



To

Application for Licence

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

Licence Number	L7315/1998/9
Applicant	Shire of Wyndham East Kimberley
File number	DER2014/002738-1
Premises	Kununurra Waste Disposal Site Reserve 28875 Victoria Highway Lot 2464 and 2465 on Deposited Plan 195310 As defined by the premises maps attached to the issued Licence
Date of report	23 October 2024
Decision	Licence granted

Grace Heydon

**MANAGER WASTE INDUSTRIES
REGULATORY SERVICES**

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Table of Contents

1.	Decision summary	1
2.	Scope of assessment	1
2.1	Regulatory framework	1
2.2	Background	1
2.3	Application summary and overview of premises	1
2.4	Operational aspects.....	2
2.5	Premises history	2
2.6	2015 Hydrogeological assessment	2
2.7	Additional supporting information.....	5
2.8	Review of monitoring data	6
2.8.1	Contaminant parameter monitoring in groundwater	6
2.8.2	Standing water level.....	12
2.8.3	Groundwater contaminant parameters	16
2.8.4	Monitoring of Waste volumes	17
2.9	Landfill closure management plan	18
3.	Risk assessment.....	19
3.1	Source-pathways and receptors	19
3.1.1	Emissions and controls	19
3.1.2	Receptors.....	21
3.2	Risk ratings.....	22
3.3	Consequence and likelihood of risk events	25
3.4	Acceptability and treatment of Risk Event.....	26
3.5	Risk Assessment – Leachate.....	26
3.5.1	Leachate characterisation and impact	26
3.5.2	Licence Holder controls.....	26
3.5.3	Data gaps.....	26
3.5.4	Key findings	27
3.5.5	Consequence.....	28
3.5.6	Likelihood of Risk Event	28
3.5.7	Overall rating of Leachate emissions.....	28
3.6	Summary of acceptability and treatment of Risk Events	29
4.	Regulatory controls.....	29
4.1	Licence expiry date.....	29
4.2	Hydrogeological assessment.....	29
4.3	Expansion of groundwater monitoring schedule	30
4.4	Landfill closure management plan	30

4.5	Waste Management Strategy	31
5.	Consultation	31
6.	Conclusion	32
	References	36
	Appendix 1: Summary of Licence Holder comments on risk assessment and draft conditions	37
	Appendix 2: Application validation summary	40

1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the operation of the premises. As a result of this assessment, Licence L7315/1998/9 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) 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>.

2.2 Background

An amendment application was received from the Shire of Wyndham East Kimberley (SWEK) on 2 July 2019 to extend the duration of the Licence from 27 October 2019 to 20 June 2026. In determining this amendment application outcome, the Delegated Officer considered that the location of the premises had a significantly high-water table (0.6 – 2.71 mbgl) and is situated within a Nationally important Wetland (refer to Table 7) with a RAMSAR classified wetland 1.8 km to the west, indicating the location is 'high-risk' for waste disposal.

As such, the Delegated Officer decided to grant the extension to the Licence period to 30 June 2024 rather than 2026 as requested, noting that the Licence Holder was in the process of acquiring a future landfill location. It was considered at the time of granting (2 September 2019) that this allowed adequate time for SWEK to acquire and prepare land suitable for a new landfill and commence the post-closure rehabilitation of the site.

On 12 December 2023, the Delegated Officer granted an amendment to the Licence to align the Licence expiry date with the Licence annual fee period by extending the duration of the Licence by 119 days, from 30 June 2024 to 27 October 2024. This was to ensure the next Licence renewal had consistent fee periods and anniversary dates.

2.3 Application summary and overview of premises

On 2 November 2023, the applicant submitted an application for a Licence renewal to the department under section 57 of the Environmental Protection Act 1986 (EP Act).

The application is to seek a Licence renewal relating to the Kununurra Waste Disposal Site (KWDS) which is operated by SWEK under Category 57, 61 and 64 as a tyre storage facility, liquid waste facility and Class II unlined landfill. SWEK are seeking to extend the duration of the Licence from 27 October 2024 to 27 October 2030. This additional six years is being sought to allow additional time in order to transition to a new landfill site and commence post-closure rehabilitation.

The landfill accepts and disposes of waste consistent with the requirements of the Landfill Waste Classification and Waste Definitions 1996 (As amended December 2019) (LWCWD) for a class II unlined landfill. The premises relates to the categories and assessed production / design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in Existing Licence L7315. 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 Licence L7315.

Table 1 lists the Prescribed premises categories for the Licence.

Table 1: Prescribed Premises Categories in the Existing Licence

Classification of Premises	Description	Approved Premises production or design capacity or throughput
64	Class II or III putrescible landfill site: premises on which waste (as determined by reference to the waste type set out in the document entitled 'Landfill Waste Classification and Waste Definitions 1996' published by the Chief Executive Officer and as amended from time to time) is accepted for burial.	30,00 tonnes per annual period
61	Liquid waste facility: premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.	1,9000 tonnes per annual period
57	Used tyre storage (general): premises (other than premises within category 56) on which used tyres are stored.	Not more than 500 tyres

2.4 Operational aspects

Landfill/sorting process

The landfill area at the KWDS operates as a Class II unlined landfill and has been in operation since 1998. Minimal historic waste acceptance and burial records are available. The KWDS disposes of various types of waste at different locations at the landfill; currently putrescible waste is disposed of above ground. Disposal of waste at the tipping area is restricted to a length of 30m and cover material is applied daily.

Clinical and asbestos waste, however, is disposed of to dedicated below ground pits. Tyres are both stored and buried in dedicated separate storage and disposal areas. No more than 500 tyres are allowed to be stored above ground at the dedicated tyre storage area while no more than 100 tyres are to remain uncovered within the tyre disposal area.

The KWDS has recycling facilities to cater for waste streams such as steel, white-goods, batteries, glass and cans and some recycled waste is for sale within a dedicated shed.

Greenwaste

Green waste constitutes a large volume of waste accepted to KWDS and to the landfill. Based on historical data there is a local demand for greenwaste use of approximately 200 m³ per annum. SWEK has drafted a landfill closure plan for both the Kununurra and Wyndham landfills and current projections for green waste use in rehabilitation activities is 1,500 m³ per annum. Therefore, the demand is approximately 1,700 m³ per annum. Based on recent data this is the equivalent to 90% of the bulk green waste received at the facility. Costs associated with mulching are approximately \$50 - \$100 per m³ compared to \$8 - \$12 m³ in Perth. Greenwaste is currently burnt on site as per Licence conditions.

Liquid waste ponds

SWEK provides liquid waste disposal services for the Shire and has the only treatment ponds available in the region. Septage and grease trap liquid waste (K210 and K110 respectively) is accepted from local Kununurra businesses. The Liquid waste ponds (LWP) are located to the east of the active landfill area and are comprised of two lined liquid waste lagoons enclosed by a security fence. The LWP Production and Design Capacity (P&DC) is 1,900 tonnes per annual period and the lagoons have the capacity to hold 1,400 cubic metres of liquid waste. There is no proposal to change the LWP production and design capacity.

Monitoring bores

KWDS currently have 10 monitoring bores. KWDS has previously prepared a hydrogeological report in May 2015 as required under previous Licence conditions, following a site assessment undertaken in November 2012 that identified that the two Existing monitoring bores were inadequate and additional bores were required in order to further develop the hydrogeological understanding of the Premises.

Stormwater

There is dedicated stormwater drainage around the landfill which captures and retains any contaminated stormwater. Uncontaminated stormwater is diverted away from active landfill operations by upstream bunds to avoid contamination. Any contaminated stormwater will remain on the premises.

KWDS has a 3m fire break surrounding and adjacent to the premises fence and around stockpiles of flammable materials. A mobile water tanker and dedicated compactor are on site and can be used if required in the event of fire.

The current layout of the Liquid Waste ponds and KWDS as provided in the Application Form is provided in Figure 1 and 2 respectively.



Figure 1: Liquid waste ponds

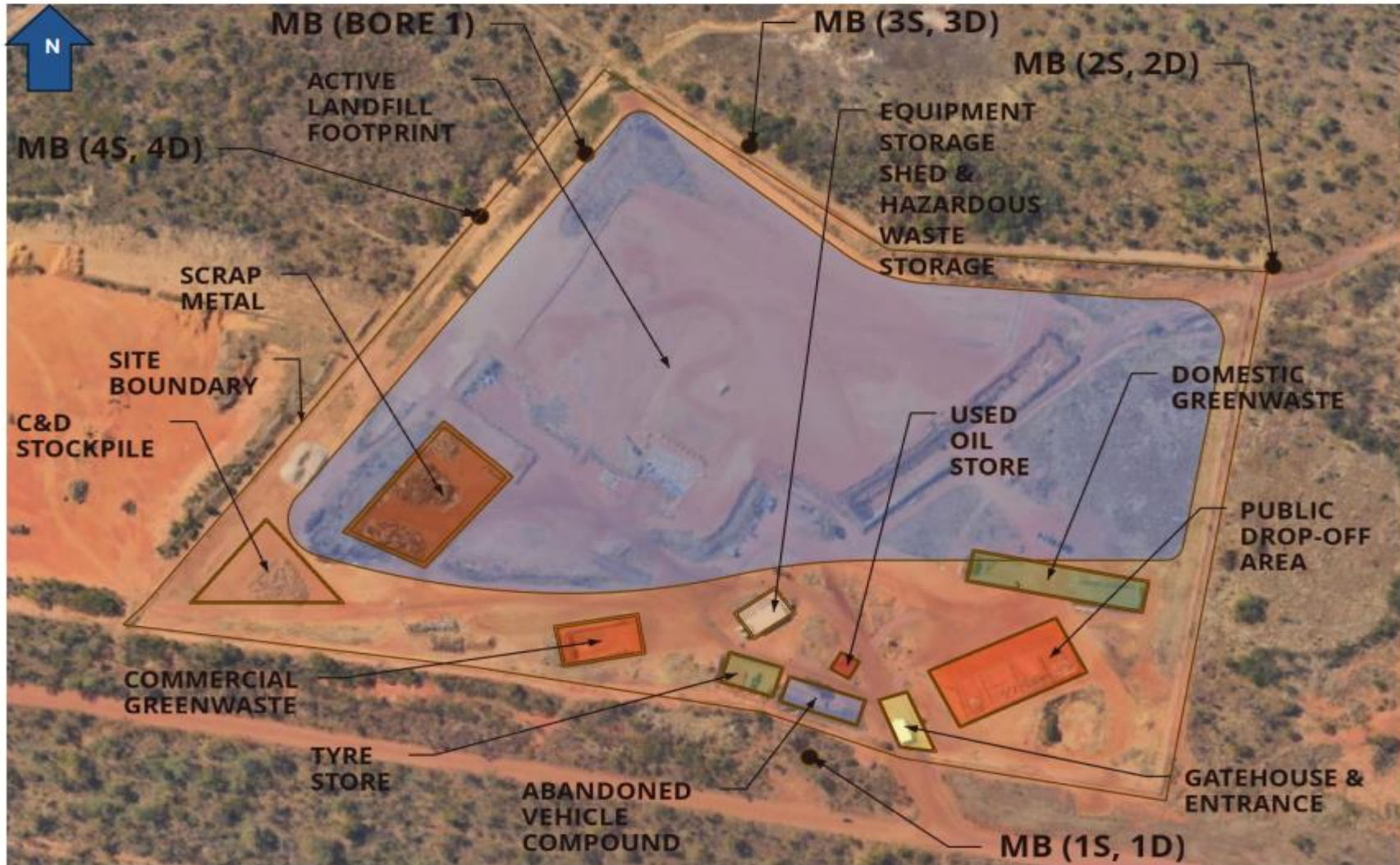


Figure 2: KWDS layout

2.5 Premises history

Table 2 summarises the works approval and Licence history for the premises since 2006.

