



Application for licence

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

Licence number	L9315/2022/1
Applicant	Puma Energy (Australia) Bitumen Pty Ltd
ACN	147 981 020
DWER file number	DER2020/000002
Premises	Puma Energy Kwinana Bitumen Terminal 49 Port Road KWINANA BEACH WA 6167
Date of report	13 July 2022
Status of report	Final

1. Purpose and scope of assessment

Puma Energy (Australia) Bitumen Pty Ltd (Puma Energy/the applicant) is seeking approval for operations at its Kwinana Bitumen Terminal. An application for licence was submitted by Puma under Division 3 Part V of the *Environmental Protection Act 1986* (EP Act) on 22 December 2021.

This report sets out the delegated officer's assessment of potential risk events arising from emissions and discharges that will be generated during bitumen manufacturing activities on the premises.

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

2. Background

The Kwinana Bitumen Terminal is an existing bitumen storage and dispatch facility operated by Puma Energy in the Kwinana Industrial Area, about 42 km south of Perth.

Existing infrastructure at the site comprises 4 x 250 tonne bitumen storage tanks, a hot oil heater system, and bitumen transfer pipes and pumps. Part of the site is used by a separate entity, Bitumen Storage Solutions Pty Ltd (BSS), which is a joint venture between SAMI Bitumen Technologies and the applicant.

Bitumen is delivered to the BSS site via ship and transferred via pipelines to Puma Energy where it is received, stored, and loaded out as a heated liquid bitumen product. The existing site operations are not a prescribed activity.

2.1 Works Approval W6349/2020/1

Works approval W6349/2020/1 was granted in July 2020 for repurposing the existing bitumen storage tanks to allow for in-tank mixing of different grades of bitumen and installation of new mixing units to produce modified bitumen products.

The works have caused the existing premises to become a prescribed premises under the following category, as defined in Schedule 1 of the Environmental Protection Regulations 1987:

Table 1: Prescribed premises category

Classification of premises	Assessed design capacity (as per application)
Category 36: Bitumen manufacturing: premises on which bitumen is mixed or prepared for use at places or premises other than those premises.	116,000 tonnes per annual period

The works are proposed in two stages, with Stage 1 comprising the establishment of a trailer-mounted crumbed rubber modified bitumen (CRMB) mixing unit and a trailer-mounted polymer modified bitumen (PMB) mixing unit, each installed with a vapour treatment system (activated carbon (AC) scrubber units); a self-bunded additive storage tank and unloading bay; pipework connecting the storage tanks with the mixing units; a road tanker loading facility, and other ancillary infrastructure. Stage 2 comprises the installation of two additional bitumen storage tanks (TK-301 and TK-302) and associated pumps and secondary containment.

Stage 1 works were completed in April 2021 and are currently being operated under the time limited provisions of W6349. The applicant advises there are no immediate plans to commence Stage 2 works.

2.1.1 Environmental compliance

The applicant submitted an environmental compliance report (ECR) in May 2021, certifying that Stage 1 works had been completed in accordance with the conditions of the works approval.

The department has reviewed the report and is generally satisfied that works have been completed in accordance with the corresponding design and construction/installation requirements, and at the corresponding infrastructure location.

2.1.2 Time limited operations

W6349 provides for time limited operations of Stage 1 works following installation and submission of an ECR for that infrastructure. The facility is currently in the time limited operations phase, pending the issue of a licence subject to this application.

The first round of stack monitoring was conducted in accordance with condition 8 of W6349 in July 2021 (see section 6.1.2). This monitoring was undertaken to verify baseline emission concentrations and the emission reduction capability of the AC scrubbers.

The monitoring results indicate the previous assessment of the predicted operational performance of the carbon scrubbers was reliable and is consistent with actual performance. From the monitoring results, it can be determined that the scrubber efficiency rate meets the requirements of W6349, and there is no indication the operational risk profile of air emissions previously assessed has changed.

