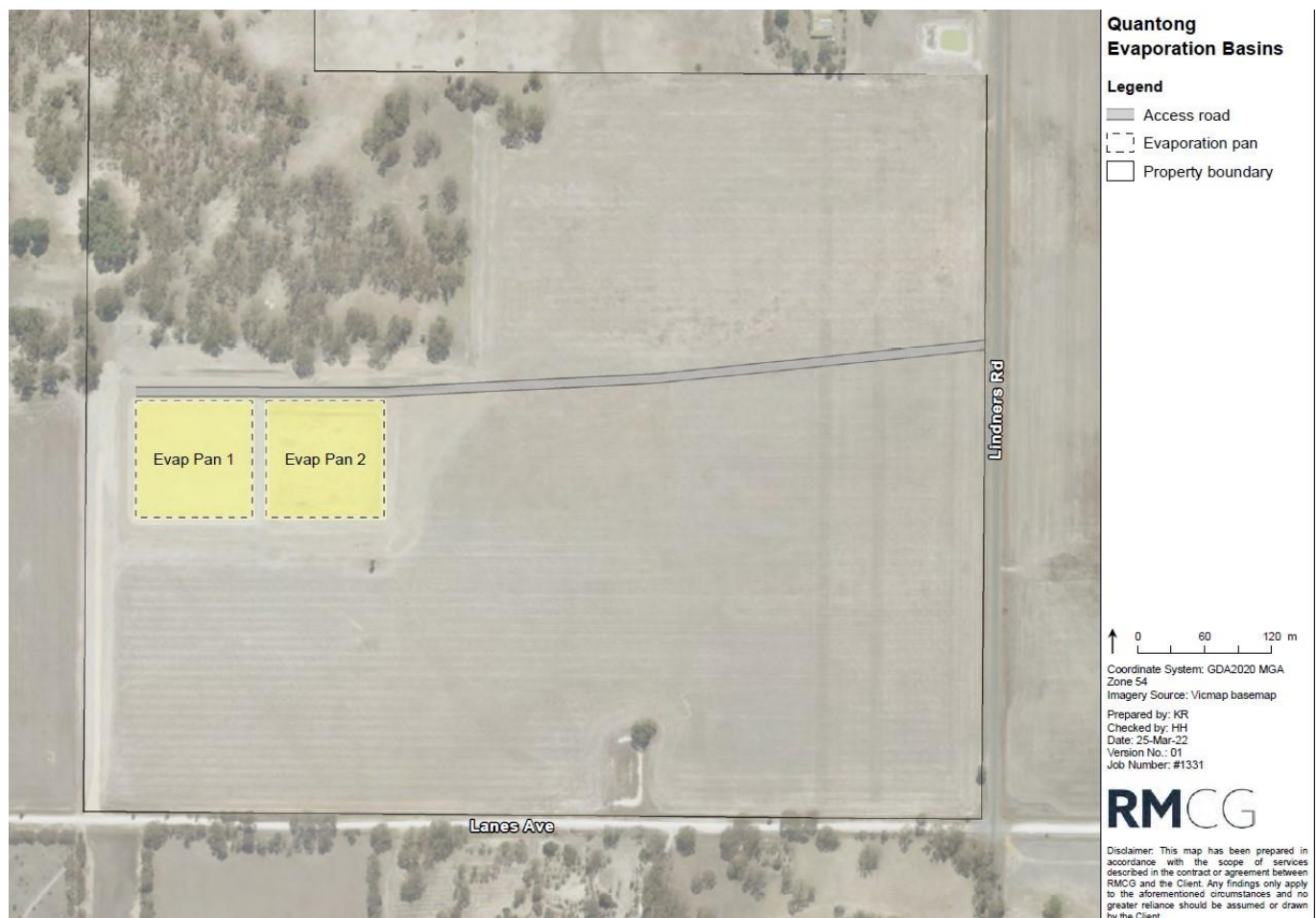


Figure 4 – Site activity Plan

3 Consultation

3.1 Community engagement and public comments

Advertisement

In accordance with Section 19B(3)(b) of the Environment Protection Act 1970, a notice of application for a works approval was published on the EPA Vic website.

The application (1004341) was advertised in the Herald Sun and Horsham Times on Friday 2 April 2021. The public comment period closed on 30 April 2021. A total of 28 submissions were received. All submissions have been published on Engage Victoria website .

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

A question-and-answer opportunity was available from 2 April to 23 April at Engage Victoria website <https://engage.vic.gov.au/epa-works-approvals/water-sus>.

Information session

On 29 April, Water Sustainability Farm Pty Ltd held an online information session to explain the information provided to EPA and answer any questions. Twenty questions were asked online and replies were provided by either the proponent or EPA staff.

Following community engagement and consideration of public submissions, EPA received a letter from Water Sustainability Farm on 24 May 2021, informing of a change in scope of the Works Approval Application.

20B conference

Due to the level of public interest, EPA convened a conference under Section 20B of the Environment Protection Act 1970 to gain further understanding of the concerns raised. Under Section 20B of the EP Act 1970, The Authority shall take into consideration the discussions and resolutions of any conference under this section and the recommendations of any person presiding at that conference. The EPA appointed an independent consultant facilitator from Twin Prism Consulting, as Chair of the conference. The conference was held at the Quantong Recreation Reserve on Wednesday 26 May 2021 from 7:00 to 8:50pm. The concerns raised and ensuing recommendations are outlined in the table 1 below.

Community concerns can be summarised as follows:

- Concerns about pollution from leakages and emissions from the brine – their impact on biodiversity, groundwater.
- Nature of the waste – its toxicity and concerns of waste being brought onsite without permission.
- Community trust in the duty holder – due to works having commenced prior to application.
- Impact on residents from the waste facility – including noise, dust, odour, site access, impacts on mental health & property prices.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Table 1 – Issues raised in Consultation

Issue type	Description of concerns
Pollution impacts	
	<p>Contaminated surface runoff will pollute farm dams and kill plants</p> <p>Water and air emissions will impact on wildlife, including birds and platypus</p>
Leaks and contamination	
	<ol style="list-style-type: none"> 1. Brine basin would leak and contaminate groundwater 2. The brine evaporation basins will overflow and contaminate the surrounding area in high rainfall events and potentially the Wimmera River 3. No monitoring program for groundwater contamination
Waste inputs	
	<ol style="list-style-type: none"> 1. Nature of the waste is unknown Concerns of toxicity to human health 2. Nature of sludge waste stream unknown 3. Concern that sludge would be brought on site without permission
Impact residents	
	<ol style="list-style-type: none"> 1. Impact on resident's mental health 2. Reduce property values 3. Quantong is a peri-urban community, and this is an inappropriate location for a waste treatment site
Facility design	
	<ol style="list-style-type: none"> 1. Saline brine waste will react to the clay liner differently to the water used to test the clay and cause leakage to groundwater and potentially the Wimmera River 2. Construction on the site during 2020 will mean the evaporation basins will not be properly constructed 3. It is unclear how saline waste after evaporation will be treated/removed/disposed of
Community trust	
	<ol style="list-style-type: none"> 1. Community consultation was not done or reported appropriately

