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STATEMENT OF CLAIM

COURT DETAILS

Court	Supreme Court of New South Wales
Division	Common Law
List	Common Law General
Registry	Sydney
Case number	2026 / 44771

TITLE OF PROCEEDINGS

First plaintiff	**Frances Mary Retallack**
Number of plaintiffs	Three Refer to Party Details at rear for full list of parties
Defendant	**Cadia Holdings Pty Limited** **ACN 062 648 006**

FILING DETAILS

Filed for	**Frances Mary Retallack, Michael Leslie Retallack and Jann Maree Harries** Plaintiffs
Legal representative	Oliver Gayner, William Roberts Lawyers
Legal representative reference	702400245
Contact name and telephone	Oliver Gayner, 02 9552 2111
Contact email	WR-Cadia@williamroberts.com.au

TYPE OF CLAIM

Nuisance

Note: The proceedings are to be listed for an initial directions hearing in accordance with paragraph 15 of the Supreme Court of New South Wales General Practice Note 17

RELIEF CLAIMED

1 Damages.

2 Aggravated damages.

3 Exemplary damages.

4 Further or alternatively:

(a) an injunction to abate further nuisances; and

(b) further or alternatively, equitable damages in lieu of an injunction.

5 Interest.

6 Costs.

7 Such further or other relief at the Court thinks fit.

PLEADINGS AND PARTICULARS

A. INTRODUCTION

1 The plaintiffs and Group Members own, lease or occupy land in the area surrounding mining operations owned and operated by the defendant, known as the Cadia Valley Operations. Since at least 2019, Mine Dust, and since at least 2024, Mine Fluids, (each as defined below) emanating from the Cadia Valley Operations have contaminated the plaintiffs' and Group Members' land and the surrounding air, surface water and groundwater. Those materials are harmful to the environment, livestock and human health, including because they contain toxic heavy metals such as arsenic, chromium, copper, lead, manganese, and nickel, and may cause AMD (as defined below).

2 The plaintiffs and Group Members seek an injunction and damages for the loss and damage they have suffered, and continue to suffer, by reason of the contamination of their land and the surrounding air, surface water and groundwater. They also seek aggravated and/or exemplary damages by reason of the defendant knowingly and recklessly exposing them to the harmful effects of the contamination and taking retaliatory action against the first and second plaintiffs and some Group Members for investigating this class action.

B. PARTIES

3 This proceeding is commenced as a representative proceeding pursuant to Part 10 of the *Civil Procedure Act 2005* (NSW) (**CPA**) on behalf of the plaintiffs and all other persons who:

(a) at any time from 2 February 2020 to the date of this pleading, owned, leased or occupied land located in whole or in part within the area delineated by the red line on the map which is **Annexure A** to this Statement of Claim (the **Relevant Area**); and

(b) have suffered loss or damage by reason of:

i. the land they owned, leased or occupied being injured or interfered with as a result of the matters set out in this Statement of Claim; and/or

ii. the contamination of public waterways, groundwater and/or air as a result of the matters set out in this Statement of Claim; and

(c) are not any of the following:

i. the defendant;

ii. any subsidiaries of the defendant; or

iii. a Chief Justice, Justice or Registrar of the Supreme Court of New South Wales or the High Court of Australia,

(**Group Members**).

4 At the time of commencing this proceeding, there are seven or more Group Members who have claims against the defendant within the meaning of section 157 of the CPA. Not all Group Members are clients of the plaintiffs' solicitor.

5 The first and second plaintiffs:

(a) operate a farming business trading as Meadowvale Farm that sells sheep wool and meat, cattle, canola and wheat;

(b) since around 2002, the first plaintiff has owned the land at 484 Millamolong Road, Mandurama, New South Wales 2792 (**Meadowvale**), save for the part of that land identified by the folio identifiers 192/46505, 7004/1020283, 193/46505 and 7005/1020283, which the first plaintiff has leased since 2002;

(c) since around 2002 to around 2011, have resided at Meadowvale;

(d) since 2002, have used the land at Meadowvale to operate their farming business;

(e) since around 2010, have jointly owned the land at Millamolong Road, Mandurama, New South Wales 2792 known as Hazelwood (**Hazelwood**) and have used the land at Hazelwood to operate their farming business;

(f) since around 2011, have jointly owned and resided at the land at 425 Millamolong Road, Mandurama, New South Wales 2792 (**Millamolong**;

(g) since around 2011, have used the land at Millamolong to operate their farming business;

(h) since around 2019 to November 2025, have leased pastoral land from the defendant under grazing rights agreements with the defendant or its subsidiaries, including land known as Narambon South pursuant to a grazing rights agreement with Contango Agricultural Company Pty Ltd (a wholly owned subsidiary of the defendant) dated 19 February 2025 (**Narambon GRA**).