2.2 Operational aspects

2.2.1 Site operations

A significant portion of bitumen moving through the facility will continue to simply be received, stored within the 4 existing tanks, and loaded out. However, additional grades of bitumen will now also be prepared using the following mixing processes:

- Grade mixing – blending two grades (i.e., different viscosities) of heated liquid bitumen from their source tanks together in a third tank to achieve a desired grade of bitumen (using existing tanks, pumps and associated infrastructure);
- Crumbed Rubber Modified Bitumen (CRMB) – mixing heated liquid bitumen with granules of recycled rubber made from used tyres and conveyor belts; and
- Polymer Modified Bitumen (PMB) – mixing heated liquid bitumen with polymer (plastic) granules.

2.2.2 Process description

The CRMB and PMB are prepared by mixing heated liquid bitumen and additives to achieve a desired grade of bitumen. The CRMB and PMB mixing units are horizontal tanks, designed to contain 25 tonnes of finished product. The mixing process takes an average of 6 hours from start to completion and operates on an as-needed basis.

Mixed grade bitumen will only be produced on customer demand until the two additional storage tanks under Stage 2 (TK-301 and TK-302) are constructed. Until this time, mixed grade bitumen will not be stored on the premises.

The raw materials, such as crumbed rubber or polymer, are delivered to the premises in 1,000 kg bulka bags and stored on a covered hardstand.

Heated liquid bitumen is transferred from the source tanks into the mixing unit where heaters positioned under the unit maintain the temperature of the bitumen. The bitumen is circulated using a pump and the crumbed rubber or polymer is induced into the circulating mixture and returned to the mixing tank. Depending on the product being produced, additives may also be added into the mixing unit at about 1 – 6% ratio to achieve desired grade and viscosity.

A helical mixer inside the tank rotates, agitating the mixture. Mixing under heat continues until the crumbed rubber or polymer granules are fully combined with the bitumen.

A milling process can be deployed where further homogenising of the mixture is required.

The completed batch is transferred directly to the road tankers via the loading facility and/or will be stored in the TK-301 and TK-302 storage tanks, when constructed. The mixture will be

kept hot using oil heaters under the tanks while being continuously stirred during storage.

Heating of bitumen pipelines and storage tanks

A heating system, comprising heating coils installed in the bitumen storage tanks, circulates heated oil around the tanks and pipes to maintain the temperature of the bitumen in a liquid state, i.e., between 140°C and 185°C, for transfer and pumping.

Bitumen pipelines are also heated using hot oil tracing lines that run along the pipelines within containment infrastructure.

For practical reasons, electrical heating is used for the trailer mounted mixing units. Electrical heating elements positioned under the mixing unit tanks are used to transfer heat through the tank shell into the bitumen.

Waste generation and management controls

The existing four bitumen storage tanks are located within a fully bunded concrete hardstand area that is graded to a collection sump. The total footprint of this area is currently 540 m², and it is proposed to extend this area by a further 80 m² to account for the proposed TK-301 and TK-302 storage tanks.

An additional 210 m² kerbed concrete containment area has been constructed under W6349 for the two new mixing units, in addition to a 28 m² kerbed concrete containment area for unloading additives, and other containment areas for pumps. The inclusion of this new containment infrastructure has increased the controlled drainage footprint of the premises to just over 1,000 m².

The new containment areas are designed to drain to collection sumps where material can either be recovered or transferred via underground pipelines to the existing oily water separator (OWS) for treatment and subsequent disposal.

The OWS can treat up to 40 m³/hr and is designed to remove total recoverable hydrocarbons to ≤10 ppm. Treated water is discharged into an existing infiltration trench about 150 m from the bitumen bunds and storage areas.

Air emissions and management controls

The heating and blending of the bitumen products generates fumes, with the main pollutants of concern comprising volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and hydrogen sulfide (H₂S).