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

2. Starting construction during 2020 prior to application, has damaged trust between applicant and community	
Odour	
<ol style="list-style-type: none">1. The odour problems at APP in Horsham would be transferred to Quantong2. Impact of odour on the community3. Odour from the evaporation basins and/or sludge drying pad will be offensive	
Noise	Noise from site operations
Site access	Using Lanes avenue would create conflict with local traffic, pedestrian, equine and other uses
Dust	
<ol style="list-style-type: none">1. Tree plantings will take a long time before they provide dust protection (if ever)2. Dust from the site during construction and on-site operation is a concern for residents3. Dust emissions from turning the sludge during drying will cause amenity loss	
Water	Where will water for dust suppression be obtained

3.2 External referral comments

External referral were made to external stakeholders in accordance to S19(4 (a), (b) or (c) of the Environment protection Act 1970. These included referrals to Horsham Rural City Council, Wimmera Catchment Management Authority and GWMWater.

Horsham Rural City Council

HRCC confirmed that the proposed activity was not prohibited, nevertheless it required a planning permit application and a permit would be required for the use and development of the land. No planning permit had been issued.

3.3 Internal referral comments

3.3.1 Regional assessment

Basin integrity

Scott Sandercock, a senior EPO conducted an inspection of the dam which have been constructed prior to the development application. The inspection revealed cracks and rills in the basin walls, the floor of the basin was compacted clay, but it had dried out leading cracking in the floor of the basin. In addition to this, weed and plant growth has occurred, further compromising the clay liner.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Photos 1-4 illustrate the type of cracking and vegetation growth that presently exist in the evaporation basin.

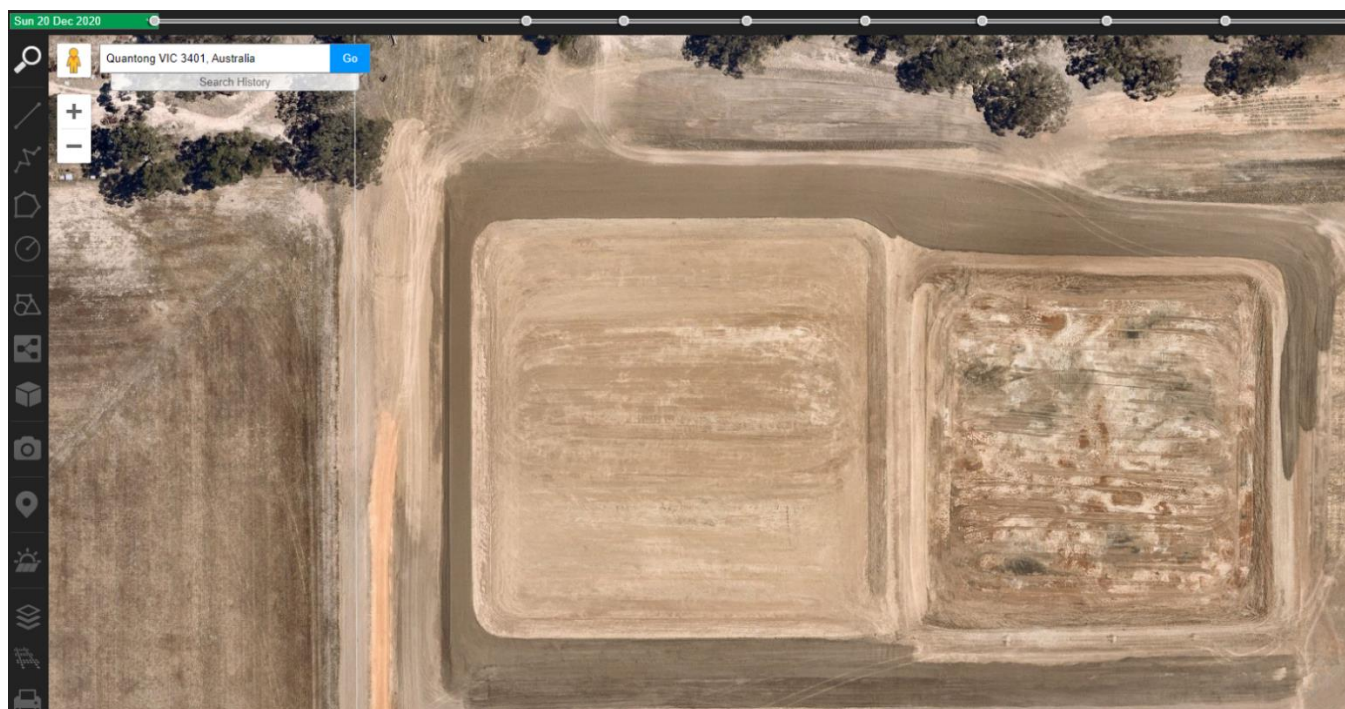


Furthermore, Photo 5 & 6 show aerial images of the evaporation basin taken in Dec 2020 and Dec 2021 respectively, these images seem to indicate a potential subsidence in the NW corner of the eastern evaporation basin, indicating a likely risk relating to the structural integrity of basin floor.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

