

Amendment Report

Application for Licence Amendment

Part V Division 3 of the Environmental Protection Act 1986

Licence Number	L4611/1987/11
Licence Holder	Agnew Gold Mining Company Pty Ltd
ACN	098 385 883
File Number	2012/006836-1~8
Premises	Agnew Gold Mine
	Legal description –
	Mining tenements M36/27, M36/32, M36/53, M36/55, M36/65, M36/150, M36/174, M36/248, M36/314 and M36/450
	LEINSTER WA 6437
	As defined by the Premises maps attached to the Revised Licence.
Date of Report	7 September 2022
Decision	Revised licence granted

Christine Pustkuchen A/MANAGER RESOURCE INDUSTRIES REGULATORY SERVICES an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

Licence L4611/1987/11 is held by Agnew Gold Mining Company Pty Ltd (Licence Holder) for the Agnew Gold Mine (the Premises), located at mining tenements M36/27, M36/32, M36/53, M36/55, M36/65, M36/150, M36/174, M36/248, M36/314 and M36/450.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Revised Licence L4611/1987/11 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment 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.

2.2 Application summary

Agnew Gold Mining Pty Ltd (applicant, Licence Holder) currently holds Licence L4611/1987/11 for categories 5, 6 and 89 under Part V of the *Environmental Protection Act 1986* (EP Act). Agnew Gold Mine (premises) is located approximately 17 km south-west of Leinster.

On 12 July 2022, the Licance Holder submitted an application to the department to amend Licence L4611/1987/11 under section 59 and 59B of the EP Act.

This amendment is limited only to the following:

• Addition of Category 85 to the licence : The operation of four additional anaerobic wastewater treatment tanks (constructed under W657/2021/1) at the premises (category 85 activities) in addition to the existing wastewater treatment plant (WWTP) within the Waroonga site of the premises (mining tenement M36/53).

On 24 September 2021 Works Approval W657/2021/1 was granted. Additions to the Waroonga Biomax Facility were constructed and commissioned in accordance with the granted Works Approval. The Licence Holder submitted a Biomax Construction Compliance Report on 15 March 2022 to enable commencement of the 180-day Time Limited Operations (TLO) and to support the application to amend the Environmental Licence to include Category 85. The Department of Water and Environmental Regulation (The department) assessed compliance and determined that it met the requirements of conditions 1,2 and 3 of Works Approval W6572/2021/1.

The existing premises licence L4611/1987/11 does not include category 85, although the existing wastewater treatment facility is above the prescribed premises category threshold (>20kL/day). This amendment to Licence L4611/1987/11 is to include category 85 activities.

No changes to aspects of the existing licence relating to Category 5, 6 and 89 have been requested by the Licence Holder. Table 1 below outlines the proposed changes to the existing licence.

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
Category 5 – Processing or beneficiation of metallic or non-metallic ore	1,400,000 tonnes per annual period (tpa)		No change proposed.
Category 6 – Mine dewatering	2,000,000 tpa		No change proposed.
Category 85 – Sewage facility		80 cubic metres per day (m³/day)	Addition of this prescribed activity to licence L4661/1987/11.
Category 89 – Putrescible landfill site	4,000 tpa		No change proposed.

 Table 1: Proposed throughput capacity changes

2.3 Waroonga Biomax WWTP

The Waroonga Biomax WWTP was initially constructed and operated with a design capacity of 60 m³/day, without authorisation under an active Part V instrument. Works approval W6572/2021/1 was granted to authorise the expansion the infrastructure and increase the design capacity of the WWTP to 80 m³/day. Construction works were completed in March 2022.

The quality of treated wastewater was monitored at the irrigation spray field outlet. Monitoring results are summarised in Table 2. It was noted that total nitrogen (as N) and total dissolved solids (TDS) concentrations exceeded the performance criteria of <20 mg/L and <1,000 mg/L, respectively, as stated in works approval W6572/2021/1 (Figure 1).

TDS concentrations in treated wastewater is primarily dependent on the water salinity supplied to the camp for use. The department understands that the Licence Holder is investigating improvement at the premises, based on third-party investigation, following detection of elevated total nitrogen and TDS concentrations at the WWTP.

