Government of Western Australia
Department of Water and Environmental Regulation

# Amendment Notice 2

| | |
|---|---|
| **Licence Number** | L5110/1988/10 |
| **Licence Holder** | Agnew Gold Mining Company Pty Ltd |
| **ACN** | 098 385 883 |
| **File Number:** | 2012/006874 |
| **Premises** | Lawlers Gold Mine<br>Legal description –<br>Mining tenements M36/91, M36/171, M36/208, M36/277, M36/622, L36/161, L36/162, G36/36, G36/37, G36/38, and G36/42<br>LEINSTER WA 6437 |
| **Date of Amendment** | 28/10/2019 |

**Amendment**

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the *Environmental Protection Act 1986* (EP Act), as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act.

Tim Gentle
Digitally signed by Tim Gentle
Date: 2019.10.28 14:23:34 +08'00'

**Tim Gentle**

**Manager, Resource Industries**

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

# Definitions and interpretation

## Definitions

In this Amendment Notice, the terms in Table 1 have the meanings defined.

**Table 1: Definitions**

| Term | Definition |
|---|---|
| CEO | means Chief Executive Officer.<br>CEO for the purposes of notification means:<br><br>Director General<br>Department Administering the *Environmental Protection Act 1986*<br>Locked Bag 10<br>JOONDALUP DC WA 6919<br>info@dwer.wa.gov.au |
| Department | means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act. |
| EP Act | means the *Environmental Protection Act 1986* (WA). |
| EP Regulations | means the *Environmental Protection Regulations 1987* (WA). |
| Irrigation Tank TK-108 | Final storage tank at the Waste Water Treatment Facility before treated liquor is piped to the irrigation area. |
| Licence Holder | refers to the occupier of the premises being the person to whom this Licence has been granted, as specified at the front of this Licence. |

# Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the Licence issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B(9) of the EP Act.

This notice is limited only to an amendment to include Category 54 onto the Licence. No changes to the aspects of the original licence have been made.

The following guidance statements have informed the decision made on this amendment:

- *Guidance Statement: Regulatory Principles* (July 2015)
- *Guidance Statement: Setting Conditions* (October 2015)
- *Guidance Statement: Decision Making* (February 2017)
- *Guidance Statement: Risk Assessment* (February 2017)

## Amendment description

Agnew Gold Mining Company Pty Ltd (The Licence Holder) has applied for an amendment to the Licence to include category 54: sewage facility. Assessment of the construction of the sewage facility was through Works Approval W6210/2019/1. Construction of the facility was completed in July 2019 and the compliance certificate was received by DWER on 18 July 2019.

The Licence will be amended to include the Agnew Waste Water Treatment Plant (WWTP) and the irrigation area as described in the Decision Report for W6210/2019/1. Standard conditions pertaining to the irrigation of treated wastewater onto lands will be included onto the licence.

## Background

Note, the incorrect Licence number was referenced during the assessment process. Licence number L4611/1987/11 was used as the reference for the assessment. L4611/1987/10 is Agnew Gold's second mine and separate from the Lawler Gold Mine – L5110/1988/10. The construction of the wastewater treatment plant was undertaken on mining tenement M36/171 and M36/27 which make up part of the prescribed premises for the Licence.

**Category 54 – Sewage facility**

The Agnew WWTP has been constructed to treat wastewater from the ablutions and other facilities at the nearby accommodation village. Wastewater from the camp is collected via buried piping in a wastewater pump station and pumped to the WWTP. The WWTP consists of a 200 kL sequencing batch reactor (SBR) system. The operation of the SBR system is described below:

**1. Filling of the reactor basin**

Raw wastewater, once collected by the gravity sewer system, is pumped to the WWTP via a duty/standby sewage pump system. The pumps remove large solids so that they do not cause blockages, wastewater is pumped into the plants Equalisation Tank sewage from the pump station after being processed by the inlet bar screen. The Equalisation tank also provides a buffer against peak inflows and provides a steady inflow into the SBR aeration tanks. Solids are sent to an off-site facility for disposal.