Table 2: Works approval and Licence history

Instrument	Issued	Nature and extent of works approval, Licence or amendment
L7315/1998/7	26/10/2006	Licence re-issue
L7315/1998/7	07/07/2011	Licence amendment
L7315/1998/8	27/10/2011	Licence re-issue
L7315/1998/8	04/10/2012	Licence amendment
W5355/2013/1	21/03/2013	Works Approval for liquid waste ponds
W5355/2013/1	13/10/2013	Works Approval amendment
W5355/2013/1	19/12/2013	Works Approval amendment
L7315/1998/8	08/05/2014	Licence amendment and converted into REFIRE format
L7315/1998/8	04/06/2015	Licence amendment for storage of scrap metal, recording of waste quantities, Category 64 Licence production and design capacity increase to 30,000 tonnes per annual period, correction of Category 57 tyre storage capacity, additional of groundwater monitoring bores and Hydrogeological assessment.
L7315/1998/8	29/4/2016	Licence amendment for the extension of the Licence duration to 27/10/2019
L7315/1998/8	18/05/2017	Amendment Notice 1: for the construction and operation of the Bioremediation Facility
L7315/1998/8	02/5/2019	Amendment Notice 2: to increase tyres stored at the tyre storage area to 500.
L7315/1998/8	02/09/2019	Consolidated Licence with amendment to extend Licence duration from 27/10/2019 to 30 June 2026.
L7315/1998/8	12/12/2023	Licence amendment to extend Licence expiry until 27 October 2024.
L7315/1998/9	20/09/2024	Licence amendment to extend Licence expiry until 27 October 2026.

2.6 2015 Hydrogeological assessment

The Licence Holder commissioned Consultants GHD to undertake a hydrogeological investigation in 2015 in accordance with previous conditions on the Licence. As no further hydrogeological investigations have been undertaken at the premises, the Delegated Officer has considered the findings within the 2015 hydrogeological assessment when assessing this amendment application. This assessment was based on a single round of groundwater sampling undertaken in March 2015. The 2015 Hydrogeological assessment provides the following information:

- The KWDS is located within a floodplain, adjacent to a wetland included in the Nationally 'Important Wetland' database and 2km east of the Ord River.
- Regionally, the superficial alluvials associated with the Ord River flood plain is the main groundwater source within the region. Within the area of the KWDS, the geology is dominated by alluvial sediments associated with the Ord River channel. The drilling lithology results indicated that to the maximum depth tested (15m below ground level), the area surrounding the landfill site is variably underlain with intercalated sands and silts with sandy clays and gravelly clays.
- Eight groundwater monitoring wells were established at the premises to inform the investigation. These wells target the shallow perched groundwater and the more permanent deeper groundwater. A new production bore was installed at the premises in April 2015 to provide water for dust suppression and fire control.
- Groundwater is fresh (<500mg/L), and groundwater levels ranged from above ground level to 5mbgl across the sampled wells.
- Based on the limited data obtained, it has been demonstrated that groundwater flows to the north of the premises towards the wetland. However, to improve confidence of understanding groundwater flow direction, surveying of the monitoring wells was recommended to obtain accurate height elevation datum.
- Hydraulic separation of the shallow and deep groundwater units demonstrates some confinement of the lower formation and possible perching of the shallow groundwater, particularly evident in the northern area of the Site. This separation, coupled with the clay rich formation encountered towards the base of the test pits (at around 3.5 metres below ground level) may reduce the leachate potential impacting the lower groundwater unit.
- The groundwater sampling undertaken on the new monitoring wells has demonstrated that groundwater is marginally impacted in the area of the Site, including in the area of the up-gradient monitoring wells. Filtered metals (aluminium, copper, iron and zinc) and nitrogen were generally above the limits outlined in the ANZ guidelines for fresh and marine water quality. Four monitoring wells also exceeded the filtered aluminium limits outlined in the DWER Guidelines for the non-potable uses of recycled water (0.2 mg/L) with concentrations up to 0.34 mg/L.
- The presence of elevated metals and nutrients in the up-gradient monitoring wells suggests that the Site is fairly typical of background concentrations. Based on a consideration of the Site conceptual model, if landfill impacts were to occur, the impacts have the potential to migrate in a north west direction with groundwater flow towards the wetland, located immediately north of the boundary of the Site.
- Detection of low level hydrocarbons (as C16 - C34 fractions) in site Kun 4S could possibly be related to the liquid waste disposal area that is just up gradient from this monitoring location. It is understood that recent improvements have been made to the housekeeping of this area of the facility. The presence of relatively high nitrogen levels upgradient of the landfill site may suggest an off-Site nutrient source, potentially from fertiliser application from the agricultural land to the south.
- In order to further develop the understanding of groundwater levels, pressure transducers should be installed in the monitoring wells to allow a near continuous record of groundwater levels. This will allow monitoring of the actual peak groundwater levels and allow for an assessment of the impact on rainfall events on groundwater levels and if the aquifers are affecting by pumping from the new production bore.
- Groundwater quality monitoring should be scheduled to occur from the new monitoring wells on a quarterly basis to determine the seasonal changes in groundwater quality. Following assessment of results over a period of a year, sampling from the monitoring wells could be

reduced to a lesser contaminant suite to reflect the lack of detection during this sampling round.

- Groundwater sampling should be undertaken on the new production bore. This will allow for an assessment of the deep groundwater at the Site and assessment and determine if it is suitable to be used for dust suppression and firefighting purposes.
- The hydrogeological conceptual model developed within the assessment highlights the topography of the Site, with the landfill waste area elevated above the natural ground level. The actual depth of the waste across the Site is unknown; however, if waste was deposited on the natural ground level, Figure 7 indicates that the waste is separated from the groundwater level by 3 to 5 metres.

Key finding: The Delegated Officer has reviewed the hydrogeological assessment undertaken on behalf of the Licence Holder in 2015 and considers the following:

- The assessment was based on a single round of groundwater sampling undertaken in March 2015. This is the late wet season in Kununurra, and therefore sampling at this time can be assumed to represent highest seasonal groundwater levels.
- The single sampling event in March 2015 will not be representative of the groundwater characteristics at KWDS due to seasonal variation. Data outlining trends in groundwater depth and contaminant concentrations over time has not been considered in informing the assessment. Due to this, the outcomes within the assessment cannot be used to draw conclusions on year-round groundwater characteristics or changes to groundwater characteristics (included depth and contaminant concentrations) over time.
- The assessment recommended that the new monitoring wells be surveyed to obtain accurate height elevation datum and provide more confidence in the assumed groundwater flow direction. To date, DWER has received no information from SWEK advising this action has been completed, indicating direction of groundwater flow is poorly understood.
- The assessment that recommended that pressure transducers should be installed in the monitoring wells to allow a near continuous record of groundwater levels, which would allow monitoring of the actual peak groundwater levels and allow for an assessment of the impact on rainfall events on groundwater levels and if the aquifers are affecting by pumping from the new production bore. To date, DWER has received no information from SWEK advising this action has been completed, indicating fluctuations in groundwater levels are poorly understood.
- Data obtained from the single sampling event notes that contaminant concentrations in background wells are similar to contaminant concentrations down hydraulic gradient of the landfill cells. However, this data cannot be used to draw long term conclusions into the extent of background contamination or contamination arising from landfilling operations, as:
 - a. Only one sampling event has been undertaken; and
 - b. There is no assurance that the direction of groundwater flow is accurate given that recommendations to confirm groundwater flow have been put forward as outcomes to the assessment.
- Quarterly groundwater monitoring was adopted at the premises on recommendation of the assessment.
- Waste is currently landfilled above ground at the premises, however, has historically be deposited below ground. The actual depth of the waste across the premises is unknown.
- Existing Licence condition 1.3.3 (Table 1.3.2) requires that the separation distance between the base of the landfill and the highest groundwater level shall not be less than 3 metres. The assessment has found that groundwater levels ranged from above ground

level to 5mbgl across the sampled wells. As landfill wastes have historically been deposited below ground, this indicates that:

- it is highly likely that historically deposited landfill wastes are siting within groundwater for at least some periods of the year; and
- it is highly likely that the Licence Holder is unable to meet the 3m separation distance between the base of the landfill cell and groundwater specified in Existing Licence condition 1.3.3 for at least some periods of the year.
- Any leachates generated from the decomposition of putrescible waste located within groundwater will have a direct and continuous pathway to groundwater receptors for a prolonged period.
- Groundwater sampling was recommended to be undertaken on the new production bore, however this was not carried over into Licence conditions, meaning that the suitability of the use of groundwater for dust and fire fighting purposes is unclear.
- The production bore and control bore indicated on the Licence appear to be the same.

2.7 Additional supporting information

Condition 4.1.1 (Table 4.1.1) on the Existing Licence required the Licence Holder to submit a hydrogeological assessment of groundwater beneath the premises to the CEO by 1 January 2017. This hydrogeological assessment was to include, but not be limited to, the following:

- Location, depth and design of monitoring bores;
- Location, occurrence, depth of all groundwater and seasonal groundwater;
- Seasonal flows and direction of groundwater;
- Interactions between groundwater and surface waters;
- Trends in groundwater depths;
- Existing groundwater quality reviewed against applicable standards and guidelines; and
- Groundwater users in the area.

The Licence Holder submitted the document '*Supporting information – Licence (L7315/1998/8) Improvement Condition IR 1*' on 24 March 2021 to address the requirements of condition 4.1.1. (Table 4.1.1). The 2021 supporting information document contained a short summary of the report outcomes of the 2015 hydrogeological assessment. Additional to the information provided in section 2.6 above, the document provides the following information:

- In general, the document states that there is no evidence to support that the groundwater is being adversely impacted by the landfill. The developed hydrogeological conceptual model for the site indicates that if landfill impacts were to occur, the impacts have the potential to migrate in a north west direction with groundwater flow towards the wetland, located immediately north of the boundary of the site; and
- The rate of discharge of groundwater into the wetland is unknown. If maintained under seasonal influences, the identified upward hydraulic head between the deep and shallow units may reduce the potential of any landfill impacts migrating into the deeper aquifer.

The 2021 supporting information document acknowledges that the 2015 hydrogeological report facility did not provide trends in groundwater depth and provided the following summary of this information, as SWEK have been undertaking standing water level measurements of the bores on-site in line with the monitoring conditions required of the licence:

- Groundwater fluctuations within the deep bores indicated up to a 5m variation within individual

bores from ground surface.

- Groundwater fluctuations within the shallow bores indicated up to a 4.5m variation within individual bores from ground surface.
- The deepest measurements to groundwater were routinely obtained from Bore 1D and 1S between 8.22 to 4.75 mbgl.
- The shallowest measurements were routinely obtained at Bore 3D and 3S between 2.44 to 0.10 mbgl.
- Shallow Bore 2 has been found to be routinely dry through both the wet and dry seasons.
- Based on SWL results recorded in the field and bore height data, groundwater flow direction appears to swing year to year including north-west, north, north- east and south-west.
- No accurate well survey elevation data is currently available to enable groundwater levels to be correctly determined in mAHD.

Key finding: The Delegated Officer has reviewed the supporting information document submitted in 2021 and considers the following:

- The intent of condition IR 1 was for the Licence Holder to undertake a new hydrogeological assessment to address data gaps identified in the 2015 hydrogeological assessment. As no additional hydrogeological studies have been undertaken at the premises since 2015, the 2015 hydrogeological assessment is considered to still be the most current and only hydrogeological dataset available for the premises.
- The new hydrogeological assessment was due to be submitted to DWER by no later than 1 January 2017 as per existing Licence condition 4.1.1. To date, no hydrogeological assessment has been submitted, indicating the Licence Holder remains non-compliant with existing condition 4.1.1.
- As the 2021 supporting information document provides a summary of the findings of the 2015 hydrogeological assessment, findings within the 2021 supporting information document align with findings in the 2015 hydrogeological assessment.
- An independent review of the historical SWL data has been undertaken to inform this assessment, as a detailed understanding of SWL at the premises is critical in informing the risk assessment. This review is discussed in Section 2.8.2 below.

2.8 Review of monitoring data









2.8.1 Contaminant parameter monitoring in groundwater

The 2021 supporting information document also includes a summary of the results of contaminant parameter monitoring from 2017 - 2020 to identify trends. Results were compared against the following guideline values –

- DER/NEPM Fresh Water guidelines - as adjacent wetland receptors may receive water flow and then further flow to the Ord River; and
- Non-Potable Groundwater Use (NPUG) due to possibility of domestic non-potable groundwater use off-site.

The results as summarised in the 2021 supporting information document are outlined for the shallow and deep bores in Tables 4.1 and 4.2 below (from the document).