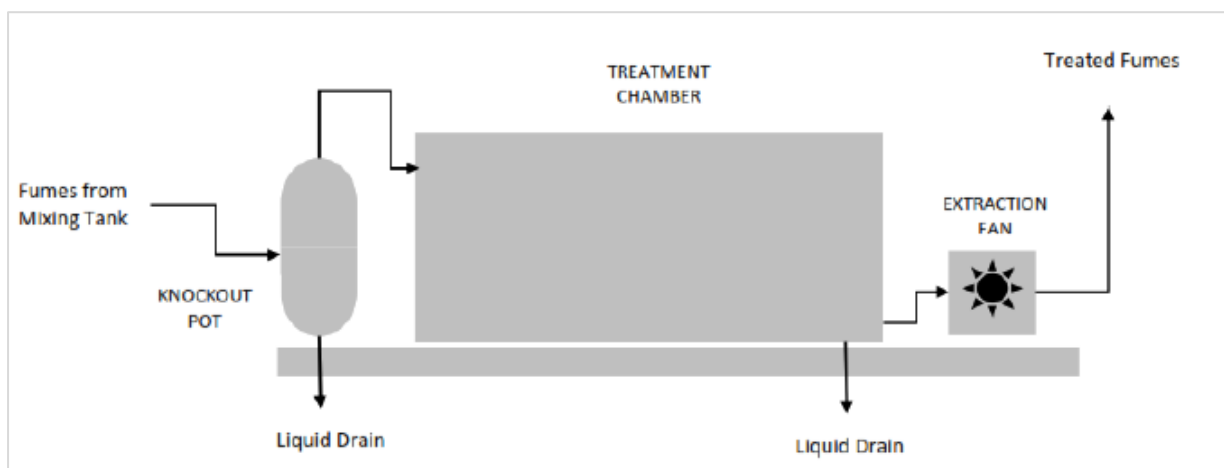
Vapours from the CRMB/PMB mixer are extracted at the vent and drawn through a fume scrubbing system comprising two AC scrubber units.

The fumes enter the scrubber via a 'knock out' (KO) pot, which is designed to remove excess moisture or atomised liquid that might be suspended in the extracted vapour flow stream. From the KO Pot, the vapours are piped to a fume treatment chamber which comprises a stainless steel vessel with an AC filter medium designed to adsorb contaminants from the fumes. The fumes are drawn through the AC bed and exit the chamber near the base, where it is drawn through the fan and discharged to the atmosphere via a 4 m high stack (Figure 1).

Any drained condensate from the KO pot will be drained to a 1,000 L intermediate bulk container and removed for off-disposal by a licensed controlled waste carrier.

Air emissions monitoring

The applicant proposes to conduct monitoring of the treated fumes on a frequency that aligns with the mixing unit volumetric throughput, based on the rate at which the performance of the unit deteriorates. Initially, monitoring events are proposed at intervals of 4,000 tonnes produced for each mixing unit.



▲ Figure 1: Vapour scrubbing unit process flow

2.3 Key infrastructure

A list of key site infrastructure used in the bitumen manufacturing process is provided in Table 2.

Table 2: Key site infrastructure

Infrastructure/equipment	Specifications
Existing infrastructure	
Hot bitumen storage tanks (TK-103 to TK-106)	4 x 250 tonne hot bitumen storage tanks located within a bunded concrete hardstand area with collection sump that is connected to the OWS via underground pipeline.
Stage 1 infrastructure	
CRMB mixing unit	1 x 25 tonne trailer-mounted mixing unit, with a vent connecting the unit to the vapour treatment system via an extraction fan.
PMB mixing unit	1 x 25 tonne trailer-mounted mixing unit, with a vent connecting the unit to the vapour treatment system via an extraction fan.
AC scrubber units	Each unit comprises: <ul style="list-style-type: none"> - a knockout pot for removal of moisture in the vapour flow stream; - a stainless steel treatment chamber containing AC filter beds designed to remove 95% of VOCs; - an extraction fan; - a 4 m high stack fitted with a sampling port that complies with AS 4323.1
Additive storage tank and unloading bay	1 x 70 kL self-bunded storage tank, located adjacent to a 25 m ² concrete unloading bay, which comprises a collection sump that is connected to the OWS via underground pipeline.
Mixing unit secondary containment slab	210 m ² kerbed concrete slab (100 mm high kerbing) for the CRMB and PMB mixing units to operate upon; comprises a collection sump that is connected to the OWS via underground pipeline.