**2. Reaction phase**

An aerobic and anaerobic process occurs in SBR tanks where other micro-organisms, such as Zoogloea, Protozoas and Rotifers treat the wastewater. The anoxic period provide de-nitrification (nitrogen removal). The Aerobic period provides the biological oxidation of the

organic matter (BOD removal and nitrification).

**3. Settling phase**

The settling period allows for solids to settle in the base of the SBR tank.

**4. Decant phase**

The decant period is where clear liquor is decanted from the top of the SBR tank and discharged to the irrigation tank. The decant pumps are controlled based on time and the low level float switch located in the SBR tank.

**5. Idle phase**

During this phase, a small amount of activated sludge at the bottom of the SBR tank is pumped out (a process called wasting). Sludge is held in the sludge tank. The sludge is then drawn from the sludge storage tank, dosed with polymer (Coagulant) and transferred to the geobags for dewatering. The dry sludge cake from the geobag is removed from site or disposed to site landfill area. The supernatant from the dewatering area is collected by the return sump and transferred back to the WWTP for reprocessing. Overflowing supernatant from the sludge tank is transferred by gravity to underground sewage transfer station and pumped to the Equalisation tank.

**6. Dosing**

A sodium hypochlorite dosing pump is used to pump chlorine to the recirculation stream in the irrigation tank. An online chlorine analyser will provide a reading of chlorine levels in the irrigation tank. The chlorine will be stored in the 1000L sodium hypochlorite tank.

**7. Irrigation**

The Irrigation tank (TK-108) stores treated effluent and reverse osmosis (RO) reject water (brine waste). The RO plant is in the same facility as the WWTP. A maximum of 100$m^3$/day of brine waste (3099mg/L of total dissolved solids) is directed to the WWTP irrigation tank. The brine waste is diluted with a maximum of 200$m^3$/day of effluent. The preferred method of disposal is via buried dripper irrigation to the mining camp lawn and on wet days or if the area appears to be sufficiently watered, the treated effluent tank is discharge by pump to a 93,000$m^2$ (inclusive of a spray field buffer) spray field. The total maximum discharge to the irrigation area is approximately 300$m^3$/day (1164mg/L of total dissolved solids). The online chlorine analyser measures the chlorine levels in the tank. The chlorine analyser sends the reading directly to the chlorine dosing pump and will provide chlorine should it be required.

Effluent from the WWTP is treated to a secondary level of treatment (Category D) in accordance with Water Quality Protection Note 22 (WQPN 22) and complies with a Low Exposure Risk Level (level of human contact) in accordance with DoH, 2011, with effluent achieving the specifications detailed in Table 2 below.

| Analyte | Units | Value |
|---|---|---|
| Biochemical Oxygen Demand | mg/L | <20 |
| Total Suspended Solids | mg/L | <30 |
| Total Dissolved Solids | mg/L | <1164 |
| Total Nitrogen | mg/L | <40 |
| Total Phosphorus | mg/L | <8 |
| Chlorine Residual | mg/L | >0.2-2 |

| | | |
|---|---|---|
| pH | pH units | 6.5-8.5 |
| *E.coli* | cfu/100mL | <1000 |

**Table 2: Effluent average specifications**

The location of the WWTP and the irrigation area is shown in blue diagonal in diagram 1 below.


**Diagram 1: Agnew Gold WWTP and irrigation area**

## Amendment history

Table 2 provides the amendment history for L5110/1988/10.

**Table 2: Licence amendments**

| Instrument | Issued | Amendment |
|---|---|---|
| L5110/1988/10 | 12/06/2014 | Licence conversion to REFIRE format and licence transfer to Agnew Gold Mining Company Pty Ltd |
| L5110/1988/10 | 05/05/2016 | Licence amendment to transfer and remove tenements between this Licence L5110 and L4611/1987/11 |
| L5110/1988/10 | 23/05/2016 | Administrative amendment to correct errors in the Premises description, to correct the amount for volume of waste allowed in condition 1.2.1 and the frequency of landfill cover requirements in Table 1.2.4. |
| L5110/1988/10 | 02/03/2017 | Amendment Notice 1: Authorise landfill at Lawlers camp on G36/37. |
| L5110/1988/10 | 25/10/2019 | Amendment Notice 2: Include category 54: sewage facility and associated irrigation area to the licence. Construction of the sewage facility and irrigation area captured under W6210/2019/1. |

## Decision

The Licence will be amended to allow for the operation of the sewage facility and irrigation areas assessed in Works Approval W6210/2019/1. Conditions included in the licence are from the assessment process undertaken in W6210/2019/1.

## Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 11/20/2019. Comments received from the Licence Holder have been considered by the Delegated Officer as shown in Appendix 2.

## Amendment

1. Table 1.2.1 of condition 1.2.1 of the licence is amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in bold below:

| **Table 1.2.1: Management of waste** | | | |
|---|---|---|---|
| **Waste type** | **Waste Code** | **Process(es)** | **Process limits** [1,2] |
| Clean fill<br>Contaminated Solid Waste<br>Inert Waste Type 1<br>Inert Waste Type 2<br>Putrescibles<br>Contaminated Solid Waste<br>Special Waste Type 1 | N/A | Storage, handling and disposal of waste by landfilling | **<u>All waste types except sewage</u>**<br>No more than 1 100 tonnes per year of all waste types cumulatively shall be disposed of by landfilling.<br>Disposal of waste by landfilling shall only take place within the landfill area shown on the map of storage locations in Schedule 1.<br>Waste shall be placed in a defined trench, the active tipping area shall be restricted to a maximum linear length of 30 metres.<br>The separation distance between the base of the landfill and the highest groundwater level shall not be less than 3m.<br>Must meet the acceptance criteria for Class II landfills.<br>**<u>Asbestos Waste</u>**<br>Only to be disposed of into a designated asbestos disposal area within the landfill;<br>Not to be deposited within 2 m of the final tipping surface of the landfill; and<br>No works shall be carried out on that landfill that could lead to a release of asbestos fibres. |
| **Sewage – waste from the on-site sewerage system** | | **Storage, handling and disposal of treated water onto Lawlers irrigation area shown in Schedule 1: Irrigation Map** | **<u>Sewage Waste</u>**<br>**200m$^3$ per day.** |

2. Table 1.2.2 of condition 1.2.2 of the licence is amended by the insertion of the red text shown in bold below:

| Table 1.2.2: Containment infrastructure | | |
|---|---|---|
| **Vessel or compound** | **Material** | **Requirements** |
| TSF 3 (cell a and cell b) | Tailings and Treated Sewage Water from Lawlers Camps | Lined with 200mm of compacted clay, or 150mm of compacted clay and 1.5mm HDPE liner to achieve a permeability of $<10^{-9}$m/s or equivalent |
| Fairyland Turkey's Nest (TKN) | Mine dewater from Fairyland underground operations | Lined with 200mm of compacted clay, or 150mm of compacted clay and 1.5mm HDPE liner to achieve a permeability of $<10^{-9}$m/s or equivalent |
| Lawlers TKN | Decant water from TSF 3 | Lined with 200mm of compacted clay, or 150mm of compacted clay and 1.5mm HDPE liner to achieve a permeability of $<10^{-9}$m/s or equivalent |
| **Lawlers WWTP** | **Wastewater sourced from Lawlers accommodation camp and brine waste from the on-site Reverse Osmosis plant.** | **Storage and treatment containment infrastructure lined or constructed to achieve a permeability of at least $<10^{-9}$ m/s or equivalent** |

3. The Licence is amended by the insertion of the following Conditions:

1.2.10 The Licensee shall manage the wastewater treatment vessels such that:
(a) overtopping of the wastewater treatment vessels does not occur;
(b) stormwater runoff is prevented from entering the wastewater treatment vessels;
(c) there is no discernible seepage loss from the wastewater treatment vessels; and
(d) vegetation and floating debris (emergent or otherwise) is prevented from growing or accumulating in the wastewater treatment vessels.

1.2.11 The Licensee shall manage the irrigation area such that:
(a) treated wastewater is distributed evenly and there is no surface ponding of wastewaters;
(b) no run-off or discharge occurs beyond the boundary of the defined irrigation area; and
(c) an even covering of vegetation is maintained.