Table 4.1 Shallow bore groundwater trends and exceedances against guideline values

Analyte	Trend	Comment
pH		Unknown. Not currently taken on site. Laboratory results were outside of withholding period for pH analysis and not indicative of on-site conditions.
Metals		Not detected above levels of reporting (LORs) at all bores (Cadmium, Chromium, Lead, Nickel, Mercury)
Copper	 (only 3S)	Detected at Bore 1S (coming onto site) on two occasions above freshwater guideline values (2015, 2018) but all other results not detected below LORs. All Bore 2S results below LOR. Bore 3S results were generally below the LOR however last result in 2020 was 0.012mg/L which exceeds the freshwater guideline values. Highest levels consistently obtained at Bore 4S up to 0.35mg/L but recently declining. All results obtained for Bore 4S are above freshwater guideline values.
Manganese		Detected at Bore 1S averaging 0.013mg/L but declining concentrations since 2018. Therefore, potential for background impacts (farmland adjacent). Downgradient bores show increased concentrations averaging 0.068mg/L. Recent results are within historical ranges. Highest levels consistently at Bore 4S average 0.31mg/L but recently declining. No exceedances of guideline values detected.
Zinc		Routinely detected above freshwater guidelines at Bore 1S with the highest result of 0.04mg/L (obtained in 2017). The latest results in 2020 average 0.019mg/L which is within historic ranges. No clear trend detected. In downgradient Bores (3S & 4S) Zinc was routinely detected (eight times), of which seven results were above freshwater guidelines at an average result of 0.063mg/L. The latest result in 2020 was the highest result obtained over the period at 0.278mg/L which indicates an increasing trend.
Benzene		Detected once at Bore 1S, 3S & 4S over the sample period. Not detected again in any Bore since 2019 (Q1).
TRH fractions		Not detected in Bore 1S over sample period. In downgradient Bore 3S, TRH was detected on six occasions. Q3 2019 results were the highest with an average result of 13,886 µg/L across all TRH fractions analysed. The latest results in 2020 have however dropped considerably with an average across all TRH fractions of 291 µg/L obtained. In downgradient Bore 4S, TRH was detected on four sample events out of the five undertaken. The highest result was obtained in 2017 (Q2) with an average TRH fraction of 1,276 µg/L obtained. The latest results in 2020 have dropped considerably with an average across all TRH fractions of 328 µg/L obtained.
Chloride		Low level chloride detection at Bore 1S at an average concentration of 21 mg/L. 2020 averages are within historic ranges and there is no clear trend observable. In Bore 3S Chloride detection averages are 196mg/L and show an increasing trend. The latest result in 2020 indicated a concentration of 819 mg/L. The NPUG thresholds were exceeded three times across the sample period in 2015, 2019 and 2020. In Bore 4S Chloride detection averages are highest at 382mg/L of all Bores and showing an increasing trend. The latest result in 2020 indicated a concentration of 478 mg/L. The NPUG thresholds were exceeded in four of the five sample events.
Sulphate		Sulphate was detected on occasions at Bore 1S at an average of 3 mg/L. It has not been detected above the LOR since 2018 (Q3). In Bore 3S Sulphate is routinely detected at an average concentration of 28 mg/L and results are indicating an increasing trend. In Bore 4S Sulphate detection is ongoing at an average concentration of 84 mg/L, with results indicating no clear trend.













		There were no exceedances of guideline values.
Total Nitrogen	 (Bore 3s & 4S)	Nitrogen was routinely detected at Bore 1S at an average concentration of 17.2 mg/L with all results except one exceeding the freshwater guidelines at 2mg/L. Recent results are consistent with historical ranges and no clear trend is evident. In Bore 3S and 4S Nitrogen was routinely detected at an average concentration of 34 mg/L and 106mg/L, respectively. Results are indicating an increasing trend at these Bores. The highest result of 220 mg/L was obtained at Bore 4S in 2020. All results at both Bores exceed freshwater guidelines.
Total Phosphorus (Kjeldahl Digestion)		In Bore 1S low levels of phosphorus have been detected at concentrations of 0.06mg/L. Recent results are within historical ranges with no clear trend observable. No exceedance of guidelines has been detected at this Bore. In Bore 2S, Bore 3S and 4S there has been ongoing detection of phosphorus at an average concentration of 0.55 mg/L, 0.41 mg/L and 0.46mg/L, respectively. The latest results are within historic ranges with no clear trend observable. Freshwater threshold vales have been exceeded at Bore 2S (four out of five sample events), Bore 3S (six out of ten sample events) and Bore 4S (one out of four sample events).

Table 4.2 Deep bore groundwater trends and exceedances against guideline values







Analyte	Trend	Comment
pH		Unknown. Not currently measured on site. Laboratory results outside of withholding period for pH analysis and not indicative of on-site conditions.
Metals		Not detected above LORs at all bores (Cadmium, Chromium, Lead, Nickel, Mercury)




Sulphate SO ₄		Decreasing sulphate trend at Bore 1D with an average concentration of 6.1mg/L across the sample period. 2020 results indicate that sulphate was detected once above LOR at 2mg/L. In downgradient bores, Sulphate is routinely detected averaging 33.4mg/L at Bore 3D, 26.4mg/L at Bore 2D and 3.6mg/L at Bore 4D. All values are within historic ranges and there is no clear trend evident. No exceedances of guideline values were detected.
Total Nitrogen		Increasing trend at Bore 1D and 3D. 1D - Total nitrogen detected all events and increasing from 2019 (Q3) onwards (from around 1mg/L to 14mg/L). All results since 2019(Q3) exceed freshwater guideline values. Total nitrogen routinely detected above freshwater guideline values at other bores averaging 22.3mg/L at 2D and 4mg/L at 3D. Total Nitrogen generally below freshwater guideline values at Bore 4D with an average concentration of 1.4mg/L.
Total Phosphorus (Kjeldahl Digestion)		Bore 1D - Low levels phosphorus detected at average concentrations of 0.06mg/L over all sample events. Bore 2D, 3D and 4D ongoing detection of phosphorus (average concentration of 0.04mg/L at all bores). Recent results are within historic ranges, with no clear trend evident. No exceedances of guideline values detected.






Copper		<p>Low levels of copper detected at Bore 1D and 2D. Results were above freshwater guidelines up to 2018 then drop from 2019 onwards to below detection limits.</p> <p>Downgradient at Bore 3D copper was detected on one occasion above fresh water levels (0.006mg/L) in 2015, but not detected again.</p> <p>In Bore 4D copper was detected on five occasions above fresh water threshold levels (highest concentration of 0.023mg/L in 2017), but results indicate a declining trend for 2019 and 2020.</p>
Manganese		<p>Fluctuating detection of manganese (not exceed guideline values) averaging highest at Bore 1D (0.0213mg/L) flowing onto site.</p> <p>The downgradient bores show decreased concentrations averaging 0.005mg/L.</p> <p>There is a low level increasing trend evident at all bores however concentrations do not exceed guideline values.</p>
Zinc		<p>In Bore 1D, Zinc was not detected above limit of reporting up until 2019, then was detected for the following six sample events at an average concentration of 0.019mg/L. These results exceed freshwater guidelines values. Recent results are within historical ranges with no clear trend evident.</p> <p>Bore 2D, 3D and 4D zinc was routinely detected above freshwater guidelines.</p> <p>Bore 2D highest concentration was 0.030mg/L (in 2018) with an average concentration of 0.017mg/L. Recent results within historical ranges with no clear trend evident.</p> <p>Bore 3D highest concentration was 0.045mg/L (in 2020) with an average concentration of 0.019mg/L.</p> <p>In downgradient bore (4D) highest concentration was 0.25mg/L (in 2017) with an average concentration of 0.039mg/L. Results indicate a generally declining in 19/20.</p>
Benzene		<p>Detected once in each bore over sample period in 2D and 4D. Not detected since 2017.</p>
TRH fractions		<p>Not detected in 1D above limit of reporting apart from some minor detection in 2019(Q3) and 2020(Q2).</p> <p>Not detected in 2D above limit of reporting apart from some minor detection in 2017(Q3) and 2019(Q3).</p> <p>Bore 2D Downgradient Bore 3D TRH was not detected above LORs except for two events in 2019 and 2020. TRH analytes (all except C29-36 & C34 - C40) were detected during 2019(Q3). The highest concentration of TRH fraction was 1270 µg/L for c10-16. Low levels of TRH fractions (C29-C36 and C16-C34) were detected 2020 (Q1).</p> <p>Downgradient bore 4D, TRH analytes detected on six occasions out of 18 sample events. Highest levels were detected during 2019 (Q3) with the highest concentration of 230µg/L for C10-C16 fraction. Levels decreasing since this sample event with no detection above LORS for last event in 2020.</p>
Chloride	 (Bore 1D & 2D)	<p>Bore 1D results indicate low level chloride detection is ongoing and increasing. The average concentration across the sample period was 18.35mg/L. The 2020 average concentration shows as increase at 19.5 mg/L.</p> <p>Bore 2D results indicate chloride detection is ongoing and increasing. The average concentration across the sample period was 49mg/L. The 2020 average concentration shows as increase at 54.7 mg/L.</p> <p>Bore 3D Chloride detection ongoing at an average concentration of 64 mg/L. 2020 averages are within historic ranges at 60.7 mg/L.</p> <p>Bore 4D Chloride detection ongoing at an average concentration of 41 mg/L. 2020 averages within historic ranges at 41 mg/L.</p> <p>No exceedances of guideline values detected.</p>

Prior to 2015 only two monitoring bores, Control Bore and Bore1 were required to be sampled at the premises under licence monitoring requirements. As such, Control Bore and Bore1 at the premises have been monitored by the Licence Holder since 2013. Table 4.3 from the 2021 supporting information document provides a summary of results from 2013 to 2020 as outlined below.

Table 4.3 Existing bore groundwater trends and exceedances against guideline values

Analyte	Trend	Comment
pH		Unknown. Not currently measured on site. Laboratory results outside of withholding period for pH analysis and not indicative of on-site conditions.
Lead		Below LORs at all bores
Cadmium		Below LOR at both bores except one event in 2014 (0.03mg/L) in Bore 1 which was above both freshwater and NPUG values
Chromium		Below LOR except one event in 2020 (0.003mg/L) in Bore 1 and one event in 2019 (0.002 mg/L) in Control Bore
Copper	 Bore 1	Generally below LOR in Bore 1. There were however six events where results exceed freshwater values. Average concentration of 0.009mg/L. 2020 detection averages indicate an increasing trend. Generally below LOR in Control Bore. There were three events where results exceed freshwater values. Average concentration of 0.008mg/L. 2020 detection averages within historical ranges. There is no clear trend evident.
Manganese	 Control Bore	Regularly detected at Control Bore at an average concentration over the sample period of 0.06mg/L. 2020 averages (0.11 mg/L) indicate an increasing trend. Regularly detected at Bore 1 at an average concentration of 0.32mg/L. 2020 average 0.12mg/L indicating a decreasing trend.
Nickel		Below LOR at Control Bore except one event 2015 detected at concentration of 0.04mg/L. Regularly detected at Bore 1 at an average concentration of 0.009mg/L. 2020 average concentrations of 0.004mg/L indicate a decreasing trend.

Zinc		In Control Bore, Zinc was generally below LORs. However early 2013 and 2015 detection concentrations were 0.06mg/L and 0.04mg/L respectively which exceed freshwater guideline values. In 2019 and 2020, Zinc was detected again at an average concentration of 0.0145mg/L with results of five out of eight sample events above freshwater guideline values. Recent detection, whilst lower, still indicates an increasing trend. Zinc detected in Bore 1 at an average concentration of 0.025mg/L. Like Control bore, levels were generally below LOR from mid 2015 to 2018. Zinc was detected again in 2018 at an average concentration of 0.020mg/L with results of five out of eight sample events above freshwater guideline values. Recent detection, whilst lower, still indicates an increasing trend.
Mercury		Below LOR at both bores except one event in 2014 (0.02mg/L) in Bore 1 which was above both freshwater and NPUG values.
Benzene		Below LOR at Control Bore except one event in 2014 (0.08 µg/L). Generally below LOR in Bore 1 except one event in 2017 at a concentration of 1.3µg/L and one event in 2014 at a concentration of 0.77µg/L, both results of which exceed freshwater and NPUG values. Benzene not detected in either bore since 2017.