Nevertheless, the reported concentrations were compliant with typical effluent quality specified in the *National Water Quality Management Strategy – Australian Guidelines for Sewerage Systems* (ARMCANZ and ANZECC 1997). The Licence Holder has committed to continually monitoring total nitrogen concentrations to ensure they are below the upper limit of the ARMCANZ and ANZECC (1997) guideline limits and investigate potential operational improvements to reduce these concentrations (Jennings et al. 2022). Further, it was noted that the average volume of treated wastewater discharged at the irrigation spray field was 29 m³/day, which was lower than the authorised 80 m³/day capacity.

Department of Health (DoH) approval 221.20 was granted on 17 September 2021 for the modified WWTP and irrigation spray field.

	Microbi	ological			Inorga	anics			Nut	Nutrient	
Sample Date	Escherichia coli	Coliforms	рН	Biochemical Oxygen Demand	Total Suspended Solids	Total Dissolved Solids	Total Residual Chlorine	Free Chlorine	Total Nitrogen as N	Total Phosphorus as P	
Unit	CFU/100mL	CFU/100mL	pH unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
									-		
8/02/2022	290000		8.19	34	22	1180	<0.01	<0.01	57.6	14.2	
22/02/2022	~2		8.21	6	<5	1140	<0.01	<0.01	60.6	10.7	
10/03/2022	~<1		8.19	6	5	1320	0.15	<0.01	39.8	11.9	
5/04/2022	~<1		8.54	7	<5	1140	2.09	0.45	31	11.4	
11/04/2022	<1		8.4	5	<5	1240	1.75	0.21	36.6	8.41	
18/04/2022	<1		8.56	6	<5	1210	3.92	1.76	37.9	8.94	
25/04/2022	<1	<1	8.46	4	<5	1140	1.52	0.16	45.4	8.73	
5/05/2022	<1	<1	8.31	4	<5	1160	1.3	0.03	51.6	9.28	
9/05/2022	<1	<1	8.14	<2	<5	1120	0.75	0.01	4.2	8.3	
15/05/2022	<1	<1	8.43	4	<5	1120	1.65	0.16	47.1	9.02	
27/05/2022	<1	~1	8.3	5	<5	1080	1.15	0.03	36.3	7.6	
3/06/2022	<1	<1	8.27	4	<5	966	1.68	0.3	42.7	7.76	
6/06/2022	<1	<1	8.1	<2	<5	916	1.08	0.06	44.4	8.3	
13/06/2022	<1	<1	8.27	<2	<5	993	1.1	0.11	47.6	10.7	
19/06/2022	<1	<1	8.38	9	<5	983	2.08	0.37	42.3	11.3	
27/06/2022	<1	<1	8.12	5	<5	952	1.39	0.05	34.7	11.4	
4/07/2022	<1	<1	8.15	5	<5	953	1.46	0.09	38.5	7.86	
11/07/2022	110	~280	8.08	6	<5	974	0.06	< 0.01	46.3	8.45	
18/07/2022	<1	<1	8.04	6	<5	1060	11.3	8.3	34.5	9.1	
22/07/2022	<1	<1	8.33	4	<5	1010	0.7	0.1	39.2	10.2	
28/07/2022	<1	<1	8.47	2	<5	1110	1.46	0.1	34.7	10.2	
5/08/2022	<1	~<1	8.43	2	<5	1060	4.65	0.45	41.9	10.3	
										·	
MIN	<1	<1	8.04	2	<5	916	<0.01	<0.01	4.2	7.6	
MAX	29000	280	8.56	34	22	1320	11.3	8.3	60.6	14.2	
MEAN	1	18.4	8.3	6.1	5.8	1083	1.9	0.6	40.7	9.7	
ST.DEV		69.8	0.2	6.6	3.6	106.3	2.4	1.8	11	1.7	

