Government of Western Australia
Department of Environment Regulation

# Decision Document

## *Environmental Protection Act 1986,* Part V

## Proponent: Nufarm Australia Limited

## Licence: L6092/1972/11

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|---|---|
| **Registered office:** | 103-105 Pipe Road<br>Laverton North<br>VICTORIA 3026 |
| **ACN:** | 004 377 780 |
| **Premises address:** | Nufarm Australia Limited<br>1 Mason Road<br>KWINANA WA 6167<br>Being part Lot 51 on Diagram 46722 |
| **Issue date:** | Monday, 13 October 2014 |
| **Commencement date:** | Tuesday, 14 October 2014 |
| **Expiry date:** | Sunday, 13 October 2019 |

**Decision**

Based on the assessment detailed in this document the Department of Environment Regulation (DER), has decided to issue a licence. DER considers that in reaching this decision, it has taken into account all relevant considerations and legal requirements and that the Licence and its conditions will ensure that an appropriate level of environmental protection is provided.

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| Decision Document prepared by: | Richard Wilson<br>Licensing Officer |
| Decision Document authorised by: | Lauren Trott<br>A/Manager Licensing - Process Industries |

# Contents



# 1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986.* Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

# 2 Administrative summary

| Administrative details | | |
|---|---|---|
| Application type | Works Approval ☐<br>New Licence ☐<br>Licence amendment ☒<br>Works Approval amendment ☐ | |
| Activities that cause the premises to become prescribed premises | **Category number(s)**<br>32: Pesticides Manufacturing | **Assessed design capacity**<br>125,000 tonnes per annual period |
| Application verified<br>Application fee paid | Date: NA<br>Date: NA | |
| Works Approval has been complied with<br>Compliance Certificate received | Yes☐ No☐ N/A☒<br>Yes☐ No☐ N/A☒ | |
| Commercial-in-confidence claim | Yes☐ No☒ | |
| Commercial-in-confidence claim outcome | | |
| Is the proposal a Major Resource Project? | Yes☐ No☒ | |
| Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986*? | Yes☐ No☒ | Referral decision No:<br>Managed under Part V ☐<br>Assessed under Part IV ☐ |
| Is the proposal subject to Ministerial Conditions? | Yes☐ No☒ | Ministerial statement No:<br>EPA Report No: |
| Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the *Environmental Protection Act 1986*)? | Yes☐ No☒<br>Department of Water consulted Yes ☐ No ☒ | |
| Is the Premises within an Environmental Protection Policy (EPP) Area Yes☒ No☐<br>Environmental Protection (Kwinana) (Atmospheric waste) Policy 1999. | | |
| Is the Premises subject to any EPP requirements? Yes☐ No☒ | | |

# 3 Executive summary of proposal and assessment

Nufarm Australia Limited is a large herbicide and fungicide manufacturer located within the heavy industrial area of Kwinana. Nufarm Australia Limited has occupied the Kwinana premises since 1985, after purchasing the location from Chemical Industries Kwinana (CIK). Some contamination was present at the site at the time of purchase. The contamination of the soil includes herbicides 2, 4-D, 2, 4, 5- T and chlorinated phenols. The site is classified *possibly contaminated – investigation required* under the *Contaminated Sites Act 2003*.

Historically, CIK installed a Deep Well Injection System (DWI) to discharge wastewater into a confined Aquifer (Cockleshell Gully Coal Seam, a highly saline aquifer) at about 1.4km depth. When Nufarm Australia Limited took over the site, the use of the DWI for the discharge of wastewater continued, this included wastewater with a very high level of salts (as a result of the Trifluralin synthesis process).

Although geological and engineering studies previously indicated DWI to be a safe and acceptable method of disposal at the time, DWI is now considered an inappropriate method of discharge. Since 2003 Nufarm Australia Limited has done several reviews on alternative ways to treat the wastewater and also has been reducing the amount of wastewater and the pollutants that were previously disposed of down the DWI.

Nufarm Australia Limited made a commercial decision to cease the synthesis of Trifluralin and Diuron on the Kwinana Premises and therefore will decommission the DWI. The decommissioning of the DWI will not be immediate as Nufarm Australia Limited needs to make changes to the wastewater treatment and choose a more appropriate method of disposal of their wastewater.

This Licence is the successor to licence L6902/1972/10.

The licence has been amended as a result of works approval W5780 granted on 26 February 2015 and Works Approval W5853 granted on the 7 August 2015.

Works Approval W5780 was for the relocation of the Bipyridyls Formulation Plant (BIPs Plant) from the proponents premises in Welshpool to the premises located at 1 Mason Road in Kwinana Beach. Nufarm has decided to close the Welshpool premises and relocate the BF Plant to continue the production of BIPs at the Kwinana Beach premises.