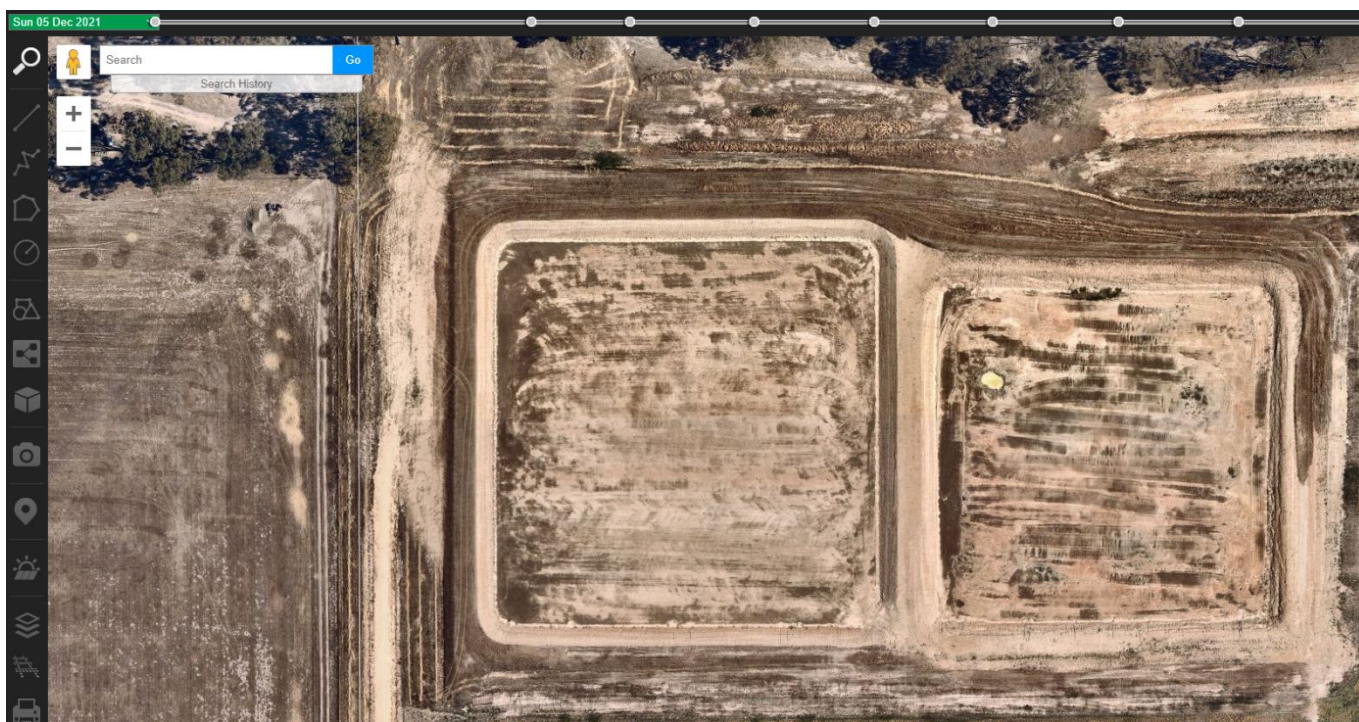


Photograph 5 - Aerial photograph 20/12/2020

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017



Photograph 6 - Aerial photograph 5/12/21

Based on these observations, the region is concerned that the existing basin will not achieve the specified permeability outlined in the proposal.

Other concerns are outlined in Table 2.

Table 2 - Region's concerns for ponds constructed without works approval/development licence

Permeability	Permeability of onsite clay appears to be good, but there is no protection of the clay liner from wetting and drying, resultant cracking would reduce the clay liner's capacity to meet required standards.
Seepage	Hydrology report indicates significant seepage which doesn't align with the main application's claim that high permeability is achieved.
Odour	The community and the EPA have raised concern regarding odour. Although the applicant has removed the sludge storage component. Based on its previous experience with Brine and Salt ponds, the region is concerned about potentially significant odours.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

	<p>The region is concerned that the potential odours impacts have not been adequately considered, considering local residents are between 250-500 meters away.</p>
Harvesting and decommissioning	<p>The region is concerned that the proposal aims to remove the salt and transfer it to landfill at the end of the project. Region believes this may not be a realistic option, considering the remaining life of the 2 nearby landfills is under 10 years.</p> <p>Without costings for the disposal to landfill, this proposed activity may not be feasible.</p> <p>Costing may be necessary for the cost of encapsulation onsite.</p> <p>Given the length of the proposed activity, appropriate financial assurance should be set to avoid the state carrying potential liability of the company were to become unviable.</p>

Advice sort from science

The following advice was sought from:

ASR0014644 – Groundwater and land – 3/03/2022

AST0021077 – Groundwater and land – 2/06/2021

ASR0012462 - Air, Odour and Noise Sciences; Chemical and Waste – 13/04/2021

AST0019980 – Wastewater, Water and Human Health – 12/04/2021

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

4 Assessment of proposal

4.1 EPA assessment methodology

EPA undertakes an evidence and risk-based approach to its regulatory functions and decision-making while having regard for the object and principles of the *Environment Protection Act 2017* and all relevant regulations and frameworks.

For this assessment, the application has been assessed against:

- *Environment Protection Act 1970 (EP Act 1970)*
- *Environment Protection Amendment Act 2017 (EP Act 2017)*
- *State Environment Protection Policy (Waters) 2018 (SEPP Waters)*
- *Environment Reference Standard 2021 (ERS)*
- *EPA Publication 1938: Fit and Proper Person policy (EPA Publication 1938)*
- *EPA Publication 668: Hydrogeological assessment (groundwater quality) guidelines (EPA Publication 668)*
- *Publication 1826.4 – Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues (The Noise Protocol)*
- *Best Practice Environmental Management — Siting, Design, Operation and Rehabilitation of Landfills (BPEM 2015)*

4.2 Statutory matters for assessment

Section 69.3 and section 69.4 of the Act specify the matters to need to be considered when determining whether or not to issue a development licence. Assessment of the application for prescribed matters are detailed in subsections below.

4.3 Fit and proper person

Section 69.(4)(b) of the Act states:

The Authority must refuse to issue the development licence if— b) the Authority determines that the person is not a fit and proper person to hold a development licence;

Prior to undertaking a detailed assessment of the application, a fit and proper person test was applied to the applicant in accordance with section 66 and section 88 of the Act.

The Prohibited Person questionnaire and the Fit and Proper Person questionnaire were provided to the applicant to complete. EPA received the signed forms with attachments on 26 November 2021 and 13 January 2022, respectively.

According to the Fit & Proper Person Questionnaire, the applicant recognised that they had been subject to an EPA Breach, this was in relation to official warning that WSF was issued for commencing construction without a Works Approval. The duty holder has responded to the official warning responsibly, ceasing any further construction and undertaking the correct

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

steps to remediate the situation, applying for a works approval, undertaking community consultation and complying with EPA requests.

Credit check and managerial history

Water Sustainability Farm has provided a credit report which had an Equifax score of 831, indicating a 1.2% chance of recording an adverse credit event in the next 12 month, the company experienced no payment defaults, no reported legal actions, no external administrators and no directors had filed for bankruptcy or been disqualified.

The duty holder has run 12 other companies, starting in 1990. None of the previous companies associated with the duty holder have experience defaults, external administration or court actions.

Conclusion

Water Sustainability Farm Pty Ltd is determined to be Fit and Proper Person based on the decision tree and guidance provided in Publication 1938.

4.4 Compliance with the general environmental duty

The applicant is required to demonstrate compliance with the General Environmental Duty in accordance with section 25(1) of the Act with common provisions under section 25(4) and section 25(5) of the Act. Based on the application, it is considered that the applicant is complying with the GED subject the addition of condition DL_R4. Details of compliance with s25(4) and section 25(5) of the Act are listed below.

Section 25(4)(a)

WSF maintains the following schedule of maintenance: groundwater water bores are maintained annual, clay pads are monitored and cracks are addressed. EMP is reviewed every 5 years to check for regulatory change which could impact operations.