Table 2: Waroonga Biomax WWTP monitoring results

Licence: L4611/1987/11

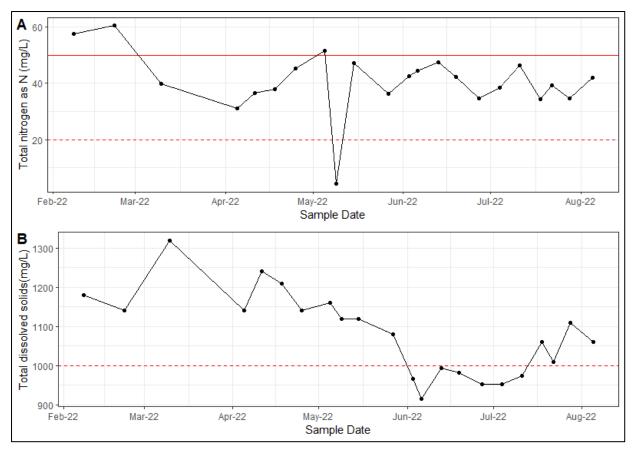


Figure 1: (A) Total nitrogen as N and (B) total dissolved solids concentrations of treated wastewater at Waroonga Biomax WWTP irrigation outlet.

Note: Red solid line denotes water quality requirement outlined in ARMCANZ and ANZECC (1997) and red dotted line denotes performance criterion outlined in works approval W6572/2021/1.

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 2020b).

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 Amendment Report are detailed in

below.

also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 3: Licence Holder proposed controls

Emission	Sources	Potential pathways	Proposed controls
Sewage Partially treated sewage Treated wastewater Treatment chemicals	Containment loss from WWTP and associated pipelines	Overland flow	 WWTP to be maintained and serviced adequately; Routine inspection; and Alarms to warn against potential loss of containment.
Treated wastewater	Discharge to irrigation spray field (4ha)	Discharge to land and potential overland flow	 WWTP to be maintained and service adequately to ensure water quality targets are achieved and maintained in the final treated wastewater; Monitoring of discharged treated wastewater; and Fence around irrigation area to be maintained.
Solid waste (Sludge)	Containment loss from WWTP and associated pipelines	Direct discharge and potential overland flow.	 Sludge is contained within sealed sludge tanks prior to removal by a licenced waste contractor (Goldfields controlled waste) for disposal to an appropriately authorised facility; and Any spills of sludge to be cleaned up immediately.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020b), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 4 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 2020a)).

Table 4: Sensitive	human and	environmental	receptors	and	distance	from	prescribed
activity							

Environmental receptors	Distance from prescribed activity
Native vegetation	Native vegetation comprises low Mulga Woodlands, with an understory of Acacia Shrubland. Remnant patches of native vegetation are present around the prescribed activity, particularly to the north and east.
Surface water bodies	A minor ephemeral creek line is located approximately 500 m to 550 m north-east of the WWTP and irrigation sprayfield.
	Topography
	Contours show elevation of 510m at the WWTP, Sprayfield and

	ephemeral creek line increasing to an elevation of 520 m to the east. Therefore, is it expected to be no flow outside of the irrigation area. The creek line is thought to flow from south to north, draining into Lake Miranda, 29 km north of the prescribed activity.				
Groundwater	<u>Groundwater depth:</u> Agnew Gold (2021) indicate in their supporting documentation that "Pre-mining groundwater levels across the AGM areas generally ranged from 20-30 mbgl, however water levels have been mounding in the vicinity of the tailings storage facility (TSF)". The TSF is ~1.4km south-west of the WWTP. Monitoring bores within the Waroonga precinct were reported with standing water levels ranging from 35.99 to 50.70metres below top of casing (mbTOC).				
	Groundwater quality:				
	The monitoring bores within the Waroonga precinct range indicate groundwater quality ranges from fresh to brackish. Elevated arsenic and weak acid dissociable cyanide are expected to occur in groundwater in the vicinity of the TSF.				
	Groundwater users:				
	No groundwater bore users aside from Agnew Gold Mining and other nearby mining operations, registered within 500m of prescribed premises boundary (Agnew Gold, 2021)				