The BIPs Plant had been in operation at the Welshpool premises for a long period of time (since 1988 to end of 2014) under licence L6153/1988/11. Works relating to W5780 are complete and the works approval is now closed.

Works approval W5853/2015/1 was granted on the 7 August 2015 and was for the installation of a wastewater treatment plant for the bi-product water from the esterification process. The treated water discharges to the stormwater treatment plant where it is treated again and then discharged to the infiltration pond on site. The wastewater will contain trace levels of:

- 2-ethyl hexanol (2-EH);
- 2,4-dichlorophenoxyacetic acid (2,4-D); and
- 2-methyl-4-chlorophenoxyacetic acid (MCPA).

Due to the wastewater having trace levels of these chemicals the licence has been updated to include monitoring for these chemicals both prior to discharge to the infiltration pond and during groundwater monitoring.

As this is a Licence amendment only the conditions or part conditions being amended have been reassessed. The amendments mainly pertain to the monitoring of potential contaminants, the removal of targets from the licence and removal of improvement conditions that DER considers have been complied with.

# 4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987*, and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

| **DECISION TABLE** | | | |
|---|---|---|---|
| **Works Approval / Licence section** | **Condition number W = Works Approval L= Licence** | **Justification (including risk description & decision methodology where relevant)** | **Reference documents** |
| **General Conditions** | Previously 1.2.2 | Emission Description<br>*Emission:* Contaminated stormwater flowing off site or into the environment.<br>*Impact:* Contamination of groundwater and/or soil.<br>*Controls*: All materials likely to contaminate stormwater are stored in sealed containers within buildings. Stormwater is collected from the sites hardstand areas and directed to a wastewater treatment plant.<br><br>Risk Assessment<br>*Consequence:* Insignificant<br>*Likelihood*: Unlikely<br>*Risk Rating:* Low<br><br>Regulatory Controls<br>General provisions of the *Environmental Protection 1986 Act*. Waste water is tested to ensure it is acceptable for discharging to the infiltration pond on site at discharge point L1. Licence condition 2.4.2 set the discharge limits for treated stormwater from L1.<br><br>Residual Risk<br>*Consequence:* Insignificant<br>*Likelihood*: Unlikely<br>*Risk Rating:* Low | |

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| **Works Approval / Licence section** | **Condition number W = Works Approval L= Licence** | **Justification (including risk description & decision methodology where relevant)** | **Reference documents** |
| **Point source emissions to air including monitoring** | L2.2.1 | **Operation**<br>The below risk assessment is for the BIPs plant only. This plant was assessed under works approval W5780 issued on 26 February 2015. Emissions from other sources on site have not been reassessed.<br><br><u>Emission Description: Normal Operation</u><br>*Emission:* Pyridine emissions from the process exiting through the stack under normal operating conditions i.e. scrubber operating as designed.<br><br>*Impact*: Nuisance odour from the pyridine effecting neighbouring businesses.<br><br>*Controls:* All waste gases from the processing area are treated by the packed bed scrubber which uses a 5-7% strength Phosphoric Acid solution and has a calculated efficiency of 99.4%. Pyridine in the waste gas will react with the Phosphoric Acid and any potential Paraquat and Diquat will readily be dissolved in the liquid of the scrubber resulting in little to no emissions.<br><br>Stack testing conducted on the BIPs plant when operating in Welshpool shows Pyridine emissions below detection level of 0.0083mg/$m^3$ and average concentrations of phosphoric acid of <0.62mg/$m^3$ and <0.13mg/$m^3$.<br><br>The concentration of the Phosphoric acid is checked daily and there are process safeguards such as interlocks which will ensure that if the scrubber pump fails the processes are stopped. Interlocks also ensure that the process is not able to operate if the scrubber is not functional. These controls are expected to result in very low level impacts occurring in most cases.<br><br>DER notes that there were no complaints received regarding the operation of the BIP plant at the previous location in Welshpool. Industrial receptors were located about 50m | Application supporting documentation |

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| | | from the old premises compared to about 100m on this site.<br><br>Risk Assessment<br>*Consequence:* Insignificant<br>*Likelihood*: Unlikely<br>*Risk Rating:* Low<br><br>Regulatory Controls<br>The licensee will be subject to the general provisions of the Act.<br><br>Residual Risk<br>*Consequence*: Insignificant<br>*Likelihood:* Unlikely<br>*Residual Risk Rating:* Low<br><br>Emission Description: Upset Operation<br>*Emission:* Scrubber for the BIPs plant malfunctioning resulting in potential emissions of Phosphoric Acid, Pyridine, Diquat and Paraquat.<br><br>*Impact:* Due to the chemical characteristics Diquat and Paraquat they will be dissolved in liquid in the reaction vessel and are unlikely to volatilise and be released during upset conditions. Pyridine could be emitted, however the concentration used within the processing area is not considered to be harmful to human health but may cause regional attention and localised impacts due to odour.<br><br>*Controls:* Nufarm controls any potential emissions with the use of the packed bed Phosphoric Acid scrubber. Nufarm checks the concentration of the Phosphoric acid daily and there are process safeguards with regards to the scrubber pump, which will ensure that as soon as the scrubber pump fails that the processes are stopped. The process is | |