TRH fractions		Below LOR from 2015 to mid 2019 for all TRH fractions in Control Bore. Some minor detection in 2014 and again in 2019 slightly above LORs. In Bore 1 TRH fractions detected at least once per annual period. Highest concentrations recorded in 2015 at an average concentration across all fractions of 940 µg/L. Detection of TRH fractions ongoing in 2020, however significantly reduced (from below LORs to average of 285µg/L).
Chloride		Chloride routinely detected at Control Bore at average concentration of 55.2mg/L over the sample period. There were two events where results exceed NPUG values in 2014 (250mg/L) and 2020 (270mg/L). 2020 average concentration of 139mg/L which indicates an increasing trend. Chloride routinely detected in Bore 1 at an average concentration of 114mg/L. There were three events where results exceed NPUG values in 2015 (540mg/L) and 2019 (370mg/L) and 2020 (248mg/L). 2020 average concentration of 151 mg/L which indicates an increasing trend.
Sulphate SO ₄		Sulphate detected at Control Bore at an average concentration of 14.8mg/L over the sample period. 2020 average concentration of 20.5mg/L indicates an increasing trend. Sulphate also detected at Bore 1 at an average concentration of 15.3mg/L over the sample period. 2020 average concentration of 23.7 mg/L indicates an increasing trend. No exceedances of guideline values were detected.
Total Nitrogen	 Bore 1	Total nitrogen detected across all sample events at Control Bore at an average concentration of 2.85mg/L. In 2014 there were two sample events where results exceeded freshwater values at 30mg/L and 10mg/L respectively. There were also two events across the 2019 and 2020 sample period where results slightly exceeded the guideline values at 2.1mg/L. All results declining in concentration from early 2014 levels. 63% of results for Bore 1 regularly exceed freshwater value for Total Nitrogen (highest concentration of 80.2mg/L obtained in 2020). The average concentration across the sample period is 18.5mg/L. 2020 results indicate an increasing trend.
Total Phosphorus (Kjeldahl Digestion)	 Control Bore	Total Phosphorus detected at average concentrations of 0.06mg/L over all sample events at Control Bore. Whilst there were no exceedance of guideline values, latest result in 2020 was the highest across the sample period at 0.1mg/L. This supports and increasing trend.
		Total Phosphorus detected at average concentrations of 0.15mg/L over all sample events at Bore 1. All results exceed freshwater guideline values. Recent results within historic ranges and no clear trend evident.

Key finding: The Delegated Officer has reviewed the summary of contaminant parameter monitoring as outlined in the supporting information document submitted in 2021 and considers the following:

- The monitoring bore numbers listed within the 2021 supporting information document and the NATA Analytical Results provided as Appendix 1B (All Bores) do not align with the bore number references outlined in Condition 3.8.1 (Table 3.8.1) within the existing Licence, which outlined bore monitoring requirements. It is therefore uncertain which NATA data is attributed to which bore at the premises and a detailed review of groundwater contamination cannot be undertaken.
- DWER's records indicate that the matter of incorrect bore reference points was brought to the attention of the Licence Holder the day after the 2021 supporting information document was submitted to the Department. DWER requested a licence amendment application be submitted to correct the bore monitoring points. To date, DWER has not received an application to rectify the discrepancy with the monitoring bores. Therefore,

any groundwater data trends and summaries provided in the 2021 supporting information document cannot be used to obtain an accurate understanding or representation of the groundwater environment at the Premises.

- An independent review of the groundwater monitoring requirements as outlined in existing licence Condition 3.8.1 (Table 3.8.1) has been undertaken and is outlined in Section 2.8.3 below.
- Under existing licence Condition 3.8.1 (Table 3.8.1) pH can be sampled in field (non-NATA accredited analysis permitted). Table 4.1, Table 4.2 and Table 4.3 in the 2021 supporting information document advise 'Unknown. Not currently taken on site' in relation to pH monitoring. It appears from the data submitted under Appendix B (All Bores) to the 2021 supporting information document, pH data has been obtained, indicating a trend analysis should have been provided for pH in accordance with Condition 3.8.1.
- Groundwater monitoring data provided in Appendix B (All Bores) to the 2021 supporting information document indicates numerous bores were not sampled in accordance with existing licence Condition 3.8.1 (Table 3.8.1) over the 2015-2020 period.
- Inconsistencies with sampling frequencies will make it more difficult to establish trends for contaminant concentrations in groundwater across the well network due to missing data. Data gaps resulting from inconsistent sampling frequencies and missed samples indicate that the results obtained may not provide an accurate understanding of contaminants within the KWDS and how concentrations may have changed over time.
- Groundwater monitoring results reported in the 2021 supporting information document show that numerous contaminants concentration in samples are above the permissible limits in the ANZ guidelines for fresh and marine water quality and the DWER Guidelines for the non-potable uses of recycled water. These exceedances also appear to be consistent over time within the same bores.
- Due to the inconsistencies in sampling frequencies and data gaps throughout the sampling period, it is difficult to determine the extent of contamination and whether contamination is increasing or moving through groundwater.
- The production bore and control bore indicated on the Licence appear to be the same. However, as results from sampling of the 'control bore' may not be reliable due to inconsistencies with groundwater monitoring, the suitability of the use of groundwater for dust and fire fighting purposes (as proposed by the Licence Holder) is unclear.

2.8.2 Standing water level

Standing water level (SWL) is required to be monitored under Existing Licence condition 3.8.1 (Table 3.8.1). Table 3 provides the groundwater depth in metres below ground level (mbgl) for the bores over the past eight years (2015-2023) and the respective month the bores were sampled.

Table 3: SWL measured in metres below ground level and sample month

Bore	Depth (mbgl)	Depth (mbgl)	Depth (mbgl)	Depth (mbgl)
	2015-2016+	2015-2016	2015-2016	2015-2016
	2016-2017#	2016-2017	2016-2017	2016-2017
	2017-2018~	2017-2018	2017-2018	2017-2018
	2018-2019	2018-2019	2018-2019	2018-2019
	2019-2020	2019-2020	2019-2020	2019-2020
	2020-2021	2020-2021	2020-2021	2020-2021
	2021-2022^	2021-2022	2021-2022	2021-2022

	2022-2023	2022-2023	2022-2023	2022-2023
Control bore	n/a (December 15) n/a (August 16) n/a (September 17) 4.2 (August 18) 5.4 (August 19) 4.18 (August 20) 8.6 (September 21) n/a (August 22)	n/a (November 16) 2.57 (January 17) 4.62 (November 18) 5.53 (October 19) 7.68 (November 20) 7.14 (November 21) n/a (November 22)	n/a (February 16) 0.89 (March 17) n/a (May 18) 4.53 (January 19) 5.68 (January 20) 5.11 (March 21) n/a n/a (February 23)	n/a (May 16) n/a (June 17) n/a (June 18) 4.96 (April 19) 8.43 (May 20) 3.6 (May 21) 9.09 (June 22) n/a (May 23)
Bore 1	n/a (December 15) n/a (August 16) 0.14 (September 17) 1.65 (August 18) 2.6 (August 19) 1.53 (August 20) 10.7 (September 21) 2.19 (August 22)	n/a (November 16) n/a (January 17) 1.95 (November 18) 2.7 (October 19) 1.76 (November 20) 1.25 (November 21) 2.44 (November 22)	n/a (February 16) n/a (March 17) n/a (May 18) 1.76 (January 19) 2.82 (January 20) 1.27 (March 21) n/a 1.83 (February 23)	n/a (May 16) n/a (June 17) n/a (June 18) 1.89 (April 19) 11.31 (May 20) 0.66 (May 21) 11.55 (June 22) 1.33 (May 23)
KTP1A (deep)	n/a (December 15) n/a (August 16) 4.9 (September 17) 6.3 (August 18) 7.73 (August 19) 7.04 (August 20) 5.96 (September 21) 6.79 (August 22)	n/a (November 16) 5.12 (January 17) 6.93 (November 18) 7.9 (October 19) 7.43 (November 20) 6.86 (November 21) 7.12 (November 22)	4.75 (February 16) 2.62 (March 17) n/a (May 18) 7.05 (January 19) 8.22 (January 20) 7.24 (March 21) n/a 7.05 (February 23)	n/a (May 16) n/a (June 17) n/a (June 18) 7.13 (April 19) 6.68 (May 20) 6.04 (May 21) 7.57 (June 22) 5.54 (May 23)
KTP1B (shallow)	n/a (December 15) n/a (August 16) 4.71 (September 17) 6.2 (August 18) Dry (August 19) Dry (August 20) 1.61 (September 21) 6.68 (August 22)	n/a (November 16) 4.73 (January 17) Dry (November 18) Dry (October 19) Dry (November 20) 6.75 (November 21) 7.02 (November 22)	4.85 (February 16) 3.0 (March 17) n/a (May 18) 6.90 (January 19) 8.08 (January 20) 7.04 (March 21) n/a 6.96 (February 23)	n/a (May 16) n/a (June 17) n/a (June 18) 6.96 (April 19) 1.52 (May 20) 5.84 (May 21) 1.77 (June 22) 5.43 (May 23)
KTP2A	n/a (December 15) n/a (August 16) 1.8 (September 17) 3.3 (August 18) 4.4 (August 19) 3.37 (August 20) 10.1 (September 21) 3.1 (August 22)	n/a (November 16) 1.67 (January 17) 6.74 (November 18) 4.51 (October 19) 3.58 (November 20) 2.92 (November 21) 3.31 (November 22)	2.62 (February 16) n/a (March 17) n/a (May 18) 3.56 (January 19) 4.59 (January 20) 3.06 (March 21) n/a 2.85 (February 23)	n/a (May 16) n/a (June 17) n/a (June 18) 3.59 (April 19) 9.7 2.48 (May 21) 10.34 (June 22) 2.04 (May 23)
KTP2B	n/a (December 15) n/a (August 16)	n/a (November 16)	2.2 (February 16) n/a (March 17)	n/a (May 16) n/a (June 17)

	Dry (September 17) Dry (August 18) Dry (August 19) Dry (August 20) Dry (September 21) Dry (August 22)	2.13 (January 17) Dry (November 18) Dry (October 19) Dry (November 20) Dry (November 21) Dry (November 22)	n/a (May 18) n/a (January 19) Dry (January 20) 1.69 (March 21) n/a 0.75 (February 23)	n/a (June 18) Dry (April 19) Dry (May 20) Dry (May 21) Dry (June 22) 1.83 (May 23)
KTP3A	n/a (December 15) n/a (August 16) 0.01 (September 17) 1.3 (August 18) 2.32 (August 19) 1.63 (August 20) 11.49 (September 21) 1.29 (August 22)	n/a (November 16) n/a (January 17) 1.66 (November 18) 2.44 (October 19) 1.87 (November 20) 1.31 (November 21) 1.49 (November 22)	0.76 (February 16) n/a (March 17) n/a (May 18) 1.55 (January 19) 2.16 (January 20) 1.42 (March 21) n/a n/a (February 23)	n/a (May 16) n/a (June 17) n/a (June 18) 1.61 (April 19) 11.42 (May 20) 0.83 (May 21) 11.68 (June 22) 0.4 (May 23)
KTP3B	n/a (December 15) n/a (August 16) n/a (September 17) 1.5 (August 18) 2.36 (August 19) Dry (August 20) Dry (September 21) 1.35 (August 22)	n/a (November 16) n/a (January 17) 1.86 (November 18) 2.44 (October 19) Dry (November 20) 1.17 (November 21) 1.5 (November 22)	0.05 (February 16) n/a (March 17) n/a (May 18) 1.55 (January 19) 2.22 (January 20) 1.13 (March 21) n/a n/a (February 23)	n/a (May 16) n/a (June 17) n/a (June 18) 1.7 (April 19) 4.51 (May 20) 0.75 (May 21) 4.05 (June 22) 0.62 (May 23)
KTP4A	n/a (December 15) n/a (August 16) 1.95 (September 17) 3.6 (August 18) 4.82 (August 19) 3.83 (August 20) 10.54 (September 21) 3.74 (August 22)	n/a (November 16) 1.99 (January 17) 4.1 (November 18) 4.9 (October 19) 4.14 (November 20) 3.62 (November 21) 4.07 (November 22)	2.7 (February 16) n/a (March 17) n/a (May 18) 3.77 (January 19) 5.13 (January 20) 11.11 (March 21) n/a 3.68 (February 23)	n/a (May 16) n/a (June 17) n/a (June 18) 4..6 (April 19) 10.44 (May 20) 2.95 (May 21) 11.56 (June 22) 2.76 (May 23)
KTP2B	n/a (December 15) n/a (August 16) 1.22 (September 17) Dry (August 18) Dry (August 19) Dry (August 20) Dry (September 21) 3.42 (August 22)	n/a (November 16) 1.94 (January 17) Dry (November 18) Dry (October 19) Dry (November 20) Dry (November 21) 3.8 (November 22)	1.87 (February 16) n/a (March 17) n/a (May 18) Dry (January 19) 4.67 (January 20) 5.11 (March 21) n/a 1.78 (February 23)	n/a (May 16) n/a (June 17) n/a (June 18) Dry (April 19) 3.15 (May 20) 2.44 (May 21) Dry (June 22) 2.49 (May 23)

Red text denotes groundwater less than three metres deep as it refers to Existing Licence Condition 1.3.3 – separation distance between the base of the landfill and the highest groundwater level shall not be less than 3m.

n/a no available data in AER.