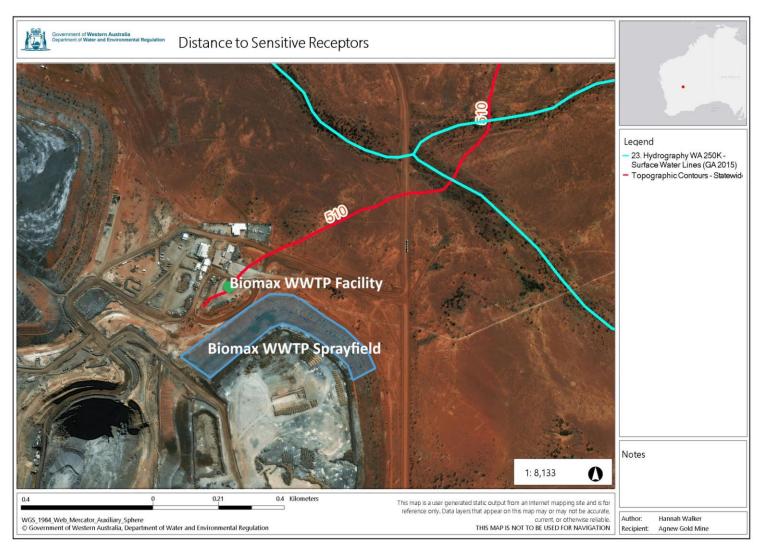


Figure 2: Distance to Sensitive Receptors

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3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020b) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are incomplete they have not been considered further in the risk assessment.

Where the Licence Holder 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 Licence Holder'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 Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 5.

The Revised Licence L4611/1987/11 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. WWTP.

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

Risk Event			Risk rating ¹			Justification for			
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	additional regulatory controls	
Operation (Category 85 ac	Operation (Category 85 activity)								
	Sewage Partially treated sewage	Pathway: Loss of containment, due to pipeline failure, spills or storage overflow	Remnant native vegetation Surface water bodies		C = Moderate L = Unlikely Medium Risk				
Operation of Waroonga Biomax WWTP	Treated wastewater Treatment chemicals	<i>Impact:</i> Discharge to land, resulting in impacts to ecological health	Groundwater	Refer to Section 3.1	C = Minor L = Rare Low Risk	Yes	Condition 1: Infrastructure and equipment requirement	The Delegated Officer considers the Licence Holder's controls to be sufficient to control sewage and wastewater emissions from impacting environmental receptors.	
	Solid waste (sludge)	Pathway: Loss of containment, due to pipeline failure, spills or storage overflow Impact: Discharge to land, resulting in impacts to ecological health	Remnant native vegetation Surface water bodies		C = Minor L = Unlikely Medium Risk				
Discharge of treated wastewater to irrigation sprayfield	Treated wastewater	Pathway: Irrigation at sprayfield Impact: Discharge to land, resulting in impacts to ecological health and subsurface environment	Remnant native vegetation Surface water bodies Groundwater	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Yes	Condition 10: Authorised discharge point Condition 11: Emission and discharge limit Condition 13: Monitoring at WWTP outlet Condition 14: Throughput monitoring	The Delegated Officer considers the Licence Holder's controls to be sufficient to control treated wastewater emissions from impacting environmental receptors.	

Table 5. Risk assessment of potential emissions and discharges from the Premises during operation

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments* (DWER 2020b). Note 2: Proposed Licence Holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

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4. Consultation

Table 6 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response
Shire of Leonora advised of proposal on 5 August 2022.	The Shire of Leonora responded on 22 August 2022 with no comments.	N/A
Licence Holder was provided with draft amendment on 6 September 2022.	Registered Business address changed to Level, 235 St Georges Terrace Perth WA 6000	Accepted.

5. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Licence be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

5.1 Summary of amendments

Table 7 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Condition no.	Proposed amendments
Cover page	Updated to include Category 85 in <i>Prescribed premises category description</i> table. Updated <i>Licence history</i> table.
All Conditions	Updated condition numbers and formatting to reflect current layout with additional conditions.
Condition 1	Added new condition and Table 1 for infrastructure and equipment requirements.
Condition 5	Removed 'treated wastewater from Biomax facility' from Table 4. Moved to Table 1.
Condition 10	Added Table 7 for authorised point source discharge to land.
Condition 11	Added new condition and Table 8 for emission and discharge limits.
Condition 13	Updated Table 9 to include WWTP outlet discharge point.
Condition 14	Updated Table 10 to include WWTP outlet.
Condition 22	Updated Table 12 specifications.
Condition 24	Updated Table 13 specifications.
Condition 27	Updated Table 14 specifications.