Section 25(4)(b)

WSF has identified risks in their Environmental Management Plan, these include risks relating to noise, spills and leaks impacting surface waters, basin leaks impact groundwater and soil salinity, potential impacts from noise and dust during operations. The environmental management plan sets out control measures to identify risks as they occur. This includes:

- The installation of groundwater bores and quarterly monitoring of groundwater depth and quality.
- Monthly checks for land salination occurring in the proximity of the basins,
- Monthly monitoring of clay liners/pads for signs of cracking and leaking (visual monitoring)

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Section 25(4)(c)

Contingencies have been identified in the case that harm occurs:

- If any spillage occurs during the filling of tanks, it will be cleaned up immediately, with impacted soil being removed and disposed of.
- Given the freeboard in the evaporation basins and the 'turkey nest' construction preventing run-off from entering the evaporation basins, it is extremely unlikely that the basins would ever flood or overflow. A 500 mm freeboard will be maintained in each basin and Horsham has a mean annual rainfall of 417 mm, preventing spillage from wind and waves on the basin.

In the event of damage to a basin, use of this basin will cease and action taken to repair the damaged section. Due to the small volume discharged at any one time into a basin and the high rate of evaporation, the likelihood of a large spill occurring due to a breach in a basin embankment is considered rare.

There is no provision for overflow management as the likelihood of this occurring is rare and discharge of RO retentate into the basins is controlled by the tanker operator.

Geotechnical assessment of clay liner and rectification works will be undertaken if there is an increase in groundwater salinity over time, when upstream bore quality is compared to downstream bore quality. Or if water table level rises with consistent trend over multiple years that is independent of climatic conditions.

Section 25(4)(d)

Brine is the only substance handled and transported in WSF, the brine is handled according to clear guidelines which the site manager is responsible for insuring that all contractors are appropriately trained to follow.

Empty or flushing saline waste outside the evaporation basin is strictly prohibited.

Any spillage occurs during the filling of tanks will be cleaned up immediately, with impacted soil being removed and disposed of to landfill.

Section 25(4)(e)

The site manager is responsible for the execution of activities in accordance to the EMP, informing and training contractors on their responsibilities and correct procedures for discharging saline waste.

Section 25(5)(a)

Construction

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

The application provides an earth works specifications for construction of the clay liner, which specifies construction method and specifications and testing/inspection requirements. Clay compaction testing will be in accordance with permeability tests - AS1289 6.7.3, and all testing will be conducted by NATA accredited testers.

It is noted that a construction management plan is not proposed to be submitted to the EPA. A construction management plan for the proposed construction activities will be required to be provided to the Authority for approval (Condition DL_R4).

Operation

WSF maintains the following schedule of maintenance: groundwater water bores are maintained annually, clay pads are monitored and cracks are addressed. EMP is reviewed every 5 years to check for regulatory change which could impact operations.

Section 25(5)(b)

The application provides information in relation to the operation of the ponds, including training for truck drivers for transporting and depositing brine into the ponds, and maintenance and monitoring program (to be prepared) for operating the ponds.

4.5 Impact of the activity on human health and the environment

4.5.1 Climate change impacts

Guidance publication:

- Climate Change Act 2017.
- State Environment Protection Policy (Air Quality Management)
- EPA publication 824 - Protocol for Environmental Management Greenhouse Gas Emission and Energy Efficiency in Industry (PEM).

Application

Impacts of Climate change

Potential climate change risks are considered in Section 6.2 of the WAA. The WAA specifies that the climate change will not impact the viability of the proposal. The applicant specifies that Sections 17 (3) of the Climate Change Act 2017 have been considered when designing and planning the facility.

Energy use and GHG emissions

GHG emissions associated with the proposal are considered in Section 6.1 of the WAA. WSF has considered that the majority of Direct (Scope 1) emissions will be generated during the transport of brine and dewatered sludge to the premises. WSF estimated that 57 tonnes CO₂e per annum will be emitted through transportation between the APP processing facility and the premises.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Indirect (Scope 2) emissions were not considered to be used during the operation of the project as the project will not draw electricity for the Victoria electricity grid.

Assessment

Section 17 (4) of the Climate Change Act 2017 sets out the relevant considerations for EPA when assessing a works approval. These are the potential short-term and long-term, direct and indirect, increases and decreases and cumulative impacts of GHG emissions.

Climate impacts

The applicant provided limited detail on considerations of potential impacts of climate change. The assessment considers that potential impacts of climate change are unlikely to impact the proposed operation.

The proponent asserts that the facility has been designed to accommodate a 1 in-a-100 year rainfall event, but this appears to be a capacity consideration only. This analysis of potential rainfall is based on historic rainfall data from 1975 to the present (following DEWLP advice). This data does not reflect potential changes in rainfall related to climate change.

While it may be that the facility is not immediately threatened by flooding, the risk of large flood events (1 in- 100 years, for instance) should be considered. This would be appropriate given the lifespan of the facility.

GHG emissions assessment

A GHG emissions estimate of 57 tonnes CO₂-e was provided in Section 6.1 of the WAA. However, emissions calculations and assumptions were not provided. Therefore, the estimates accuracy could not be verified.

Given the change of scope of the proposal, eliminating dewatered sludge from the scope of the activity, the emissions will be reduced proportionately to the emission share of this activity. The reduce emissions have not been assessed.

Details regarding the emissions from the construction of the evaporation basins have not been included.

Section 2.1 of the PEM specifies that applicants with GHG emissions less than 100 tonnes CO₂-e are not required to identify and evaluate option to reduce energy consumption as part of their application.

Conclusion

It is assessed that the proposal can meet the requirements of the Climate Change Act, PEM and SEPP (AQM).

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

4.5.2 Noise impacts

Guidance publication:

- Publication 1826.4 – Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues (The Noise Protocol).

Application

Noise assessment has been provided in section 9 of the WAA and identifies sources of noises such as trucks moving to and from the premises, identifying other sources of noise from sludge processing which are no longer relevant. Evaporation basins are a low-noise passive technology (solar evaporation).

The closest sensitive receiver of noise was identified as 300 m away, which comprises residential dwellings surrounding the premises.

The application provides details on typical traffic movements at the premises, which include:

- 07:00 – 16:00 Monday to Friday – up to 3 trucks per day carrying brine (3 trips per day).
- 07:00 – 16:00 Saturday and Sunday - up to 3 trucks per day carrying brine (3 trips per day).

A noise assessment is not provided in the application.

Assessment

Noise limit at nearest receptors (because both source and receptors are in Farming Zone same noise limits are applied all nearest receptors):

- Day period: 46 dB(A)
- Evening period: 41 dB(A)
- Night period: 36 dB(A)

Assuming a noise rating from a transfer pump is 75 dB(A), noise reduction due to distance (250m) is about 47 dB(A), noise level at the nearest receptors is 28 dB(A). Note that this preliminary assessment does not account for atmospheric or ground effects on the propagation of sound.

Conclusion

Based on noise to be limited to the activities of 3 trucks/trips per day and the discharge from these trucks into the evaporation basins, the expected noise level will be low and compliance of noise at the four nearest receptors are expected to be achieved at all operating hours.

No evaluation of noise during construction have been made, these will be conducted as part of the construction management plan outlined in condition DL_R4.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

4.5.3 Air and odour impacts

Guidance publication:

- Publication 1518: Recommended Separation Distances for Industrial Residual Air Emissions – Guideline

Application

The application has provided a breakdown of the brine outlined in section 2.2 above, the brine has a low organic content, with a BOD of less than 20 mg/L.