+ sample data was lost /not available for December 2015 and May 2016. Only three samples submitted for the annual period for December 2015, February 2016, and May 2016.

sample data was lost/not available for August 2016, November 2016, and June 2017.

~ sample date was lost/no samples for May 2018 and June 2018 respectively.

^ monitoring dates were only September 2021, November 2021, and June 2022 – not Quarterly sampling as required.

On review of this data, the following points are noted:

- In 2015-2016 the majority of wells were not sampled for SWL. Only three sampling events occur over the quarterly schedule conditioned in the Licence. Samples occurred for December 2015, February 2016 and May 2016 only – the sample for August 2016 was not undertaken.
- In 2016-2017 the majority of wells were not sampled for SWL – only three samples were conducted out of the required 40. While the quarterly sampling frequency was adhered to, some bores were not sampled resulting in a shortfall of 14 samples from the required 40. This shortfall was due to access issues in February/March so that only three bores were sampled.
- In 2017-2018 the majority of wells were not sampled for SWL, or the data is missing. The AER indicates that in May 2018 all bores were sampled but the sample data sheets are missing so there are no results. This also occurs for two samples in September 2017. No samples were taken for May 2018. The quarterly sampling frequency was not adhered to with sampling conducted in August 2017, January 2018 - the March 2018 sampling date was missed, and sampling did not occur until May 2018. Due to this delay, there was no June 2018 sample. There was no November 2017 sample.
- In 2018-2019 the quarterly sampling frequency was adhered to; however, an additional sample was taken during this time period - August 2018, November 2018, January 2019, April 2019, and May 2019.
- The 2021-2022 AER indicates sampling was undertaken in September 21, November 21 and June 2022; however, the quarterly sampling frequency was not adhered to as there was no sampling in April/May 2022.
- The monitoring well numbers listed within the NATA Analytical Results provided as appendices in the AERs do not align with the well references outlined in condition 3.8.1 (Table 3.8.1). It is therefore uncertain which NATA data is attributed to which well under Table 3.8.1 which in turn prohibits a detailed review and analysis of groundwater.
- The summary of results of historic SWL for the groundwater monitoring wells presented in Table 5 of this report indicate groundwater is permanently less than 3 metres deep for some bores all year within the premises boundary (Bore 1 and KTP3A&B for example).

Key finding: The Delegated Officer has reviewed monitoring data historically provided by the Licence Holder through the provision of AERs and had determined the following:

- Although monitoring of SWL across the 10 groundwater monitoring wells was a requirement of the Licence from 2015, only in 2018 were all wells sampled in accordance with Licence conditions requirements.
- Inconsistencies with sampling frequencies across the 2015-2023 data collection period make it more difficult to establish trends for SWL across the well network due to missing data.
- Data gaps resulting from inconsistent sampling frequencies and missed samples indicate that the results obtained may not provide an accurate understanding of SWL within the KWDS.
- Results for SWL provided in Table 5 of this report indicate groundwater is permanently less than 3 metres deep for some bores all year within the premises boundary. This aligns with the findings of the 2015 hydrogeological assessment, where groundwater levels were found to range from above ground level to 5mbgl

across the sampled wells.

- This data further supports the high likelihood that historically landfilled wastes are located within groundwater for at least a proportion of the year. Any leachates from the decomposition of putrescible waste thus will have a direct and continuous pathway to groundwater receptors for a prolonged period.

2.8.3 Groundwater contaminant parameters

Existing Licence condition 3.8.1 (Table 3.8.1) requires the monitoring of groundwater with provision of this data in the AER. Under Existing Licence condition 3.8.1 ten monitoring bores are required to be sampled for a range of parameters as listed in the Table. Groundwater sampling is required quarterly, and all the groundwater monitoring data is provided in the AER. Prior to 2015 only two monitoring bores, Control Bore and Bore1 were required to be sampled.

Table 4 represents *Table 3.8.1: Monitoring of ambient groundwater quality* from the Existing Licence. All groundwater samples are required to be sampled in accordance with Australian Standards AS/NZS 5667 and are to be submitted to a laboratory with current NATA accreditation as per Existing Licence condition 3.1.1.

Table 4: Groundwater monitoring requirements at KWDS

Table 3.8.1: Monitoring of ambient groundwater quality				
Monitoring point reference and location	Parameter	Units	Averaging period	Frequency
Control Bore, Bore 1, KTP1A, KTP1B, KTP2A, KTP2B, KTP3A, KTP3B, KTP4A and KTP4B as depicted in Schedule 1	Cadmium; Chloride; Chromium; Copper; Lead; Manganese; Mercury; Nickel; Sulphate; Total Dissolved Solids; Total Nitrogen; Total Recoverable Hydrocarbons; Total Phosphorus; and Zinc.	mg/L	Spot sample	Quarterly
	Standing water level (SWL)	m(AHD)	Spot sample	
	pH*		Spot sample	

*In-field non-NATA accredited analysis permitted

Key finding: The Delegated Officer considers the following in relation to the groundwater monitoring schedule at the premises:

- The Licence Holder has historically not provided an interpretive summary and assessment of groundwater monitoring results against relevant assessment levels for groundwater (as published in the *Guideline: Assessment and management of contaminated sites*) or against previous monitoring results. Without this record and presentation of data, it is hard to distinguish trends within bores and with contaminant concentrations across the 2015-2023 sampling period.
- Inconsistencies with sampling frequencies across the 2015-2023 data collection period, as established through the review of the SWL data, will also make it more difficult to establish trends for contaminant concentrations in groundwater across

the well network due to missing data.

- Data gaps resulting from inconsistent sampling frequencies and missed samples indicate that the results obtained may not provide an accurate understanding of contaminants within the KWDS and how concentrations may have changed over time.
- Groundwater monitoring results for the 2015-2023 show that numerous heavy metal, total recoverable hydrocarbons and nitrogen concentrations in samples are above the permissible limits in the ANZ guidelines for fresh and marine water quality and the DWER Guidelines for the non-potable uses of recycled water. These exceedances also appear to be consistent over time within the same bores.
- However, due to the inconsistencies in sampling frequencies and data gaps throughout the sampling period, it is difficult to determine the extent of contamination and whether contamination is increasing or moving through groundwater.
- Wells located up gradient of the landfill can present similar contaminant concentrations to wells located down-hydraulic gradient of the landfill. However, there is currently no assurance that the direction of groundwater flow is accurate given that no confirmation has been provided to DWER advising that the recommendations to confirm groundwater flow put forward as outcomes to the hydrogeological assessment were adopted.
- Additionally, there is a large amount of uncertainty within monitoring data, indicating that these results cannot wholly be relied on.
- The monitoring suite of parameters is not as comprehensive as normally included in monitoring suites for other landfills in environmentally sensitive areas. This indicates that the scope for monitoring and tracking impacts of potential contamination of groundwater as a result of landfill activities is limited.
- The production bore and control bore indicated on the Licence appear to be the same. However, as results from sampling of the 'control bore' may not be reliable due to inconsistencies with groundwater monitoring, the suitability of the use of groundwater for dust and fire fighting purposes (as proposed by the Licence Holder) is unclear.

2.8.4 Monitoring of Waste volumes

Existing Licence condition 3.6.1 (Table 3.6.1) requires the monitoring of waste inputs and outputs. This data is provided in the Annual Environmental Report (AER) under Existing Licence condition 5.2.1 (Table 5.2.1), which is to be submitted within 60 calendar days after 30 June each year. The AER was required annually up to 29 August 2023 but is now required to be submitted biennially.

Waste output Licence conditions were placed on the on the Licence in 2015, however, when considering potential environmental impacts from waste accepted to the premises, only waste input data is relevant. There is no weighbridge at the KWDS, so all solid waste volumes are estimated tonnages except for liquid wastes. Liquid waste comprises only septage and grease trap wastes. Table 3 provides the accepted waste input volumes for both Solid and Liquid wastes since 2010. It is noted that post 2014, waste diversion from landfill tonnage is reported in the AER and this data is captured in Table 5.

Table 5: Waste acceptance (Input) volumes

Year	Solid waste acceptance - Class II waste types combined. (tonnes per annual period)	Liquid waste acceptance (tonnes per annual period)
1 Oct 2010 – 30 Sept 2011	15,000	1,305
1 Oct 2011 – 30 Sept 2012	15,900	1,174
1 Oct 2012 – 30 Sept 2013	11,120	785
1 Oct 2013 – 30 June 2014	25,000	636
1 July 2014 – 30 June 2015	16,400 (11,000*)	594
1 July 2015 – 30 June 2016	14,800 (12,000*)	583
1 July 2016 – 30 June 2017	27,840 (9,100*)	689
1 July 2017 – 30 June 2018	26,200 (14,600*)	695
1 July 2018 – 30 June 2019	35,200 (13,900*)	852
1 July 2019 – 30 June 2020	19,100 (8,000*)	810
1 July 2020 – 30 June 2021	19,300 (8,000*)	539
1 July 2021 – 30 June 2022	17,700 (9,000*)	931
1 July 2022 – 30 June 2023	14,800 (9,000*)	790

* This data denotes what tonnage was landfilled opposed to tonnages accepted during the annual period – and therefore what waste was diverted from landfilling (burial).

Key finding: The Delegated Officer has reviewed the monitoring data provided by the Applicant and has found:

1. Solid waste acceptance, except for the year 2018-2019, has been below the premises approved throughput for Category 64 of 30,000 tonnes per year.
2. Post 2014, with better data reporting systems, there has been substantial diversion of waste from landfill (burial). Waste not landfilled is recycled or reused.
3. All liquid waste acceptance is below the premises approved throughput for Category 61 of 1,900 tonnes per annual period.

2.9 Landfill closure management plan

A Landfill Closure Management Plan (LCMP) was drafted and submitted by the Licence Holder in 2015 and was informed by the findings of the 2015 hydrogeological assessment. A review of the LCMP by DWER concluded that:

- progressive landfill capping work would occur at KWDS with the need to experiment and monitor to ensure engineering specifications are met;
- a revised non-Victorian BEPM landfill cap design could be provided based on the groundwater data as provisioned in the 2015 hydrogeological report;

- DWER would consider a capping permeability not meeting the standard requirement of 10^{-9} m/s;
- The new capping proposal should consider the following:
 - Soil permeability testing to produce a suitable and uniform cap permeability;
 - Future civil, stormwater management and maintenance works necessary to preserve the cap integrity;
 - Stockpiling or identification of suitable soil reserves to allow for ongoing cap maintenance;
 - Confirmation of landfill gas monitoring and site water balance requirements, as informed by the capping design agreed upon.

To date, DWER has not received any updates in relation to capping at the landfill undertaken in accordance with the LCMP. A new capping proposal has also not been received.

Key finding: The Delegated Officer notes that the LCMP was informed by the findings of the hydrogeological assessment. The single groundwater monitoring event undertaken in March 2015, which informed the findings of the assessment, may not provide sufficient information for any accurate long-term conclusions to be drawn relating to the characterisation of groundwater. As such, the LCMP may be based on data which is not comprehensive.

Additionally, the LCMP was submitted in 2015 and no updates have been provided to DWER since this submission, including the provision of the new capping proposal. This information will be required to inform closure and post-closure actions and management in the event that landfill activities are relocated and the site enters its rehabilitation phase.

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 operation which have been considered in this decision report are detailed in Table 6 below. Table 6 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 6: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Dust	Acceptance, storage, disposal and removal of waste Vehicle movements	Air/windborne pathway causing impacts to health and amenity	Water cart on site. Reduced speed limits due to size. Siting. Operation hours. All trucks entering and leaving KWDS

Emission	Sources	Potential pathways	Proposed controls
			<p>must be covered.</p> <p>Immediate burial and covering of dusty loads.</p> <p>Final landfill cover applied daily.</p> <p>Dust emissions are monitored by KWDS staff.</p>
Noise	Vehicle movements	Air/windborne pathway causing impacts to health and amenity	<p>Siting.</p> <p>Operational hours.</p> <p>Reduced speed limits due to size.</p> <p>Machinery as required – not continuously all day.</p> <p>Compliance with Environmental Protection (Noise) Regulations 1997 (Noise Regs).</p>
Odour	Acceptance, storage, disposal and removal of waste	Air/windborne pathway causing impacts to health and amenity	<p>Siting.</p> <p>Application of daily cover material.</p> <p>Deep burial of biomedical waste.</p>
Fire/smoke	Burning of greenwaste and putrescible wastes	Air/windborne pathway causing impacts to health and amenity	<p>Siting.</p> <p>Fire control equipment on site.</p> <p>Daily cover materials and readily available stockpile on site.</p> <p>Sufficient curing of greenwaste prior to burning.</p> <p>Limit stockpile sizes.</p> <p>Segregation of incompatible of chemicals etc.</p> <p>Fire break around Premises.</p>
Asbestos fibres	Burial of asbestos waste	Air/windborne pathway causing impacts to health and amenity	<p>Siting.</p> <p>Acceptance criteria and wrapping of waste.</p> <p>Visual inspections.</p> <p>Acceptance records and Register.</p> <p>Burial records.</p> <p>Deep burial.</p> <p>Dedicated burial area separated by a buffer.</p> <p>Avoid disturbing defined asbestos burial area.</p>
Windblown waste	Disposal of putrescible waste	Air/windborne pathway causing impacts to health and	Premises fence – 1.8m cyclone mesh fence.