Particulars

i. Millamolong, Meadowvale, and Hazelwood are marked on the map which is **Annexure B**.

6 The third plaintiff:

(a) since approximately 1994, has resided at 64 Old Errowanbang Road, Errowanbang, New South Wales 2791 (**Old Errowanbang**);

(b) since approximately 2016, has been the registered proprietor of around 250 acres of Old Errowanbang;

(c) prior to approximately March 2014, provided labour hire and recruitment services to the defendant through a company called Minebiz Training Pty Ltd (**Minebiz**);

(d) since approximately March 2014, has used the land at Old Errowanbang to operate a cattle farming business through Minebiz.

Particulars

i. The third plaintiff's property is marked on the map which is **Annexure B**.

7 The defendant:

(a) is a company incorporated in Australia;

(b) is able to sue and be sued in its corporate name;

(c) at all times until on or about 6 November 2023, was a wholly owned subsidiary of Newcrest Mining Ltd;

(d) since on or about 6 November 2023, has been a wholly owned subsidiary of Newmont Corporation, a company listed on the New York Stock Exchange.

C. THE CADIA VALLEY OPERATIONS

8 At all material times, the defendant owned and operated the mining operations known as "Cadia Valley Operations", which are predominantly undertaken at the property marked on the map at **Annexure C**.

9 The main Cadia Valley Operations are located about 25 kilometres south-west of the city of Orange in the Central Tablelands region of New South Wales.

10 The Cadia Valley Operations include:

(a) the Cadia Hill Open Cut Pit (**Main Pit**), which commenced production in around 1998 and ceased production in around 2012;

(b) the Ridgeway Mine, which commenced production in approximately 2001 and has been in care and maintenance since around March 2016;

(c) the Cadia East Mine (**Cadia East**), which commenced production in approximately 2012, and is intended to continue production until 2031 or, if an extension is granted, until 2050;

(d) the ore processing plant;

(e) process water ponds and leachate ponds;

(f) the molybdenum plant, which commenced production in around 2022;

(g) the northern tailings storage facility and the southern tailings storage facility (**NTSF** and **STSF**, respectively);

(h) southern waste rock dump (**SWRD**);

(i) northern waste rock dump (**NWRD**), which ceased use in around 2005, and was subsequently enclosed and covered with various layers including topsoil and vegetation;

(j) Cadiangullong Dam;

(k) Upper Rodds Creek Dam;

(l) Lower Rodds Creek Dam (NTSF decant pond), which was created in around 2019 by damming the northern part of the NTSF; and

(m) other areas and facilities outside the main Cadia Valley Operations, including the Cadia dewatering facility at Blayney and the pipelines connecting it to the main operations.

11 Since around 2012, Cadia East has been an underground mine that primarily produces gold and copper, but also produces other commodities, such as molybdenum.

12 The Cadia East ore body is an alkalic porphyry gold-copper deposit, with distinctive sulfur isotopic zonation patterns.

Particulars

i. Wilson, Cooke et al, (2006), 'Sulfur isotopic zonation in the Cadia district, southeastern Australia: exploration significance and implications for the genesis of alkalic porphyry gold–copper deposits'.

13 At all material times, a process known as panel caving, which is a type of block caving, has been used at Cadia East.

14 Panel caving at Cadia East involves:

(a) fracturing of ore and host rock under controlled conditions (including drilling, fracking, and blasting), which in turn results in caving and subsidence of the overlying host rock;

(b) removing the caved ore and host rock from the panel by vehicles;

(c) transferring the caved ore and host rock to underground crushing stations;

(d) transporting the crushed ore and rock to the surface by conveyors.

Particulars

i. Statement of Agreed Facts dated 18 January 2024 (Environment Protection Authority v Cadia Holdings Pty Ltd, NSW Land and Environment Court, 2023/323614) (**SOAF**), [5].

15 The panel caves at Cadia East extend up to around 1.2 to 1.4 kilometres below the surface.

16 The defendant uses and has used chemicals and reagents in its operations, including:

(a) in the production of crushed ore during panel caving described at paragraph 14;

(b) in some or all of the processes used to extract valuable metals (such as gold, copper and molybdenum) from crushed ore; and

(c) in the management of Tailings (as defined in paragraph 42 below),

(**Processing Chemicals**).