The brine product will emit minimal or no odour. Prior to the RO system and the brine stream being generated, the water quality meets that of Class A with very low organic contaminant levels (as outlined above).

With very little organic residue, the water should not turn septic or anaerobic. No part of the solar evaporation process will create odour that is so often associated with wastewater.

Assessment

As per section 11 of publication 1518 the calculated minimum separation distance for storage of brine with a BOD of less than 20 mg/L is 48 m. This indicates odour from the brine is not expected to be significant. As the nearest receptor is 300 m away, the risk of impact due to odour from the proposed activities is acceptable.

Conclusion

The risk of impact from odour is acceptable.

4.5.4 Land and groundwater impacts

Guidance publication:

- Environment Reference Standard (2021) (ERS)
- Publication 788.3 - Siting, design, operation, rehabilitation of landfills, Best practice environmental management (Landfill BPEM, 2015)

Application

Details of the soil and groundwater characteristics are provided within Section 11 of the WAA. Soils within the region of the site comprise the Haven sandy loam, which commonly comprises soil within Table 2.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Table 3 - Soil characteristics

HORIZON	DEPTH	DESCRIPTION
Surface Soil		
A1	0–5/20 cm	Brown, dark brown or dark greyish brown sandy loam or loamy sand; hard setting or loose surface condition; weak medium or coarse granular or blocky structure; sharp change to A2 horizon.
A2	5/20–15/35 cm	Strong brown, brown or brownish yellow, sporadically or conspicuously bleached sandy loam or sandy clay (occasionally medium or heavy clay); may form a cemented capping; sharp or gradual change to subsoil.
Subsoil		
B21	15/35–55/90 cm	Yellowish red, light brown, light brownish grey, strong brown or brownish yellow, occasionally with reddish brown or pale brown mottled <i>medium</i> or <i>heavy clay</i> (occasionally <i>sandy clay</i>); plastic; coarse columnar, prismatic or weak medium blocky structure; strong consistence dry, sticky consistence wet; usually contains a trace (< 2%) amount of hard carbonate; gradual or clear change to B22 horizon.
B22	55/90–120/140 cm	Yellowish brown, light brownish grey, brownish yellow or yellow with pale yellow, yellowish red or red mottled <i>light to heavy clay</i> or <i>sandy clay</i> ; plastic; weak medium to coarse blocky structure; strong consistence dry, sticky consistence wet; contains a trace (< 2%) amount of hard carbonate and a slight (2-10%) amount of soft carbonate.

Preliminary geotechnical sampling was undertaken in two pits located in the proposed evaporation basins construction in September 2020. Geotechnical analysis indicated that soils in pits comprised silty clay. Samples were collected in the pits at 600 mm and 1000 mm depth and achieved co-efficient of permeability of 6×10^{-11} m/s.

The applicant indicated that the risks to land associated with the proposal is potential leakage of saline waste from the evaporation basins. If seepage occurs, it is possible for a plume below the evaporation basin to occur until it reaches the water table. Subject to the permeability of the subsoils, there is also potential for creation of a perched water table and lateral movement of saline seepage.

Groundwater beneath the site is likely to be classified as Segment C conservatively based on the regional groundwater TDS level of 3,500 – 7,000 mg/L as shown on Visualising Victoria's Groundwater (VVG) (DELWP, 2018). The applicable environmental values are water dependent ecosystems and species, potable mineral water supply, agriculture and irrigation (stock watering), industrial and commercial use, water-based recreation (primary contact recreation), Traditional Owner cultural values, buildings and structures, and geothermal properties.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

The surrounding area is largely comprised of farmlands with a few residences. Given the rural setting, it is unlikely that the regional groundwater will be used for industrial and commercial use.

No groundwater extraction bores have been identified within the 2 km radius of the site (DELWP, 2018), indicating that the likelihood of groundwater being extracted for irrigation is possibly low.

In addition, the nearest surface waterbody Wimmera River is located 5 km west of the site (down hydraulic gradient of the site). Given the proximity, it is unlikely that the environmental value of water dependent ecosystems and species will be threatened as a result of salinity seepage.

Assessment

The impacts on groundwater and soils are contingent on the design of the clay liners and the extent to which they prevent seepage into their surrounds. These designs will be discussed in section 4.6.7 of this assessment.

Potential seepage could lead to a plume forming under the evaporation basin, leading to a perched water table and salinisation of subsoils.

Given current environmental values of soils, the change of environmental values will have minimal impact on its surrounding. As such the EPA considers the risk of harm to the environment to be low based on the surrounding site setting and environmental values of groundwater in the region.

Conclusion

The risk of impact on land and groundwater from the proposed activities is acceptable subject to conditions .

4.5.5 Surface water

Guidance publication:

- Environment Reference Standard (2021)

Application

Details of proposed stormwater management have been provided in section 10 of the application. The evaporation basins will be designed as a 'turkey nest' to prevent stormwater draining into the basin. Only rain which falls directly onto the evaporation basins will be collected in the evaporation basin.

The evaporation basins are proposed to be designed to have a capacity capable of receiving wet year rainfall fall (550 mm).

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

This capacity is calculated based on historic rainfall from 1975 to the present, allowing for 1-in-a-100-year rainfall events.

Assessment

Given the lifespan of the project, current weather conditions cannot be regarded as an appropriate indicator of future conditions.

As such, the duty holder needs to consider climate change considerations.

While the facility is not immediately threatened by flooding, the risk of large flood events (1-in-a-100-year event, for instance) should be considered. This would be appropriate given the lifespan of the facility.

Conclusion

It is assessed that the proposal complies with ERS.

4.6 Principles of environment protection

The proposal has incorporated some of the environment protection principles into the project objectives and the design of the Water Sustainability Farm. The application was assessed with respect to the environment protection principles pursuant to section 71(3)(c) of the Act.

4.6.1 Principle of integration of environmental, social and economic considerations

The Water Sustainability Farm takes into account environmental, social and economic considerations when comparing alternative solutions for its brine disposal –

- reducing transport and associated costs/emissions
- using passive solar solutions which are both cost effective and energy efficient

4.6.2 Principle of proportionality

The risk assessment in the following section demonstrates how environmental management controls are directly proportional to the risk of harm to human health and the environment.

4.6.3 Principle of primacy of prevention

Application

The facility and its management controls (described in the following section) have been designed to prevent harm to human health and environment in the first instance.

Assessment

Given the correct conditions, a clay liner can provide an appropriate level of protection to prevent harm to the environment. The specifications which were included in the proposal will

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

never prevent seepage into groundwater and has the potential to impact both groundwater and salinity. This will be discussed in section 4.6.7.

Condition DL_R4 & DL_W1 will address this concern.

Subject to this condition, the application will be consistent with the principles of the primacy of prevention.