Exclusions to this assessment

The following matters are out of the scope of this assessment and have not been considered within the risk assessment detailed in this report:

- infrastructure and activities conducted by BSS, including interconnecting pipelines from the BSS storage tanks to the applicant's existing storage tanks (noting some infrastructure is shared, such as the hot oil buffer storage tank);

- office and control building, and storage shed activities; and
- vehicle movements on public roads, including trucks, road tankers, etc.

The licence is related to category 36 activities only and does not offer the defence to offence provisions in the EP Act (see sections 74, 74A and 74B) relating to emissions or environmental impacts arising from non-prescribed activities, including those listed above.

3. Other approvals

A summary of approvals and other legislation relevant to the application are listed in Table 3.

Table 3: Relevant approvals

Legislation	Approval	Notes
Environmental Protection (Kwinana) (Atmospheric Wastes) Regulations 1992	N/A	EPP applies to Kwinana air shed within Kwinana Industrial Area
<i>Dangerous Goods Safety Act 2004</i>	DG licence	DGS022430
<i>Planning and Development Act 2005</i>	Planning approval	Granted for Stage 1 & 2

4. Consultation

The application was referred to relevant public authorities and advertised for public comment on the department's website during January 2022. No public submissions were received in the timeframe specified.

The City of Kwinana advised it has no objections to the proposal.

5. Location and siting

The premises is located at the southern end of the Kwinana Industrial Area and is predominantly surrounded by major heavy industry, including the CSBP ammonium nitrate plant, Macrofertil fertiliser plant, and refineries such as Nickel West and Coogee Chemicals.

The premises is located on Port Rd, which forms part of the outer harbour of the Fremantle Port and is the connecting road to the Kwinana bulk jetty, a major berth for unloading bulk commodities, which is 800 m to the west. A single residence is located about 540 m southwest, behind a liquor store and delicatessen. Kwinana beach recreational park (Wells Park) is across the road from this residence. The closest built-up residential area is East Rockingham, about 2.5 km to the south.

The site is located about 550 m east of the 'moderate ecological protection area' specified in the State Environmental (Cockburn Sound) Policy 2015, which is in place to protect the intrinsic values of the most intensively used marine embayment in Western Australia, Cockburn Sound. The Sound has had a history of significant nutrient pollution caused by overland flow and submarine groundwater discharge from nearby industry, which has resulted in a declining density of seagrass beds.

There are no permanent watercourses or surface water features in proximity to the premises. The site underlies the Safety Bay Sand aquifer, with groundwater about 3 m below ground level. Groundwater is brackish, with salinity 1,000 – 1,500 mg/L total dissolved solids.

Table 4: Receptors and distance from premises boundary

Sensitive Land Uses	Distance from prescribed activity
Single dwelling, Wells Park – Kwinana Beach recreational park	540 m southwest
East Rockingham, residential area	2.5 km south
Specified ecosystems	Distance from the Premises
Cockburn Sound	600 m west

Groundwater – salinity 500 – 1,000 mg/L	Depth to groundwater encountered at 4 m below ground level (5 m AHD)
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6. Modelling data

6.1 Air quality assessment

6.1.1 Initial air emissions screening

The applicant identified the principal pollutants of concern for air emissions being VOCs, PAHs and H₂S from current and future operations.

Ambient air quality and odour monitoring was conducted at the site in December 2019 (CETEC 2020). The monitoring did not detect any VOCs, PAHs or H₂S at the premises boundary. Additionally, the applicant advises it has not received any complaints in relation to the existing operations at the site.