4. Table 2.2.1 of condition 2.2.1 of the licence is amended by the insertion of the red text shown in bold below:

| Table 2.2.1: Emissions to land | | |
|---|---|---|
| **Emission point reference** | **Description** | **Source including abatement** |
| Daisy Queen pit | Receiving environment – previously mined pit | Water from dewatering operations of Lawlers mine operations |
| **Lawlers Irrigation area** | **De-marked irrigation area** | **Treated wastewater from the Lawlers WWTP** |

5. The Licence is amended by the insertion of the following Condition and Table:

2.2.2 The Licensee shall target emissions to land at or below the levels specified in Table 2.2.2

| Table 2.2.2: Emission targets to land | | | |
|---|---|---|---|
| **Emission point reference** | **Parameter** | **Target (including units)** | **Averaging period** |
| Irrigation tank TK-108 | Biochemical Oxygen Demand | 20 mg/L | Spot sample |
| | Total Suspended Solids | 30 mg/L | |
| | Total Nitrogen | 40 mg/L | |
| | Total Phosphorus | 8 mg/L | |
| | pH | 6.5 – 8.5 | |
| | Escherichia coli | 1000 cfu/100mL | |

6. Table 3.3.1 of condition 3.3.1 of the licence is amended by the insertion of the red text shown in bold below:

| Table 3.3.1: Monitoring of inputs and outputs | | | | |
|---|---|---|---|---|
| **Input / Output** | **Parameter** | **Units** | **Averaging period** | **Frequency** |
| Mine dewatering discharged from the Fairyland pit to the Daisy Queen pit | Cumulative volume | KL | N/A | Quarterly[1] |
| **Treated wastewater from the Lawlers WWTP discharged to the Lawlers irrigation area** | **Cumulative volume** | **KL** | **N/A** | **Monthly** |

7. The Licence is amended by the insertion of the following Condition and Table.

3.4.6 The Licensee shall undertake the monitoring in Table 3.4.6 according to the specifications in that table.

| Table 3.4.6: Monitoring of emissions to land | | | | | |
|---|---|---|---|---|---|
| **Emission point** | **Monitoring point reference** | **Parameter** | **Units** | **Averaging Period** | **Frequency** |
| TK-108 | Irrigation tank | pH[1] | - | Spot Sample | Monthly |
| | | Biochemical Oxygen Demand | mg/L | | |
| | | Total Dissolved Solids (calculated from conductivity) | | | |
| | | Total Suspended Solids | | | |
| | | Nitrate+ Nitrite nitrogen | | | |
| | | Ammonium-nitrogen | | | |
| | | Total Nitrogen | | | |
| | | Total Phosphorus | | | |
| | | Escherichia coli. | cfu/100 mL | | |

Note 1: In-field non-NATA accredited analysis permitted.

8. The Licence is amended by the insertion of the following Map into Schedule 1: Maps.

**Map of Lawlers WWTP and Irrigation Area**

## Appendix 1: Key documents

| | Document title | In text ref | Availability |
|---|---|---|---|
| 1 | Licence L5110/1988/10 – Lawlers Gold Mine | L5110/1988/10 | accessed at www.dwer.wa.gov.au |
| 2 | Works Approval W6210/2019/1 – Lawlers WWTP | W6210/2019/1 | DWER records (A1789272) |
| 3 | Decision Report W6210/2019/1 – Lawlers WWTP | W5201/2012/1 | DWER records (A1789723) |
| 4 | DER, July 2015. *Guidance Statement: Regulatory Principles.* Department of Environment Regulation, Perth. | DER 2015a | accessed at www.dwer.wa.gov.au |
| 5 | DER, October 2015. *Guidance Statement: Setting Conditions.* Department of Environment Regulation, Perth. | DER 2015b | |
| 6 | DER, November 2016. *Guidance Statement: Risk Assessments*. Department of Environment Regulation, Perth. | DER 2016b | |
| 7 | DER, November 2016. *Guidance Statement: Decision Making*. Department of Environment Regulation, Perth. | DER 2016c | |

## Appendix 2: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Notice on 11/10/2019 for review and comment. The Licence Holder responded on 22/10/2019. No comments were submitted on the draft Amendment Notice.