4.6.4 Principle of shared responsibility

The application understands the principle of shared responsibility, understanding that it's the responsibility of all levels of business to protect the environment. In order to minimise WSF's impact on the environment, WSF requires all staff and contractors to read the environment management plan and be aware of their collective and individual responsibilities as defined in the plan.

4.6.5 Principle of polluter pays

The WSF accept responsibility for the costs of containing, avoiding and abating any pollution inadvertently generated at the facility as well as all waste products (including residual super-saline waste) generated at the facility.

4.6.6 Principle of waste management hierarchy

The WSF manages RO retentate wastes from the APP factory in accordance with this hierarchy:

- RO retentate waste cannot be beneficially used. Dried salt can have a commercial value (e.g. for human consumption), but the market is small compared to the volume of waste RO retentate produced regionally and it is difficult to achieve the quality required for these commercial uses.
- Production of wastewater for discharge is avoided by evaporating off the water component of the RO retentate in the evaporation ponds.
- The residual super-saline waste will be managed according to the best available technology at the time of harvesting (approximately 30 years from establishment). This may include beneficial reuse or recycling, where an opportunity exists.
- Alternatively, the residual super-saline waste will be contained or disposed of safely.

4.6.7 Best available techniques and technologies

The applicant considered the following options for its brine disposal:

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Table 4 - Analysis of super-saline waste disposal options

Option	Analysis	Outcome
Beneficial use	Dried salt can have a commercial value (e.g. for human consumption), but the market is small compared to the volume of waste brine produced regionally and it is difficult to achieve the quality required for these commercial uses. The presence of processing contaminants and low market demand for the product are likely to inhibit beneficial use.	Currently not feasible
Trade waste discharge	Discharge to GWMWater's Horsham sewerage system was considered and was discussed with GWMWater. However, the sewerage scheme makes beneficial use of the treated wastewater for agricultural irrigation and extra salt would not be beneficial for that scheme. Therefore, GWMWater will not accept the saline waste.	Not acceptable
Ocean discharge	Ocean discharge of saline waste (prior to evaporation) was considered, however the financial, environmental and energy costs of transporting the saline waste 200 km to the nearest ocean outfall at Warrnambool (operated by Wannon Water) are prohibitive. The super saline waste (post evaporation) would not be accepted by Wannon Water for ocean discharge.	Currently not feasible/ not acceptable
Aquifer injection	The groundwater at the site is expected to be deep (10 – 20 m) and of poor quality (3,500 – 7,000 mg/L TDS). As the brine (prior to evaporation) is two to four times higher salinity than the groundwater, this is not a suitable disposal location.	Currently not feasible
Landfill	The Dooen Landfill, north of Horsham, accepts commercial waste and Category C waste. If the super saline waste receives either of these classifications from EPA, it can be disposed here. If classified at Category B, the waste will need to be transported to the Taylors Road, Dandenong Landfill.	Feasible

It therefore identified, evaporation as the best possible approach for its brine processing, weighing up both mechanical evaporation and solar evaporation.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Evaporation options

Mechanical evaporation required significant capital expenditure (\$1.0-1.2 million), as well as energy or gas, leading to a high carbon footprint and associated expenses. Furthermore, mechanical evaporation would require space which is not available on site.

APP concluded that solar evaporation was the best available option. Brine evaporation is a low-risk process, requiring simple proven technology and minimal energy inputs. The Horsham weather conditions with low mean annual rainfall (417mm) and high mean annual pan evaporation rates (1,510mm), are conducive to solar evaporation, with average net evaporation rates of 1,093 mm or 11 ML/ha.

Solar evaporation could therefore be located nearby, minimising cartage, relying on natural solar energy & minimising operating costs.

Construction of solar evaporating basins could use either clay liners or geomembrane liners.

Clay and geomembrane options

Both options were considered, clay liners were chosen as onsite clay had shown to demonstrate appropriate permeability to hold the brine, local contractors had experience working with the materials and it was a proven technology.

The possibility of using a geomembrane liner was considered, it was regarded as less reliant on correct clay liner construction but had a higher capital expenditure cost and limited availability of materials in Australia due to global shortages.

Evaporation pond design

The proposed design consists of compacted clay of minimum thickness of 600 mm. The compacted clays have been permeability tested indicate a coefficient of permeability of 6×10^{-11} m/s. The target permeability for the clay base construction is less than 1×10^{-9} m/s.

According to the application's hydrogeological assessment, testing was conducted under two scenarios -

- Scenario 1 – with a lower hydraulic conductivity (6×10^{-11})
- Scenario 2 – with the hydraulic conductivity outlined in project (1×10^{-9})
- On ponds saturated to 100% of its design capacity

The results indicated that ponds would leak 120 kL/annum over the first 10 years and 200 kL/annum in year 11 to year 30 in scenario 1 and 2,004 kL/annum for the first 10 years and 3,335 kL/annum from year 11 year 30 in scenario 2.

These leakage rates equate to 4 to 6 mm/annum under Scenario 1, rising to 61 to 96 mm under Scenario 2. This compares to natural recharge of the Wimmera Plains estimated between 6 to 19 mm (Strudwick, 1992). The projected leakage under scenario 2 could impact the groundwater a short distance from the site.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Appropriate permeability targets

The applicant set a target permeability for the clay base construction of $< 1 \times 10^{-9}$ m/s, its hydrogeological assessment indicates that this permeability target will lead to significant leakage rates with the associated impacts outline in the section above.

The applicant set its hydrogeological targets based on the Landfill BPEM for a pond with maximum liquid pressure head (level) of 300 mm over the liner. For the proposed ponds, this pressure head is likely to be greater and therefore a lower permeability liner is required to achieve the same levels of protection. The desired outcome for a Type 2 landfill is less than 10 L/Ha/annum seepage. To achieve this target, the target liner permeability needs to be less than 6×10^{-11} m/s (equivalent to a seepage of 12 L/ha/day).

Evidence of permeability

The permeability test used to demonstrate the permeability of the onsite clay was conducted using Melbourne potable water, this could potentially lead to biased results. There is literature that demonstrates that brine is reactive with clay, increasing hydraulic conductivity. As such this methodology is considered to be insufficient to demonstrate the permeability of clay under saline conditions.

In order to ensure permeability performance, hydraulic conductivity testing must be undertaken using both fresh water and 50,000 ppm NaCl solution (in accordance with Landfill BPEM (2015)). Australian Standard AS 1289.6.7.1–2001 gives details on how hydraulic conductivity testing should be performed.

It is recommended that details of the following properties of the clay also be provided in accordance with the Landfill BPEM:

- soil plasticity index
- particle size distribution
- cation exchange capacity

Desiccation

Clay liners are susceptible to desiccation, as the liner dries it may shrink and crack. The proposal outlines that the proponent will conduct monthly checks for evidence of drying and cracks and will remediate cracks as they form.

The proponent has stated that desiccation will not occur as additional brine will be brought in daily. This would prevent desiccation on the bottom basin but doesn't not address potential desiccation on the edges and sides of the basin.