The applicant also conducted a screening assessment of likely air emissions using the screening process outlined in the *Draft Guideline – Air Emissions* (DWER 2019). This assessment indicated when operating at full capacity with the AC scrubber units operating with an efficiency of at least 95%, the resultant VOC emissions would be in the order of 22% of the 1-hour ambient air quality guideline value (AGV) for asphalt (bitumen/petroleum) fumes (1.99 µg/m³), and about 10% of the 1-hour AGV (0.85 µg/m³) at the planned production rate (CETEC 2020). The maximum calculated concentration of particulates (PM₁₀) was less than 7% of the 24-hour AGV at full operating capacity and less than 3% of the 24-hour AGV at the planned production rate.

The calculated results of the screening assessment for the maximum production rate exceeded the *Draft Guideline – Air Emissions*' threshold of insignificance, but for the planned production rate, the calculated results were below this threshold.

6.1.2 Validation stack emissions monitoring

The applicant has conducted one round of validation monitoring of stack emissions during the commissioning phase, in accordance with condition 8 of W6349 (Emission Assessments 2021).

It is noted the sampling locations (L1 & L2) were found to be not ideal with the sampling location guidelines for minimum stack gas velocity, as stipulated in AS4323.1.

The results of the sampling run is summarised in Table 7.

Table 7: Emissions testing – scrubber stack emissions & efficiency (15/07/2021)

Analyte	Units	L1		L2	
		Run 1	Run 2	Run 1	Run 2
Total particulate matter	mg/m ³	13	10	1.1	<0.45
	g/sec	0.00026	0.00022	0.000024	0.0000096
Hydrogen sulfide	mg/m ³	<1.7	<1.3	<1.2	<1.4
	g/sec	<0.00004	<0.00003	<0.000029	<0.000033
Total VOCs	mg/m ³	2600 (inlet) 17 (outlet)	2200 19	660 41	1000 52
	g/sec	0.00041	0.00046	0.00098	0.0012
Scrubber efficiency (VOCs)	%	99	99	94	95
PAHs	µg/m ³	0.28	0.014	0.049	0.075
	µg/sec	0.0073	0.00038	0.00097	0.0016
Stack gas temperature	°C	14	15	17	17
Stack gas velocity	m/sec	2.7	2.9	2.4	2.4

Actual stack flow rate	acm/min	1	1	1	1
Dry standard stack flow rate	dscm/min	1	1	1	1

The results indicate AC scrubber efficiency in the order of 99% for L1 and 94% for L2, which is consistent with the expected efficiency rates, as assessed under the works approval.

VOC emission rates are also lower than expected, with a rate of 0.0025 g/sec being considered in the screening assessment, compared to actual rates measured being much less than this, except for run 2 (L2). Stack concentrations of particulates, PAHs and H₂S are also within expected ranges, and are not expected to result in significant off-site impacts.

Given these results, further review or detailed assessment of air emissions is not warranted.

6.2 Noise assessment

6.2.1 Noise monitoring

Noise monitoring was conducted at the site in December 2019 (CETEC 2020).

From the information and charts submitted with the application, it appears that noise measurements were taken at the boundary as energy (log) averaged data, in 1 minute resolution (likely L_{Aeq 1 min}), which do not relate to the parameters of the assigned levels set out in the Environmental Protection (Noise) Regulations 1997 (Noise Regulations), which are statistical (with exception of the L_{Amax} levels). The applicant is advised that noise measurements should have been obtained using values that relate to the Noise Regulations.

In any event the data, assuming the L_{A10} values are somewhat above the average L_{Aeq 1 min} values presented in the application, indicate that noise levels are likely to comply with the assigned levels at the boundary if the receiver is an industrial premises, and assuming there are no intrusive noise characteristics, would be borderline compliant if the receiver is a commercial premises.