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| | | automatically disabled if the scrubber is not functional.<br><br>Concentrations of pyridine during normal operations at the intake for the scrubber are expected to be between 0.007 and 0.023 mg/m$^3$. If additional loading from packaging stations and a safety factor is applied, the maximum concentration is expected to be 0.05 mg/m$^3$. The odour threshold of pyridine is quoted as 0.10 mg/m$^3$.<br><br>These controls are expected to result in very low level impacts occurring in most cases or emissions for a very short period of time due to the automatic safeguards in the system.<br><br>Risk Assessment<br>*Consequence:* Minor<br>*Likelihood*: Rare<br>*Risk Rating:* Low<br><br>Regulatory Controls<br>Condition L1.2.1 requires that the maintenance of the pollution control equipment is sufficient for the scrubber operation. The BIPs plant Emission point A7 (BI-SC-28) has been added to the licence as an authorised emission point.<br><br>Residual Risk<br>*Consequence*: Minor<br>*Likelihood:* Rare<br>*Residual Risk Rating:* Low | |

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| **Works Approval / Licence section** | **Condition number W = Works Approval L= Licence** | **Justification (including risk description & decision methodology where relevant)** | **Reference documents** |
| **Point Source Emissions to Groundwater** | Previously 2.3.3 | As per the risk assessment below condition 2.3.3 has been removed. This condition set both monthly and annual targets for emissions to groundwater through emission point G1: deep well injection (DWI) bore. Reporting for the 2014-2013 annual period shows that emissions are consistently below the monthly targets. The highest result recorded was 20 times lower than the monthly target.<br><br>Due to Nufarm Kwinana ceasing the production of Trifluralin and Diuron it was determined that DWI will no longer be required so the licence requires that all discharges via the DWI bore cease prior to 1 January 2016. This means there will be approximately 3-4 months of emissions to the DWI from the issuing of this amended licence. Given the amount of contaminants in waste water produced and there will only be 3-4 months of discharge it is unlikely there will be an impact from continuing to discharge to the DWI for this period of time.<br><br>Licence condition 2.3.2 places limits on the emissions from the DWI bore for the year.<br><br><u>Emission Description: Normal Operation</u><br>*Emission:* Trace levels of contaminants discharged to the DWI bore<br><br>*Impact*: Treated wastewater being injected into the confined aquifer. Which is highly saline and believed to discharge 10's of kilometres off the coast in an area of well mixed ocean.<br><br>*Controls:* The licensee treats water prior to discharge to the DWI bore and monitors the level of contaminants to ensure they are within the limits set within the licence. | |

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| | | Risk Assessment<br>*Consequence:* Insignificant<br>*Likelihood*: Unlikely<br>*Risk Rating:* Low<br><br>Regulatory Controls<br>The licence contains annual limits of contaminants discharged to the DWI bore. Due to Nufarm Kwinana ceasing the production of Trifluralin and Diuron it was determined that DWI will no longer be required so the licence requires that all discharges via the DWI bore cease prior to 1 January 2016.<br><br>The Licensee continues to be subject to the general provisions of the act.<br><br>Residual Risk<br>*Consequence*: Insignificant<br>*Likelihood:* Unlikely<br>*Residual Risk Rating:* Low | |
| **Point Source Emissions to Land** | 3.4.1<br>3.8.1 | **Operation**<br>Emission Description<br>*Emission:* Treated wastewater from the esterification process discharging to the existing infiltration pond from licensed emissions point L1.<br><br>*Impact:* waste water discharging from the premises and potentially contaminating soil and groundwater.<br><br>*Controls*: Water entering the treatment system is tested and will only be put through the system if it passes quality control requirements. If water does not meet quality control it is disposed of by a third party contractor. | |