The edge of the lagoon will be prone to desiccation and unavoidable cracking. The EPA suggests that the proponent takes a preventative approach to avoid desiccation.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Conclusion

A clay liner can be an effective best practice for the construction of an evaporation basin contingent on the following conditions:

- The clay liner is able to demonstrate a hydraulic conductivity of 6×10^{-11} based using both fresh water and 50,000 ppm NaCl solution (in accordance with the Landfill BPME). Australian Standard AS 1289 (2001) gives details on how hydraulic conductivity testing should be performed. (DL_W1)
- The duty holder should perform long-term degradation testing to ensure high salinity doesn't degrade clay liner over time.
- Measures be included to prevent clay liner desiccation
- Construction of clay liner should be accompanied by Level 1 geotechnical testing as set out in Appendix B of AS 3798 (2007), Guidelines on earthworks for commercial and residential developments unless other CQA measures are undertaken in accordance with AS 1289 (2001) and Appendix 4A with the approval of the EPA.
- Development and implementation of a construction quality assurance (CQA) plan is recommended for EPA approval to provide assurance of the quality of construction of the liner.

4.7 Proposal consistency with the Act and the Regulations

The application has addressed the requirements of the following Acts and regulations:

- It has considered climate change in accordance with the Climate Change Act 2017.
- Demonstrated compliance with the GED (Section 25 of the Act)
- Applied the Principles of environmental protection (Section 71.3 of the act)
- The application has assessed potential with respect to environmental values as specified in the ERS.

However, the proposal hasn't provided any evaluation of potential environmental impacts during construction, condition DL-R4 requiring an environmental management plan during construction to address this concern, allowing for compliance with the GED.

Furthermore, the design specifications of the liner outlined in the proposal do not minimise potential harm from seepage from the evaporation basins. This impacts the proposal's consistency with the principles of environmental protection (primacy of prevention), GED (minimising risks of harm as far as reasonably practicable). Condition DL_W1 sets a higher permeability target for the basin that is consistent with these fundamental principles in accordance with the Landfill BPEM.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

In summary, subject to the conditions outlined above, the application is considered consistent with the Act and Regulations.

4.8 Prescribed referrals

The EPA regional office has expressed concerns about the use of existing evaporation basins, the existing basins are cracked, and vegetation is growing in the basins at present.

This highlights the tendency of the basin to dry and crack when desiccated. Desiccation will lead to the degradation of the tanks and affect its long-term permeability. As such, management measures will be required to prevent desiccation as these will compromise the standards outlined in the proposal.

The duty holder has assured the EPA, that the evaporations will be completed in accordance with the standards outlined in the application, and all testing and inspection requirements.

4.9 Other matters for assessment

The project proposes to accumulate brine in evaporation tanks for a period of 30 years. No super saline waste will be harvested until the end of proposed activity. The longevity of this proposal can raise potential concerns.

As the prescribed activity is A04 (discharging or depositing industrial wastewater generated at another site, exceeding a design or actual flow rate of 5,000 litres per day or on any day) no financial assurance mechanism will apply.

Although the duty holder has a strong financial history as demonstrated in section 4.2, this activity will extend past the working life of the duty holder. The proposed activity extends to 2052.

Although the project will require a decommissioning plan as a condition of approval. The proposed activity is essentially focusing on accumulating waste with no clarity regarding final disposal. The proponents state that the super saline waste will be landfilled unless new alternatives are present. No costing for disposal is provided.

When questioned whether Water Sustainability Farm could be operated in a manner that progressively harvested the salt, the consultant stated that this was a possibility, however it could potentially damage the lagoon liner and would increase operating costs as a loader would be required. This would be a preferred option for the EPA.

This issue has not been addressed in this assessment, however, by providing the duty holder with a development licence for the first two evaporation, the EPA is providing the duty holder with the opportunity to trial its evaporation basins. With appropriate monitoring, the duty holder will be able to prove the effectiveness of its technology, gather data on the

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

accumulation rates of super saline waste and clarify its methods for harvesting and disposing of this waste.

4.10 Activity risk mapping

The following table outlines all the risks associated with the application, the proposed control measures and whether the risk can be covered by the GED alone or by a condition, whether standard or bespoke.

Table 5: Proposed EPA management of activity risks

Source	Risk	Pathway	Control	Covered by GED alone (Y/N)	Existing standard condition (Y/N)	Condition code or bespoke condition required
Groundwater and land contamination	Medium	Seepage of saline water	Clay liner hydraulic conductivity testing, implement CQA Plan, desiccation prevention measures	N		DL_W13 DL_W1, DL_R4
Noise	Low		Separation Distance Defined Operating Hours	Y		DL_W13
Surface water	Low	Surface water runoff Spill during discharge	Turkey Nest Freeboard Discharge training Spills clean up procedures	N		DL_W13
Odour	Low		Low BOD, separation distance	Y		DL_W13
Waste stockpiling And Site abandonment	High		Management measures (to be developed) Decommissioning plan	N		

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

4.11 Summary of assessment

The application has been broken down above, the application above can be regarded as acceptable for approval. The impacts on the environment in terms of climate change, noise and odour are acceptable.

Groundwater and land contamination

The application offers to build a clay liner to a hydraulic conductivity of 1×10^{-9} m/s, under this permeability target the clay liner is known to result in significant seepage of 61 - 96 mm/annum compared to a natural recharge rate of 6-19 mm annum. This could lead to a plume to form below the evaporation basin until it reaches the water table, creating a perched water table and ground salinity.

The applicant has claimed that according to its initial testing of onsite clay, a hydraulic conductivity of 6×10^{-11} m/s can be achieved. This is consistent with the desired outcome for a Type 2 landfill is less than 10 L/Ha/yr seepage. According to the guidelines in the Landfill BPEM a clay pond of the size proposed in this application will need to demonstrate a permeability of less than 6×10^{-11} m/s, this will reduce any potential risk to surrounding groundwater & soils.

Alternative a geomembrane could also be regarded as an effective best practice.

Given the proposal suggests that it can achieve a hydraulic conductivity of 6×10^{-11} m/s, it is reasonable to expect the proponent builds its clay basin to the standard that it claims to be able to achieve. Quoting a high standard of hydraulic conductivity and then building to a lower standard is not acceptable.

Sufficient evidence will be required to demonstrate that the applicant can achieve this desired hydraulic conductivity target. Previous test used Melbourne potable water to demonstrate permeability, according to Australian Standard AS1289.6.7.1-2001, hydraulic conductivity should be tested in both fresh water and saline conditions.

As such, under the correct conditions, namely by testing the clay according to the methodology outlined in AS1289 and building a clay liner to the hydraulic conductivity of less than 6×10^{-11} m/s. This application can be regarded as acceptable for approval.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

5 Recommendation

The conclusions of the assessment are that subject to the proposed conditions outlined in Appendix B, the development of clay lined solar evaporation basins can be regarded as the best practice solution for the disposal of brine waste generated by APP. Under these conditions, this proposal has acceptable risks in terms of their impact on human health and the environment.