Emission	Sources	Potential pathways	Proposed controls
		amenity	Regular inspections of incoming vehicles to ensure loads are secure. Regular inspections of access routes. Weekly litter collections. Waste is leveled and compacted as soon as practicable. Size of the tipping face is no longer than 30m. Application of daily cover material on putrescible waste.
Vermin / pests	Disposal of putrescible waste	Air/windborne pathway causing impacts to health and amenity	Siting. Fence. Frequent removal of litter. Application of daily cover material.
Contaminated Stormwater	Disposal of putrescible waste	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Waste contained within a defined area. Stormwater diversion drains. Maintenance of stormwater drains. Erosion controls.
Spills / leaks	Acceptance, storage, disposal and removal of waste	Groundwater and soil contamination	Waste oil shed is banded. Spill kits on site. Environmentally hazardous materials are stored in accordance with the Code of Practice for the Storage of Dangerous Goods. Batteries are stored on pellets.
Leachate	Acceptance, storage, burial of putrescible waste Acceptance of liquid waste	Groundwater and soil contamination	Capping and post closure management plan. Accept Class II waste only. Operate only one landfill face. LWP are lined and sited in a separate area from landfill activities.
Landfill gas	Disposal / burial of putrescible waste	Lateral migration through soils and preferential pathways causing explosive risk and dangerous atmosphere.	Siting. Progressive landfill capping. Landfill capping post conclusion of landfill operations. Landfill Capping Management Plan.

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 7 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 7: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Residential Premises	1000m southeast from the Premises.
Environmental receptors	Distance from prescribed activity
Ramsar Wetland	1800m west
Wetland Nationally important WA098 Surface water	Within premises boundary – surface water on northern and westerns side of premises. KWDS is located within a floodplain.
Clearing Regulations Environmentally sensitive area	Within premises boundary – surface water on northern and westerns side of premises.
Threatened ecological community	Within 1km of premises boundary
Threatened or priority flora	Within 1km of premises boundary
Threatened or priority fauna	530m north - bird
Aboriginal heritage sites	100m west
Public drinking water source area	3km northwest
Groundwater	0.01-3mbgl

3.2 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 Licence 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 8.

Licence L7315 that accompanies this decision report authorises emissions associated with the operation of the premises i.e. Landfill activities.

The conditions in the issued Licence, as outlined in Table 8 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 8: Risk assessment of potential emissions and discharges from the premises during operation

Risk events					Risk rating ¹	Applicant controls sufficient?	Conditions ² of Licence	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood			
Operation								
Acceptance, storage, disposal and burial of liquid / inert / putrescible waste Heavy / Light Vehicle movements Buring of greenwaste	Dust	Air / windborne pathway causing impacts to health and amenity	Residences 1000m southeast	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	Condition 15	N/A
	Noise	Air / windborne pathway causing impacts to health and amenity	Residences 1000m southeast	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A	Emission to be regulated under the <i>Environmental Protection (Noise) Regulations 1997</i>
	Odour	Air / windborne pathway causing impacts to health and amenity	Residences 1000m southeast	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	Condition 1, 3 and 4	N/A
	Fire / smoke	Air / windborne pathway causing impacts to health and amenity	Residences 1000m southeast	Refer to Section 3.1	C = Moderate L = Possible Medium Risk	Y	Condition 3, 6, 7, 13, 14 and 28	N/A
	Asbestos Fibres	Air/windborne pathway causing impacts to health and amenity	Residences 1000m southeast	Refer to Section 3.1	C = Severe L = Rare High Risk	Y	Condition 1, 2, 3 and 4	N/A
	Vermin / pest	Air / windborne pathway causing impacts to health and amenity	Residences 1000m southeast	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	Condition 10	N/A
	Windblown waste	Air / windborne pathway causing impacts to health and amenity	Residences 1000m southeast Flora / fauna adjacent to the premises	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	Condition 11	N/A

Licence: L7315/1998/9

Risk events					Risk rating ¹	Applicant controls sufficient?	Conditions ² of Licence	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood			
	Contaminated stormwater	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Groundwater 0.01-3mbgl Flora / fauna adjacent to the premises Wetland adjacent/within premises	Refer to Section 3.1	C = Moderate L = Possible Medium Risk	Y	Condition 12	N/A
	Spills / Leaks	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality. Groundwater and soil contamination	Groundwater 0.01-3mbgl	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Y	Condition 1, 2, 3, 8 and 9	N/A
	Leachate	Groundwater, surface water and soil contamination	Groundwater 0.01-3mbgl Wetland adjacent/within premises	Refer to Section 3.1	C = Major L = Likely High Risk	N Refer to section 3.3	Condition 1, 2, 3, 4, 5, 16, 17, 18, 19, 22, 25 and 27. <u>Conditions 22, 27, 31, 32 and 33.</u>	Refer to section 3.5
	Landfill gas	Air / windborne pathway causing impacts to health and amenity. Lateral migration through soils and preferential pathways causing explosive risk and dangerous atmosphere.	Residences 1000m southeast	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Y	<u>Condition 32 and 33</u>	N/A

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.

3.3 Consequence and likelihood of risk events

A risk rating will be determined for risk events in accordance with the risk rating matrix set out in Table 9 below.

Table 9: Risk rating matrix

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

DWER will undertake an assessment of the consequence and likelihood of the Risk Event in accordance with Table 10 below.

Table 10: Risk criteria table

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the Risk Event occurring.		The following criteria has been used to determine the consequences of a Risk Event occurring:		
		Environment	Public health* and amenity (such as air and water quality, noise, and odour)	
Almost Certain	The risk event is expected to occur in most circumstances	Severe	<ul style="list-style-type: none"> onsite impacts: catastrophic offsite impacts local scale: high level or above offsite impacts wider scale: mid-level or above Mid to long-term or permanent impact to an area of high conservation value or special significance[^] Specific Consequence Criteria (for environment) are significantly exceeded 	<ul style="list-style-type: none"> Loss of life Adverse health effects: high level or ongoing medical treatment Specific Consequence Criteria (for public health) are significantly exceeded Local scale impacts: permanent loss of amenity
Likely	The risk event will probably occur in most circumstances	Major	<ul style="list-style-type: none"> onsite impacts: high level offsite impacts local scale: mid-level offsite impacts wider scale: low level Short-term impact to an area of high conservation value or special significance[^] Specific Consequence Criteria (for environment) are exceeded 	<ul style="list-style-type: none"> Adverse health effects: mid-level or frequent medical treatment Specific Consequence Criteria (for public health) are exceeded Local scale impacts: high level impact to amenity
Possible	The risk event could occur at some time	Moderate	<ul style="list-style-type: none"> onsite impacts: mid-level offsite impacts local scale: low level offsite impacts wider scale: minimal Specific Consequence Criteria (for environment) are at risk of not being met 	<ul style="list-style-type: none"> Adverse health effects: low level or occasional medical treatment Specific Consequence Criteria (for public health) are at risk of not being met Local scale impacts: mid-level impact to amenity
Unlikely	The risk event will probably not occur in most circumstances	Minor	<ul style="list-style-type: none"> onsite impacts: low level offsite impacts local scale: minimal offsite impacts wider scale: not detectable Specific Consequence Criteria (for environment) likely to be met 	<ul style="list-style-type: none"> Specific Consequence Criteria (for public health) are likely to be met Local scale impacts: low level impact to amenity
Rare	The risk event may only occur in exceptional circumstances	Slight	<ul style="list-style-type: none"> onsite impact: minimal Specific Consequence Criteria (for environment) met 	<ul style="list-style-type: none"> Local scale: minimal to amenity Specific Consequence Criteria (for public health) met

[^] Determination of areas of high conservation value or special significance should be informed by the *Guideline: Environmental Siting*.

* In applying public health criteria, DWER may have regard to the Department of Health's *Health Risk Assessment (Scoping) Guidelines*.

"onsite" means within the Prescribed Premises boundary.

3.4 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with the Risk treatment table 11 below:

Table 11: Risk treatment table

Rating of Risk Event	Acceptability	Treatment
Extreme	Unacceptable.	Risk Event will not be tolerated. DWER may refuse application.
High	May be acceptable. Subject to multiple regulatory controls.	Risk Event may be tolerated and may be subject to multiple regulatory controls. This may include both outcome-based and management conditions.
Medium	Acceptable, generally subject to regulatory controls.	Risk Event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.
Low	Acceptable, generally not controlled.	Risk Event is acceptable and will generally not be subject to regulatory controls.

3.5 Risk Assessment – Leachate

3.5.1 Leachate characterisation and impact

Landfill leachate is formed from the decomposition of accepted wastes, infiltration of water through the landfill cells and the moisture content of the buried waste. Leachate generated from a putrescible landfill may contain dissolved and decomposing organic matter, inorganic compounds (such as sulfates, chloride, and ammonium salts), nutrients, hydrocarbons, metals and metalloids, pesticides, synthetic organic compounds, and other miscellaneous contaminants including PFAS. The quantity and quality of leachate will be influenced by the waste types, management of waste within the landfill cells, the integrity of landfill liners (if present), the control of stormwater, and ambient meteorological conditions.

The Delegated Officer considers the receptors most likely to be at risk from leachate is groundwater users and groundwater dependent ecosystems, including the wetland area adjacent to the premises and the Ord River. Leachate seepage to groundwater from the landfill cells (closed and active) and/or the LWP may arise if defects occur during placement and/or over time in the operation of the cell/LWP. Leachate emissions may also occur as a result of overtopping of the LWP in the event of extreme rainfall. Leachate emissions may also result from basal or side slope instability, seismic activity, poor installation and construction practices, poor waste placement practices, or other activities that compromise the structural integrity of the landfill subbase.

3.5.2 Licence Holder controls

The Licence Holder controls are detailed in Section 3.1 (Table 6).

3.5.3 Data gaps

From a review of the supporting documentation provided by the applicant, the 2015 and 2021 hydrogeological assessment, and groundwater monitoring data obtained through the 2015-2023

sampling period, the Delegated Officer considers that the following data gaps remain in relation to understanding the risk and magnitude of potential impacts from leachate emissions at the premises:

- The single sampling event in March 2015 provided in the 2015 hydrogeological assessment used to inform the hydrogeological will not be representative of the groundwater characteristics at KWDS due to seasonal variation. Due to this, the outcomes within the assessment cannot be used to draw conclusions on year-round groundwater characteristics or changes to groundwater characteristics (included depth and contaminant concentrations) over time.
- The 2021 supporting information document provide limited additional data with bore numbers that were different to those reflected in existing licence Condition 3.81, making understanding groundwater trends is difficult and the additional data not providing accurate data representative of groundwater conditions at KWDS.
- The 2015 hydrogeological assessment recommended that the new monitoring wells be surveyed to obtain accurate height elevation datum and provide more confidence in the assumed groundwater flow direction. The assessment also recommended that pressure transducers should be installed in the monitoring wells to allow a near continuous record of groundwater levels, which would allow monitoring of the actual peak groundwater levels and allow for an assessment of the impact on rainfall events on groundwater levels and if the aquifers are affecting by pumping from the new production bore. This issue was also not addressed in the 2021 supporting information document and to date, DWER has received no information from SWEK advising that these actions have been completed, indicating direction of groundwater flow and fluctuations in groundwater levels remain poorly understood.
- Inconsistencies with sampling frequencies across the 2015-2023 data collection period make it more difficult to establish trends for SWL and contaminant concentrations within groundwater across the well network due to missing data and discrepancies in bore numbers. This indicates that the data obtained may not provide an accurate understanding of SWL and contaminants within the KWDS and how contaminant concentrations may change over time. It is also difficult to determine the extent of contamination and whether contamination is increasing or moving through groundwater.
- The Licence Holder has historically not provided an interpretive summary and assessment of groundwater monitoring results against relevant assessment levels for groundwater (as published in the *Guideline: Assessment and management of contaminated sites*) or against previous monitoring results. Without this record and presentation of data, it is hard to distinguish trends within bores and with contaminant concentrations across the 2015-2023 sampling period.
- The monitoring suite of parameters is not as comprehensive as normally included in monitoring suites for other landfills in environmentally sensitive areas. This indicates that the scope for monitoring and tracking impacts of potential contamination of groundwater as a result of landfill activities is limited.