7. Risk assessment

7.1.1 Determination of emission, pathway and receptor

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.

7.1.2 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 identified potential source-pathway and receptor linkages. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls, 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 the below table.

7.1.3 Risk assessment table

The table below describes the risk events associated with the proposal consistent with the *Guideline: Risk Assessments* (DWER 2020a). The table identifies whether the risk events are acceptable and tolerated, or unacceptable and not tolerated, and the appropriate treatment and degree of regulatory control, where required.

Risk Event				Consequence rating ¹	Likelihood rating ¹	Risk ¹	Reasoning	Regulatory controls
Source/ Activities	Potential emissions	Potential receptors, pathway and impact	Applicant controls					
Category 36: Bitumen manufacturing operations								
Transfer and mixing of bitumen with raw materials and product	Air emissions – vapours from the CRMB/PMB mixing process (VOCs, PAHs, H ₂ S, odour)	Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby sensitive receptors (single residence & Wells Park 540 m southwest, adjacent commercial premises)	Vapours treated through a fume scrubbing system (KO pot, AC scrubbers, extraction fan, 4 m high stack) AC scrubber to operate at ≥95% efficiency for VOC removal	Specific consequence criteria (for public health) likely to be met Minor	Not likely to occur in most circumstances Unlikely	Medium Acceptable, subject to regulatory controls	Vapours from the heating and blending of bitumen products will be extracted at the CRMB/PMB mixer vent and drawn through a fume scrubbing system comprising a KO pot and two AC scrubber units. A screening assessment of likely air emissions using the <i>Draft Guideline – Air Emissions</i> (DWER 2019) indicated, that with the above controls in place and AC scrubber efficiency >95%, VOC emissions would be <10% of the 1-hour AGV and PM ₁₀ <3% of the 24-hour AGV at the planned production rate. According to the <i>Draft Guideline – Air Emissions</i> (DWER 2019), these concentrations are considered insignificant. In addition, PAHs and H ₂ S were not detectable at the premises boundary during ambient air monitoring. Validation monitoring during commissioning has confirmed AC scrubber efficiency of >95% and emission rates being lower than expected. To ensure an acceptable level of risk is maintained during ongoing operations, the licence will require the fume scrubbing system to remain in place and be maintained, and routine stack sampling at least once every 4,000 tonnes of production per unit, to provide assurance over the performance of the scrubber and mixing units.	<u>Licence controls:</u> <ul style="list-style-type: none"> - Infrastructure design and operational requirements specified in infrastructure table; - Routine stack sampling to be conducted at least once every 4,000 tonnes of production per mixing unit.
	Noise associated with operation of CRMB & PMB mixing units, pumps, hot oil heater		None specified.	Low level off-site impacts to amenity Minor	Only in exceptional circumstances Rare			
Storage and transfer of bitumen and bitumen products	Hydrocarbon-contaminated stormwater runoff from operational areas	Shallow groundwater (~4 mbgl) via on-site infiltration basin Cockburn Sound, via overland runoff into municipal stormwater system	Storage tanks and operational areas located within bunded concrete hardstand areas, with surface water collection in sumps	Low level off-site impacts Minor	Not likely to occur in most circumstances Unlikely	Medium Acceptable, subject to regulatory controls	All storage tanks and operational areas are located within bunded concrete hardstand areas that are designed to contain stormwater and any spills or leaks and either drain to a blind sump for recovery or to an OWS via an isolation valve and underground pipeline for treatment, prior to discharge (see below). To ensure an acceptable level of risk is maintained during ongoing operations, the licence will require the bunded hardstand areas to be maintained as infrastructure controls.	<u>Licence controls:</u> <ul style="list-style-type: none"> - Infrastructure design and operational requirements specified in infrastructure table;
Treatment of contaminated stormwater			Collected surface water treated through OWS and discharge to on-site infiltration basin	Low level off-site impacts Minor	Not likely to occur in most circumstances Unlikely			