It is recommended that the application for the development licence is approved under Section 69(1)(a) of the *Environment Protection Act 2017*, subject to the proposed conditions of approval, as per Appendix B of this report.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

6 Post-approval compliance plan

The purpose of the completion strategy is to ensure appropriate oversight is undertaken of the monitoring, development works, commissioning, and licensing of the works subject to this assessment.

Prior to commencement of works

Construction plan

- Onsite clay permeability tests to be completed prior to commencement– clay must indicate hydraulic conductivity of less than 6×10^{-11} , alternatively if clay needs to be sourced from off-site, it is important to ensure that clay is of clean fill standard, in compliance with IWRG621.
- WSF to provide Construction Quality Assurance plan, testing permeability of constructed clay liner using AS1289.
- WSF to provide an outline of proposed measures to prevent desiccation of the ponds.
- WSF to provide a noise assessment relating to the construction of the basins

6.2 Post completion of works

- Inspection for completion of works and EPA receipt of completion of works reports.
- Notifying WSF to apply for an operating licence.

6.3 Operating Licence

This assessment has identified the following considerations that would be beneficial to include in the operating phase of this project:

- The duty holder should perform long-term degradation testing to ensure high salinity doesn't degrade clay liner over time.
- The duty holder should monitor the formation of super saline waste and investigate opportunities to harvest waste during the life of the project.
- The duty holder should provide an outline on how they intend to prevent the desiccation of the liner

6.4 Second development licence

This proposal intends to build a further two evaporation basins, 10 years into the proposed activity. This will not be included in the initial Development Licence.

The interim period is an opportunity for the duty holder to investigate how it can operate the proposed site, gathering data on the crystallisation of super saline waste, demonstrating how the evaporation basins are performing in terms of seepage and evaluating possible alternatives to accumulating super saline waste onsite for 30 years.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

The information that can be gathered during the operating licence is crucial to inform the possibility of harvesting waste, to demonstrate the performance of the clay liner and to evaluate the need for further evaporating basins in the future.

The duty holder should also get a better understand of the end of life of the project – outlining possibilities for onsite containment, landfill disposal and reuse. No costings have been provided to date and such costing should be clarified by that stage.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Appendix A List of application documents and information

Waterform Technologies, Works Approval Application for Water Sustainability Farm, Quantong

Waterform Technologies, Community engagement plan for Water Sustainability Farm Quantong.

WSF Change of Scope EPA 0521

Douglas Partners, Permeability Test 679146.00-1

Douglas Partners, Permeability Test Report 679146.00 – 2

Appendix A – Evaporative base model extract

Following – EPA S22 – 16/4/21

Responses to EPA s22 for Water Sustainability Farm Works Approval Application

Response to RFI – 6/7/21

Fit and Proper Person Form

Prohibited Person questionnaire

Groundwater Science, Australian Plant Proteins – Hydrogeological Report to Support Solar Ponds Construction. Prepared for Waterform Technologies, July 2021

RMCG, Responses to EPA request on 6 July 2021 regarding Water Sustainability Farm Works Approval Application.

Water Sustainability Farm Credit Report

RMCG, WSF Environmental Management Plan, Draft Report

RMCG, Preliminary Super Saline Waste Classification, Final Report, October 2021

Response to RFI – 3/3/21

Appendix 1 – site layout

GTS, Brine pad construction – Lanes avenue, Quantong, Earthworks specification for Waterform Technologies, Report 20C 1262, October 2020.

WTS Statement from Peter Blair, 10/3/2022.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

Appendix B – Draft Conditions

DL_G1	A copy of this licence must be kept at the site and be easily accessible to persons who are engaging in an activity conducted at the site. Information regarding the requirements of the licence and the Act duties must be included in site induction and training information.
DL_G2	The development must be conducted in accordance with the approved plans and documents referenced in TABLE 1. In the event of any inconsistency between the approved documents and the conditions of this permission, the conditions of this permission shall prevail.
DL_G3	Subject to the following conditions, this development licence allows you to: construct two (2) clay-lined solar evaporation basins, shelter belts, barrier fences and access roads.
DL_G4	This permission does not take effect until a copy of any planning permit or amendment to a planning scheme required under the Planning and Environment Act 1987 (Vic) and related planning schemes has been provided to the Authority by the applicant.
DL_G5	This permission expires: (a) on the issue or amendment of an operating licence or permit relating to all activities covered by this permission; (b) when the Authority advises in writing that all activities covered by this permission have been satisfactorily completed and the issue or amendment of an operating licence or permit is not required; or (c) on the expiry date listed on the front page of this permission.
DL_C2	You must immediately notify the Authority by calling 1300 EPA VIC (1300 372 842) in the event of: a) A discharge, emission or deposit which gives rise to, or may give rise to, actual or potential harm to human health or the environment; b) A malfunction, breakdown or failure of risk control measures at the site which could reasonably be expected to give rise to actual or potential harm to human health or the environment; or c) Any breach of the licence.
DL-W1	Prior to commencing construction of the following components of the development activity, you must provide to the Authority for approval: evidence that the onsite clay can achieve a hydraulic conductivity of $<6 \times 10^{-11}$ m/s based on samples tested using both fresh water and 50,000 ppm of NaCl solution in accordance to Australian Standard AS 1289.6.7.1–2001, integrate that target into the Construction Quality Assurance Plan.

Assessment report number: PAS006550

Development licence assessment report

Environment Protection Act 2017

DL_W2	You must notify the Authority in writing when the development activity authorised by this permission has commenced.
DL_W3	You must notify the Authority when the construction associated with the development activities covered by this approval has been completed.
DL_G7	You must: (a) develop and maintain a decommissioning plan that is in accordance with the current decommissioning guidelines published by the Authority; (b) provide the decommissioning plan to the Authority upon request; (c) supply to the Authority an updated detailed decommissioning plan minimum 40 business days business days prior to commencement of decommissioning, if you propose to divest a section of the licensed site, cease part or all of the licensed activity or reduce the basis upon which the licence was granted to a point where licensing is no longer required; and (d) decommission the licensed site in accordance with the detailed decommissioning plan, to the satisfaction of the Authority and within any reasonable timeframe which may be specified by the Authority.
DL-R4	At least 15 days before the commencement of any construction, you must provide to the Authority (a) a Construction Quality Assurance Plan, (b) Construction Environmental Management Plan.
DL_C7	Within 30 days of the completion of the approved activities, you must provide to EPA a written report that summarises the activities undertaken and includes: a) permeability test indicating a hydraulic conductivity of less than 6×10^{-11} m/s; and b) all testing and inspection in accordance with the Construction Quality Assurance Plan, and (c) environmental performance during the construction stage.
DL_W13	During construction, you must ensure that all activities are carried out in accordance with an EPA approved Construction Environmental Management Plan.

Assessment report number: PAS006550