3.5.4 Key findings

From a review of the supporting documentation provided by the applicant, the 2015 hydrogeological assessment and 2021 Supporting information (refer to section 2.7 of the Decision Report), and groundwater monitoring data obtained through the 2015-2023 sampling period, the Delegated Officer considers the following:

- Through a review of 2015 hydrogeological assessment and 2021 Supporting information, the SWL data provided through the 2015-2023 groundwater monitoring period, it is highly likely that the historically deposited landfill wastes are siting within groundwater for at least

some periods of the year. This is noting that the actual depth of the waste across the premises is unknown.

- Through a review of 2015 hydrogeological assessment and 2021 Supporting information, the SWL data provided through the 2015-2023 groundwater monitoring period, it is highly likely that the Licence Holder is unable to meet the 3m separation distance between the base of the landfill cell and groundwater specified in Existing Licence condition 1.3.3 for at least some periods of the year. This is noting that the actual depth of the waste across the premises is unknown.
- Groundwater monitoring results for the 2015-2023 show that numerous heavy metals, total recoverable hydrocarbons and nitrogen concentrations in samples are above the permissible limits in the ANZ guidelines for fresh and marine water quality and the DWER Guidelines for the non-potable uses of recycled water. These exceedances also appear to be consistent over time within the same bores.

The data obtained to support the 2015 hydrogeological assessment and 2021 Supporting information and obtained through the 2015-2023 groundwater monitoring period is not reliable to draw accurate conclusions from due to:

- Data gaps resulting from missing samples and inconsistent sampling frequencies;
- Insufficient data being collected and/or assessed;
- The groundwater monitoring suite not being as comprehensive as suites used for similar landfills;
- Mislabelling of data within the hydrogeological assessments and AER report submissions; and
- the Licence Holder not having confirmed whether further actions were taken to confirm the validity of groundwater flow direction and groundwater level fluctuations.

In the absence of more current or complete data sets, available data has been used to assess the risk of leachate to the environment. This adds a level of uncertainty to the extent and magnitude of the leachate emissions and their effect on the surrounding environment, which must be taken into account when setting ongoing Licence conditions to prevent emissions and discharges resulting in negative impacts to the environment.

3.5.5 Consequence

If impacts to groundwater and down gradient receptors from leachate emissions occur, then the Delegated Officer has determined that they will be high level on-site impacts, mid-level off-site impacts at a local level, and have low level off-site wider impacts in line with the relevant assessment criteria for this emission. Therefore, the Delegated Officer considers the consequence of leachate to be **Major**.

3.5.6 Likelihood of Risk Event

The Delegated Officer considers that due to the high likelihood that historically deposited landfill wastes are siting within groundwater, impacts to groundwater and down gradient receptors from leachate emissions will probably occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of the risk event to be **Likely**.

3.5.7 Overall rating of Leachate emissions

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 8) and determined that the overall rating for the risk of Leachate is **High**.

3.6 Summary of acceptability and treatment of Risk Events

A summary of the risk assessment and the acceptability or unacceptability of the risk events set out above, with the appropriate treatment and control, are set out in Table 12 below. Controls are described further in Section 3.1 (Table 6).

Table 12: Risk assessment summary

Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)
Emission	Source	Pathway/ Receptor (Impact)			
Leachate	Acceptance, storage, burial and decomposition of putrescible waste Acceptance of liquid wastes to LWP.	Seepage to land causing groundwater and soil contamination, impacts to down hydraulic receptors of groundwater	Capping and post closure management plan. Accept Class II waste only. Operate only one landfill face. LWP are lined and sited in a separate area from landfill activities.	Major consequence Possible likelihood High Risk	May be acceptable. Subject to multiple regulatory controls.

4. Regulatory controls

The Delegated Officer will incorporate the following controls into the proposed licence.

4.1 Licence expiry date

Due to the High Risk rating for the risk event of landfill leachate, the Delegated Officer does not consider that a 6 year Licence duration extension to 2030 is appropriate. As such, the Delegated Officer will extend the duration of the Licence for an additional 2 years to permit the SWEK additional time to transition to a new landfill site and commence post-closure rehabilitation. It is noted that this aligns with the Licence expiry date originally sought by the Licence Holder through the amendment application submitted on 2 July 2019.

The Delegated Officer considers that due to the high likelihood that historically deposited landfill wastes are sitting within groundwater, and the high likelihood that the Licence Holder is unable to meet the 3m separation distance between the base of the landfill cell and groundwater specified in Existing Licence condition 1.3.3, there are no regulatory controls other than a limit on Licence duration that can be incorporated into the Licence to reduce the risk rating to an acceptable level which will justify the ongoing operation of the landfill.

Additionally, the continuing acceptance of waste into the landfill on top of historically deposited wastes which are likely to be sitting within groundwater will result in an ongoing generation of leachate through both the historically deposited waste mass and in situ soils. Again, the only way to reduce the ongoing risk of leachate to groundwater and down gradient receptors is to limit the Licence duration.

4.2 Hydrogeological assessment

The Delegated Officer considers that groundwater monitoring data collected to date is not comprehensive enough to be able to inform any concrete conclusions relating to groundwater flow direction or contamination. Additionally, condition 4.1.1 within the Existing Licence, which

required the submission of a hydrogeological assessment by 1 January 2017, was not complied with, meaning that the most recent hydrogeological data for the premises was collected in 2015 to inform the last hydrogeological assessment undertaken.

To support the Licence duration extension of 2 years and the Licence Holder's obligation to commence post-closure rehabilitation of the site on the relocation of landfilling activities, the Delegated Officer has incorporated a condition into the Revised Licence requiring the Licence to prepare a new hydrogeological assessment and submit the hydrogeological assessment to the CEO.

The provision of a new hydrogeological assessment will:

- Scrutinize monitoring data obtained from the 2015-2023 sampling period to provide a more accurate overview of contaminant concentration and SWL trends within and across the sampling wells; and
- Incorporate more recent data so that a more accurate understanding of hydrogeological characteristics across the premises can be obtained.

The new hydrogeological assessment bore data submitted by the Licence Holder under Proposed Condition 28 must correlate to monitoring well names and locations as provided in Proposed Condition 22 Table 6 – the same bore names used since 2015. The interpretive summary required by sub-condition (i) for previous results (back to 2015) must also correlate to the correct bore number on the Licence.

The provision of a new hydrogeological assessment will be critical in informing post-closure management procedures at the premises and will assist DWER in determining if a closure notice will be required. Should a closure notice be necessary, the hydrogeological assessment will assist DWER in determining the appropriate degree of regulatory control that should be implemented on the closure notice to ensure that no ongoing environmental impacts will result from the premises once landfilling operations have ceased.

4.3 Expansion of groundwater monitoring schedule

To ensure that the new hydrogeological assessment is informed by a more comprehensive set of groundwater contaminant parameters, the Delegated Officer will add the following parameters to Existing groundwater monitoring conditions within the Licence:

- Electrical conductivity
- Biochemical oxygen demand
- Ammonium nitrogen

These additional parameters will provide a more complete understanding of impacts to groundwater from landfill leachate and will assist the Licence Holder in making decisions regarding the ongoing management of the landfill post-closure.

4.4 Landfill closure management plan

The Delegated Officer notes that the Licence Holder has previously submitted a Landfill Closure Management Plan (LCMP) which was reviewed by DWER in 2015. The LCMP was informed by the findings of the 2015 hydrogeological assessment, which is not considered to provide a comprehensive overview of groundwater flow, contamination, or level in the vicinity of the premises. DWER's review outlined the submission requirements for a new capping proposal. To date, DWER has received no updates in relation to any capping works undertaken at the premises, nor has the updated capping plan been received.

Due to uncertainties surrounding the adequacy of the findings within the 2015 LCMP and the extent to which capping activities have occurred at the premises, a condition will be added to the Licence requesting that the Licence Holder:

- Audit any capping works that have occurred on the premises since the 2015 LCMP was reviewed by DWER against the requirements of the 2015 LCMP and;
- Submit a new LCMP informed by the findings of the new hydrogeological assessment.

In line with the findings of DWER's review of the 2015 LCMP, the new LCMP should include at least the following items:

- Soil permeability testing to produce a suitable and uniform cap permeability;
- Future civil, stormwater management and maintenance works necessary to preserve the cap integrity;
- Stockpiling or identification of suitable soil reserves to allow for ongoing cap maintenance; and
- Confirmation of landfill gas monitoring and site water balance requirements, as informed by the final proposed capping design.

The provision of a new LCMP will be critical in informing post-closure management procedures at the premises and will assist DWER in determining if a closure notice will be required.

4.5 Waste Management Strategy

The Delegated Officer notes that no information has been provided by the Licence Holder outlining proposed actions to facilitate the closure of existing landfill cells at the premises, or how waste will be managed within the Shire of Wyndham East Kimberley on an ongoing basis post closure of the landfill.

To ensure that DWER has oversight of steps being taken by the Licence Holder in relation to landfill closure and waste management, the Delegated Officer has included conditions in the revised Licence requiring the Licence Holder to submit a Waste Management Strategy, which is to be revised and resubmitted on a six-monthly basis and contain the following information:

- An overview of proposed changes to waste management within the Shire of Wyndham East Kimberley to facilitate the closure of the current landfill cells within the premises;
- Timeframes for the implementation for proposed changes to waste management within the Shire of Wyndham East Kimberley;
- Progress made in obtaining land tenure for a new premises location (if required);
- Hydrogeological investigations undertaken or proposed for a new premises location (if required); and
- Conceptual infrastructure and siting designs for a new premises and/or for modifications to the existing premises.

Should the Licence Holder have need to seek an extension to the Licence duration to facilitate actions which will lead to the eventual closure of the current landfill cells, the Delegated Officer will consider information within the Waste Management Strategy submissions to determine the suitability of any proposed extension.

5. Consultation

Table 13 provides a summary of the consultation undertaken by the department.

Table 13: Consultation

Consultation method	Comments received	Department response
Application advertised	None received	N/A

on the department's website on 11/1/2024 and the West Australian 15/1/2024		
Applicant was provided with draft documents on 30/04/2024/ and 30/05/2024.	SWEK responded on 23/05/2024 and 14/06/2024. Refer to Appendix 1 for Final comments.	Refer to Appendix 1.
Applicant was provided additional questions from DWER on 25 June 2024 regarding the status of the existing and proposed new landfill location noting the original responses to the draft documents.	SWEK provided a response to DWER on 23 August 2024. Refer to Appendix 1.	DWER meet with SWEK on 7 August 2024 to discuss the proposed licence and conduct a site visit at the existing landfill and proposed new landfill locations. Refer to Appendix 1.

6. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that the application to renew Licence L7315/1998/9 will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

Summary of Licence conversion

Table 14 provides a summary of the conversion of the Existing Licence that has been reformatted into the current Licence template.

Table 14: Consolidation of Licence conditions in this amendment

Existing condition	Condition summary	Revised Licence condition	Conversion notes
N/A	Expiry Date: 27 October 2024	Expiry Date: 27 October 2026	In accordance with the Decision Report findings
N/A	Prescribed Premises Category table	N/A	Revised to current licensing format.
1.1.1 1.1.2	Interpretation and definitions	N/A Interpretation section, Definitions and Table 9	Redundant condition. Revised to current licensing format.
1.1.3	Australian or other standard	N/A Interpretation section, Definitions and Table 9	Redundant condition. Revised to current licensing format.
1.1.4	Reference to code of practice	N/A Interpretation section, Definitions and Table 9	Redundant condition. Revised to current licensing format.