8. Decision

The delegated officer has determined the proposal for ongoing operations at the Puma Energy Kwinana Bitumen Terminal, with an assessed throughput of 116,000 tonnes per year of modified bitumen product, does not pose an unacceptable risk of impacts to public health or the environment. This determination is based on the following:

- the location of the premises being within the Kwinana Industrial Area and surrounded by major heavy industry with sufficient separation to sensitive human and environmental receptors; and
- the premises currently being used for the storage and transfer of hot bitumen products, and the proposal to produce modified bitumen products does not significantly increase the risk profile of existing activities on the premises.

To minimise the potential for impacts to human health and the environment, the applicant has proposed the following engineering controls, which will be imposed on the licence as they are critical for maintaining an acceptable level of risk:

- vapours from the heating and blending of bitumen products will be treated using a system comprising a KO pot and AC scrubber system, to remove VOCs and particulates and to reduce odour;
- emission points for air will be elevated at 4 m above ground level, to facilitate air dispersion; and
- all storage tanks and operational areas will be located within bunded concrete hardstand areas, where stormwater (and potentially contaminated stormwater) will be contained and treated where required, prior to discharge.

In addition, the applicant proposes to conduct stack monitoring at least once every 4,000 tonnes of production per mixing unit, to provide assurance over the performance of the AC scrubber and mixing units, and monthly sampling of water discharged to the infiltration basin, to provide assurance over the performance and effectiveness of the OWS.

The delegated officer is satisfied the above controls and monitoring lower the overall risk profile of the premises, and adequately addresses the potential for unacceptable impacts to public health and the environment.

8.1.1 Works approval compliance and licence

The delegated officer has reviewed the construction compliance and commissioning documentation relating to the Stage 1 works and is satisfied the works have been completed in accordance with the conditions of W6349.

A licence will therefore be granted to authorise ongoing operations, subject to controls determined by the delegated officer having regard to the adequacy of controls proposed by the applicant. The conditions of the issued licence will be set to give effect to the regulatory controls determined to be appropriate for the risk events listed in Table 7.

The conditions in the issued licence have been determined in accordance with the *Guidance Statement: Setting Conditions* (DER 2015).

The *Guidance Statement: Licence Duration* (DER 2016) has been applied and the issued licence expiry has been set to align with the term of the applicant's lease for the premises (25 years from 10/05/2016).

8.1.2 Applicant comments on draft decision

The applicant was provided with drafts of the licence and this report on 22 June 2022 and sought changes to the proposed controls for the discharge of treated water from the OWS. The delegated officer considered this and is satisfied the technology in place is sufficient for managing the risk of hydrocarbon-contaminated stormwater being discharged to the infiltration

basin, and that monthly monitoring can be undertaken to provide assurance over the performance and effectiveness of this system.

The delegated officer also notes the applicant's comment about including a note or provision in the licence where sampling of the OWS may not be possible in months with little or no rainfall, however if a sample is unable to be obtained for this reason, for all intents and purposes 'no result' will be considered a valid result and this should be recorded in the written log of monitoring results.

9. Conclusion

Based on this assessment, it has been determined that a licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

Daniel Hartnup
A/MANAGER, PROCESS INDUSTRIES
REGULATORY SERVICES

An officer delegated by the CEO under section 20 of the EP Act

References

1. CETEC Pty Ltd (CETEC) 2020, Airborne emissions from Puma Energy Bitumen Plant, Kwinana, WA, preliminary emissions assessment report for 360 Environmental Pty Ltd.
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. DER 2016, *Guidance Statement: Licence Duration*, Perth, Western Australia.
4. Department of Water and Environmental Regulation (DWER) 2019, *Draft Guideline: Air Emissions*, Perth, Western Australia.
5. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
6. Emission Assessments Pty Ltd 2021, Puma Energy – Regulatory Emission Monitoring 2021, report prepared for Puma Energy.