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| **Works Approval / Licence section** | **Condition number W = Works Approval L= Licence** | **Justification (including risk description & decision methodology where relevant)** | **Reference documents** |
| | | Treated wastewater is sampled and analysed from the batch release tank on site to ensure it is below the required limits on the licence prior to its discharge to the stormwater treatment system. Where it will undergo further treatment and will be tested again to ensure it is within the limits specified in the licence.<br><br>If treated wastewater does not meet the specifications for discharge to the stormwater treatment system it will be pumped from the batch tanks into empty IBCs and stored in a quarantine area. An unusual incident report will be raised and an investigation carried out and a decision made to either pass the water back through the wastewater treatment system again or dispose of the water by a licensed third party contractor.<br><br>The licence limits for discharge to the environment have been set at 10 times the drinking water level outlined in the NHMRC, NRMMC (2011) Australian Drinking Water Guidelines these levels have previously been determined to be acceptable by DER. These guidelines do not specify a guideline level for 2-EH, however trials conducted by Nufarm show that the concentration of 2-EH in the discharge water is expected to be below detection limit (1mg/L).<br><br>Note DER has not re-assessed the applicability of current licence limits in this assessment.<br><br><u>Risk Assessment</u><br>*Consequence:* Insignificant<br>*Likelihood*: Possible<br>*Risk Rating:* Low<br><br><u>Regulatory Controls</u><br>Condition 3.3.1 has been updated to include the monitoring of 2-EH and MCPA prior to | |

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| | | discharge to L1 as there is a potential for trace quantities of these substances to pass through the wastewater treatment plant and stormwater treatment plant and be discharged to the infiltration pond.<br><br>Condition 3.4.1 has been updated to include 2-EH during groundwater monitoring.<br><br>Residual Risk<br>*Consequence*: Insignificant<br>*Likelihood:* Possible<br>*Residual Risk Rating:* Low | |
| **Fugitive emissions** | Previously 2.5.1 | The licence previously contained condition 2.5.1 that required the licensee to minimise dust emissions from the premises. As the activities on site are not considered particularly dusty this condition has been removed and can be regulated under the general provisions of the EP Act.<br><br>Emission Description<br>*Emission:* Dust emissions from the premises operations.<br>*Impact:* Nuisance dust impacts on neighbouring businesses and residences.<br>*Controls*: The site is located in an industrial complex and the nearest residence to the site is over 1.5km away.<br><br>The site does not use any materials that are likely to cause dust emissions with materials being appropriately contained and stored within buildings. The site is hardstand and is not likely to have dust lift off from outdoor areas. | |

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| **Works Approval / Licence section** | **Condition number W = Works Approval L= Licence** | **Justification (including risk description & decision methodology where relevant)** | **Reference documents** |
| | | Risk Assessment<br>*Consequence:* Insignificant<br>*Likelihood*: Unlikely<br>*Risk Rating:* Low<br><br>Regulatory Controls<br>General provisions of the *Environmental Protection 1986 Act*<br><br>Residual Risk<br>*Consequence:* Insignificant<br>*Likelihood*: Unlikely<br>*Risk Rating:* Low | |
| **Odour** | N/A | Pyridine is added to the process as a stenching agent. Pyridine emissions have been risk assessed under point source emissions to air above which considers odour. | |
| **Noise** | N/A | The Premises is located within the heavy industrial area of Kwinana. The proposal will not significantly add to the noise from this premises due to the fact that the main processes are inside a building. The *Environmental Protection (Noise) Regulations 1997* apply. | *Environmental Protection (Noise) Regulations 1997* |
| **Monitoring** | 3.5.1<br>3.8.1 | As per the point source emission to land section above, conditions 3.5.1 and 3.8.1 have been updated to ensure monitoring captures trace substances in treated wastewater being discharge to emission point L1, the infiltration pond. | |
| **Notification** | Part 5.3.1 | Part of condition 5.3.1 has been changed so under the licence the licensee is not required to notify DER of any failure or malfunction of any pollution control equipment or any incident, which has caused, is causing or may cause pollution. This is covered by the requirements under section 72 of the EP Act. | N/A |
| **Improvements** | Previously IR1 and IR2 | The requirements of improvement conditions IR1 and IR2 on the licence have been satisfied. These conditions have been removed. The information provided by IR1 and IR2 will be assessed by DER and licence amended if required. | N/A |
| **Licence Duration** | N/A | The licence duration has not been reassessed and has not changed. | N/A |

# 5 Advertisement and consultation table

| Date | Event | Comments received/Notes | How comments were taken into consideration |
|---|---|---|---|
| 08/09/2015 | Proponent sent a copy of draft instrument | No comments received | N/A |

# 6. Risk Assessment

*Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management*

### Table 1: Emissions Risk Matrix

| Likelihood | Consequence | | | | |
|---|---|---|---|---|---|
| | Insignificant | Minor | Moderate | Major | Severe |
| Almost Certain | Moderate | High | High | Extreme | Extreme |
| Likely | Moderate | Moderate | High | High | Extreme |
| Possible | Low | Moderate | Moderate | High | Extreme |
| Unlikely | Low | Moderate | Moderate | Moderate | High |
| Rare | Low | Low | Moderate | Moderate | High |