Existing condition	Condition summary	Revised Licence condition	Conversion notes
1.2.1	Emissions	Condition 1 and Table 2	Redundant condition. Revised to current licensing format.
1.2.2	Pollution control and monitoring equipment	N/A	Redundant condition. Adequately covered by alternative Existing conditions. Deleted from Licence.
1.2.3	Storage of environmentally hazardous materials	N/A	Redundant condition. Adequately regulated by the Dangerous Goods Safety Act 2004. Deleted from Licence.
1.2.4	Recovery and removal of spills	8 and 9	Revised to current licensing format.
1.2.5	Prevention of contamination and containment of contaminated stormwater	12	Revised to current licensing condition format.
1.3.1 Table 1.3.1	Waste acceptance	Condition 1 Table 2	Revised to current licensing format.
1.3.2	Waste acceptance	2	Revised to current licensing format.
1.3.3	Waste processes	Condition 3 Table 2	Revised to current licensing format.
1.3.4	Waste processes cover material	Condition 4 Table 3	Revised to current licensing format.
1.3.5	Premises security	6	Revised to current licensing format.
1.3.6	Infestations of vermin and pests	10	Revised to current licensing format.
1.3.7	Windblown waste	11	Revised to current licensing format.
1.3.8	Windblown waste	11	Revised to current licensing format.
1.3.9	Burning of waste	13 and 14	Revised to current licensing format.
1.3.10	Fire extinguished	Condition 30 Table 8	Revised to current licensing format.

Existing condition	Condition summary	Revised Licence condition	Conversion notes
1.3.11	Premises Sign	7	Revised to current licensing format.
1.3.12	Landfill process activities	5	Revised to current licensing format.
1.3.13	Construction of Bioremediation Cells	N/A	Redundant condition.
1.3.14	Construction of Bioremediation Cells	N/A	Redundant condition.
1.3.15	Construction of Bioremediation Cells	N/A	Redundant condition.
1.3.16	Construction of Bioremediation Cells	N/A	Redundant condition.
1.3.17	Bioremediation facility	16	Revised to current licensing format.
1.3.18	Bioremediation facility	17	Revised to current licensing format.
2.6.1	Dust emissions	15	Revised to current licensing format.
3.3.1	Water Sample analysis	20	Revised to current licensing format.
3.1.2	Water Sample frequency	21	Revised to current licensing format.
3.1.3	Water sample calibration	23	Revised to current licensing format.
3.1.4	Water sample calibration	N/A	Redundant condition. Revised to current licensing format.
3.6.1	Monitoring of inputs and outputs	Condition 18 Table 4 Condition 19 Table 5	Revised to current licensing format.
3.8.1	Ambient environmental quality monitoring	Condition 22 Table 6	Revised to current licensing format. Additional parameters added in line with risk assessment outcomes.
4.1.1	Improvement program – hydrogeological assessment	31	Condition has been revised to require a new hydrogeological assessment in line with risk assessment outcomes.

Existing condition	Condition summary	Revised Licence condition	Conversion notes
			Revised to current licensing format.
5.1.1	Records	Condition 29 and 30	Revised to current licensing format.
5.1.2	Licence Records	N/A	Redundant condition. Revised to current licensing format.
5.1.3	Annual Audit Compliance Report	26	Revised to current licensing format.
5.1.4	Complaints	24	Revised to current licensing format.
5.1.5	Records system	25	Revised to current licensing format.
5.2.1	Annual Environmental Report	Condition 27 Table 7	Revised to current licensing format. Additional reporting requirements added for groundwater monitoring data in line with risk assessment outcomes.
5.3.1	Notifications	Condition 30 Table 8	Revised to current licensing format. Maintain Fire and Greenwaste burning notifications.
Schedule 1: Maps	Premises map	Schedule 1: Maps	New maps consistent with Premises details and condition 3, 16, 17 and 22.
Schedule 2	Prescribed Premises Categories	Prescribed Premises category description table.	Revised to current licensing format.
Schedule 3 Reporting & notifications	Annual Audit Compliance Report Form N1 Notification	N/A	Redundant attachment. Deleted from Licence
N/A	Landfill closure management plan	32 and 33	Additional conditions added in line with risk assessment outcomes.
N/A	Waste management strategy	34, 35 and 36	Additional conditions added in line with risk assessment outcomes.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. Shire of Wyndham – East Kimberley Kununurra Waste Disposal Facility Hydrogeological Investigation May 2015

Appendix 1: Summary of Licence Holder comments on risk assessment and draft conditions

Decision Report	Summary of applicant's comment	Department's response								
General comment	The landfill it is not adjacent to a RAMSAR classified wetland as specified in the decision report template. The closest RAMSAR wetland is the Lake Argyle and Kununurra Ramsar site, situated approximately 1.8 km away. The landfill is adjacent to a nationally important wetland. The Shire requests that this reference is corrected.	Section 3.1.2 Table 7 of the Decision Report correctly identifies the Ramsar Wetland as 1.8km west of the Premises and the Nationally important Wetland as within the premises boundary as per DWER geographical information systems. Decision Report text amended as required to reflect Table 7.								
Condition	Summary of applicant's comment	Department's response								
32	The Shire requests that the date for compliance for Condition 32 is extended to 11 October 2024 to allow sufficient time for the capping audit to be undertaken and a report produced to satisfy the requirements on this condition.	Date amended to 11 October 2024 to allow sufficient time.								
22	<p>The Shire acknowledges that the existing and proposed licence has a different descriptor for the groundwater monitoring wells, than historically used by the Shire. Through this licence amendment process, it is requested that these are changed to reflect the onsite descriptors as follows:</p> <table border="1" data-bbox="647 1206 1308 1417"> <thead> <tr> <th>DWER bore descriptor</th> <th>Shire descriptor</th> </tr> </thead> <tbody> <tr> <td>Control Bore</td> <td>Control Bore</td> </tr> <tr> <td>Bore 1</td> <td>Bore 1</td> </tr> <tr> <td>KTP1A</td> <td>K1D</td> </tr> </tbody> </table>	DWER bore descriptor	Shire descriptor	Control Bore	Control Bore	Bore 1	Bore 1	KTP1A	K1D	<p>Noted and Condition 22 Table 6 monitoring wells amended to the new Shire descriptors as requested.</p> <p>A new Map of monitoring bore locations in Schedule 1 has been produced to accompany the new bore numbers.</p>
DWER bore descriptor	Shire descriptor									
Control Bore	Control Bore									
Bore 1	Bore 1									
KTP1A	K1D									

Decision Report	Summary of applicant's comment		Department's response	
		KTP1B	K1S	
		KTP2A	K2D	
		KTP2B	K2S	
		KTP3A	K3D	
		KTP3B	K3S	
		KTP4A	K4D	
		KTP4B	K4S	
Additional Comments			Department's response	
<p>Conditions 34 - 36.</p> <p>DWER wrote to SWEK in an email dated 25 June 2024 requesting an update on the landfill and proposed new landfill location noting SWEK previous responses to the draft licence. the following questions were raised:</p> <ol style="list-style-type: none"> 1. When were the SWEK made aware that their preferred site was no longer an option due to planning and tenure challenges? What are these planning and tenure challenges, and do you foresee these being an issue on any other site? DWER has received no correspondence advising that this proposed area has fallen through. 2. Since being made aware that the preferred site was no longer an option, has SWEK considered or looked into any other alternative locations for a new landfill facility? 3. It is noted that groundwater monitoring is proposed prior to approvals processes being undertaken when a new location is found for a new landfill facility. The construction of groundwater monitoring bores and the requirement for baseline groundwater monitoring is usually conditioned within works approvals. SWEK will need to seek a works approval to authorise the construction of a new landfill, in which the construction and monitoring of groundwater monitoring bores will be conditioned so that these activities can occur in parallel to the construction of landfill cells. As such, it is not required for this work to be undertaken prior to the submission of a works approval. <p>You have mentioned a timeframe of 6-7 years for a new landfill to be operational – can you please advise what this timeframe is based on?</p>			<p>DWER meet with SWEK on 7 August 2024 to discuss the proposed licence and conduct a site visit at the existing landfill and proposed new landfill locations and to discuss the six questions posed by DWER to SWEK on 25 June 2024.</p> <p>SWEK formally submitted a response to the questions to DWER on 23 August 2024.</p> <p>In consultation with SWEK and as agreed on the 23 August 2024, DWER will add additional Specified action licence conditions 34 - 36 outlining the requirement for the licence holder (SWEK) to prepare and submit a Waste Management Strategy providing an overview of actions taken to facilitate the eventual closure of the current landfill cells at the premises.</p> <p>These conditions will provide timeframes for the licence holder to keep DWER updated on the progress of the new landfill noting DWER has only granted the proposed licence at the existing premises for two (2) years.</p> <p>This information will allow DWER to make further informed decisions on the applicability of extending the current licence at the existing premises.</p>	

Decision Report	Summary of applicant's comment	Department's response
	<p>4. Has SWEK received a cost analysis for the construction of a new landfill facility which is appropriately sized for ongoing waste management across the region?</p> <p>5. The review of hydrogeological data used to inform DWER's risk assessment has concluded that contamination to groundwater is likely occurring. SWEK have an obligation under the Contaminated Sites Act 2003 to report any known or suspected contaminated site to DWER. Could you please confirm whether SWEK has reported the premises as a contaminated site? We have no record of this on file.</p> <p>Reports can be made through submission of the following form - https://www.wa.gov.au/system/files/2023-05/contaminated-sites-form-1.pdf. A contaminated sites officer from within DWER will follow up with your report directly.</p> <p>6. Whilst DWER is aware of the limitations imposed by remote areas on landfill construction, DWER has also been aware for several years that the location and ongoing operation of the landfill poses a high risk to the surrounding environment. The continued operation of the landfill has been permitted on the basis that a new location had been selected and SWEK were in the process of securing this location. Given that:</p> <ul style="list-style-type: none"> a. This location has fallen through and SWEK has not presented DWER with a suitable alternative; and b. DWER does not have a concrete timeframe for when a new landfill will be operational to replace the old landfill; and c. A sufficient landfill closure management plan has not been provided to DWER; and d. A technical review of available hydrogeological data for the premises has determined that the location of the landfill is resulting in a continuous pathway for contamination to enter the environment, given that historically deposited waste is likely inundated within the water table; <p>DWER does not consider it appropriate to extend the Licence past 2026, especially without SWEK providing DWER with evidence of a new secured location, plans and a timeframe to construct and operate a new landfill, to facilitate the closure of the premises.</p>	<p>DWER provided notification of conditions 34, 35 and 36 on 18 September 2024 to the licence holder.</p> <p>The licence holder provided a response to DWER on 20 September 2024 advising that what has been proposed in condition 34, 35 and 36 is acceptable to the Shire and the licence holder we will work around these dates moving forward.</p>

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)			
Application type			
Renewal	<input checked="" type="checkbox"/>	Current Licence number:	L7315/1998/8
Date application received		2 November 2023	
Applicant and premises details			
Applicant name/s (full legal name/s)		Shire of Wyndham East Kimberley	
Premises name		Kununurra Waste Disposal Site	
Premises location		Kununurra Waste Disposal Site Reserve 28875, Victoria Highway KUNUNURRA WA 6743 Being Lots 2464 and 2465 on Plan 195310	
Local Government Authority		Shire of Wyndham East Kimberley	
Application documents			
HPCM file reference number:		DER2014/002738-1	
Key application documents (additional to application form):		Application Form Supporting Document	
Scope of application/assessment			
Summary of proposed activities or changes to Existing operations.		Licence Renewal Operation of Category 57, 61 and 64 putrescible landfill.	
Category number/s (activities that cause the premises to become prescribed premises)			
Table 1: Prescribed premises categories			
Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)	
Category 57:	Not more than 500 units	N/A	
Category 61:	1,900 tonnes per annual period	N/A	
Category 64:	30,000 tonnes per annual period	N/A	
Legislative context and other approvals			
Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>	

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)		
Does the applicant hold any Existing Part IV Ministerial Statements relevant to the application?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	
Has the applicant applied for, or have an Existing EP Act clearing permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	No clearing is proposed.
Has the applicant applied for, or have an Existing CAWS Act clearing Licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	No clearing is proposed.
Has the applicant applied for, or have an Existing RIWI Act Licence or permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Licence / permit not required.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: N/A Type: N/A Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Regional office: N/A
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to <u>WQPN 25</u>)? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Note: If the proposed activity is not listed as a compatible land use with the PDWSA please consult with the relevant regional office (Regulatory

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)		
		Services - Water) and Water Source Protection (Science and Planning).
Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx</i>)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<i>Environmental Protection (Controlled Waste) Regulations 2004.</i> <i>Environmental Protection (Unauthorised Discharges) Regulations 2004.</i>
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Classification: Possibly contaminated – investigation required (PC–IR) Date of classification: 12/06/2019