Definitions	Updated Table 15 to include definition for <i>E. coli</i> and WWTP.
Schedule 1: Maps	Updated figure numbering for Figure 2, 3 and 4 (replacing Figure 2A, 2B and 2C). Added Figure 6 for location of Waroonga Biomax WWTP.

References

- 1. Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) and Australian and New Zealand Environment and Conservation Council (ANZECC) 1997, *National Water Quality Management Strategy Australian Guidelines for Sewerage Systems Effluent Management*, Artarmon, New South Wales.
- 2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
- 3. Department of Water and Environmental Regulation (DWER) 2020a, *Guideline: Environmental Siting*, Perth, Western Australia.
- 4. DWER 2020b, *Guideline: Risk Assessments*, Perth, Western Australia.
- 5. Jennings M, Parnham T and Shelton A 2022, Agnew God Mine Time Limited Operations Environmental Compliance Report Works Approval W6572/2021/1, Perth, Western Australia.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)						
Application type						
Amendment to licence		Current licence number:	L4611/1987/11			
Amenament to licence	\boxtimes	Relevant works approval number:	W6572/2021/1	N/A		
Date application received						
Applicant and Premises details						
Applicant name/s (full legal name/s)		Agnew Gold Mining Company Pty Ltd				
Premises name		Agnew Gold Mine				
Premises location		Mining tenements M36/27, M36/32, M36/53 , M36/55, M36/65, M36/150, M36/174, M36/248, M36/314 and M36/450				
Local Government Authority	Scope of this amendment only involves the bolded tenement. Shire of Leonora					
Application documents	Shile of Leonora					
		2042/000820 4				
HPCM file reference number: 2012/006836-1						
Key application documents (additional to application form):		 Attachment 1A – Proof of Occupier Status Attachment 1B – ASIC Company Extract Attachment 1C – Authorisation to Act as Representative of the Occupier Attachment 2A – Prescribed premises map and inset Attachment 2B – Waroonga Biomax map Attachment 6A – Emissions and Discharges Attachment 8 – Cover Letter Attachment 10 – Proposed Fee Calculations 				
Scope of application/assessment						
Summary of proposed activities or changes to existing operations.		 <u>Licence amendment</u> Authorisation of Category 85 activity on licence L4611/1987/11; and Operation of the Waroonga Biomax WWTP. 				

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 5: Proessing or beneficiation of metallic or non- metallic ore	1,400,000 tonnes per annual period		No change proposed.
Category 6: Mine dewatering	2,000,000 tonnes per annual period		al No change proposed.
Category 85: Sewage facility	80 m	n³/day	N/A
Category 89: Putrescible landfill site	4,00	0 tonnes per annual period	No change proposed.
Legislative context and other approv	vals		
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 🗆 No 🖂	N/A
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?		Yes □ No ⊠	N/A
Has the proposal been referred and/or assessed under the EPBC Act?		Yes 🗆 No 🛛	N/A
Has the applicant demonstrated occupancy (proof of occupier status)?		Yes ⊠ No □	Mining lease / tenement: M36/53 Expiry: 21 September 2030
Has the applicant obtained all relevant planning approvals?		Yes □ No □ N/A ⊠	Premises is located on mining tenement and regulated under <i>Mining Act 1978</i> .
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?		Yes □ No ⊠	No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?		Yes 🗆 No 🖂	N/A
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?		Yes □ No ⊠	RIWI Act licence is not relevant to the scope of the amendment.

Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes 🛛 No 🗆	Name: Goldfields Groundwater Area Type: Proclaimed Groundwater Area
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes □ No ⊠	N/A
Is the Premises subject to any other Acts or subsidiary regulations (e.g. Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx)	Yes ⊠ No □	 Mining Act 1978 Environmental Protection (Unauthorised Discharge) Regulations 2004 Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974 Health (Miscellaneous Provisions) Act 1911
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes □ No ⊠	N/A
Is the Premises subject to any EPP requirements?	Yes □ No ⊠	N/A
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes ⊠ No □	Classification: Awaiting Classification Date of classification: N/A