17 The Processing Chemicals include the following:

(a) lime;

(b) caustic soda;

(c) collectors, including primary collectors (containing thiocarbamate), secondary collectors (containing dithiophosphinate), and tertiary collectors (containing xanthates);

(d) emulsified diesel;

(e) sodium hydrosulfide;

(f) sodium hypochlorite;

(g) defoaming agents;

(h) flocculants;

(i) promoters;

(j) frothers;

(k) antiscalants;

(l) copper depressants;

(m) sulfuric acid;

(n) fire-fighting foams;

(o) drilling fluids;

(p) ammonium nitrate fuel oil; and

(q) dust suppressants.

Particulars

i. Newcrest Mining, 'Cadia Valley Operations, Processing Rate Modification – Environmental Assessment' (March 2015) Section 2.4.1 (Process Consumables).

ii. Newmont Corporation, 'Technical Report Summary – Cadia Valley Operations' (February 2024) Section 14.5.3 (Process Consumables).

18 Some of the Processing Chemicals contain or are comprised of per- and poly-fluoroalkyl substances (**PFAS**).

D. NATURAL FEATURES OF THE RELEVANT AREA

D.1 General features

19 Land in the Relevant Area north of the Belubula River, which includes the Cadia Valley Operations, slopes southward towards the Belubula River, falling from about 1,000 metres with respect to the Australian Height Datum (**mAHD**) at or near the northern boundary of the Cadia Valley Operations, down to about 600 metres mAHD at or near its southern boundary, and lower at the Belubula River.

D.2 Hydrology

20 The Relevant Area is within the Lachlan River Catchment in the Murray-Darling Basin. The lowland catchment of the Lachlan River is designated as an Endangered Ecological Community under the *Fisheries Management Act 1994* (NSW).

21 The Relevant Area contains waterways, including:

(a) the Belubula River, which is located to the south of the Cadia Valley Operations and flows in a westerly direction before joining the Lachlan River;

(b) Flyers Creek, which is located along the eastern boundary of the Cadia Valley Operations and flows in a southerly direction into the Belubula River;

(c) Cadiangullong Creek, which is located along the western boundary of the Cadia Valley Operations and flows in a southerly direction into the Belubula River;

(d) Swallow Creek, which is located to the west of Cadiangullong Creek and flows in a southerly direction into the Belubula River.

Particulars

i. A map of the hydrogeological features of the Relevant Area is **Annexure D** to this Statement of Claim, which is sourced from the 'EIS Roundtable Session Groundwater Presentation July 2025' available on the Newmont Corporation's website.

22 The tributaries flowing into Cadiangullong Creek include:

(a) Copper Gully Creek, which intersects with the Main Pit; and

(b) Rodds Creek, which intersects with the NTSF and STSF.

23 Water from Cadiangullong Dam is released into Cadiangullong Creek.

D.3 Geology and Hydrogeology

24 Groundwater flow may occur through fractured rock (including fault lines) or unfractured rock.

25 The Relevant Area is underlain by groundwater resources including:

(a) the Orange Basalt Aquifer Source; and

(b) groundwater associated with the Lachlan Fold Belt Groundwater Source.

26 The Relevant Area is located within the eastern Lachlan Fold Belt.

27 The dominant regional structures in the Lachlan Fold Belt are a series of generally north striking faults and related splays.

28 The Werribee Fault (also known as the Cadiangullong Fault):

(a) is north to north-northeast trending;

(b) intersects with the Belubula River;

(c) intersects the western margin of the STSF and slightly to the west of the NTSF;

(d) extends north between the SWRD and Cadiangullong Creek; and

(e) skirts the western boundary of the Main Pit.

29 The Werribee Fault is comprised of fractured rock with apertures that may act as conduits for groundwater flow.

30 The Warrengong Fault:

(a) is a near vertical structure located to the east of the Cadia East deposit;

(b) is north to south trending;

(c) intersects with Flyers Creek south of the Cadia Valley Operations;

(d) intersects with the Belubula River near Burnt Yards Road Bridge; and

(e) intersects with the eastern boundary of Cadia Vally Operations, including the NTSF, and passes nearby Rodds Creek, the STSF and the Upper and Lower Rodds Creek Dams.

Particulars

i. A map showing geological features in the Relevant Area is **Annexure D** to this Statement of Claim, which is sourced from the 'EIS Roundtable Session Groundwater Presentation July 2025' available on Newmont Corporation's website.

31 The Warrengong Fault is comprised of fractured rock with apertures that may act as conduits for groundwater flow.

32 Groundwater and surface water in the Relevant Area are hydraulically interconnected, with groundwater contributing to surface water systems through seepage and/or flow pathways including but not limited to fault zones.

33 Cadiangullong Creek has connectivity with groundwater over at least some of its length.

34 Flyers Creek has connectivity with groundwater over at least some of its length.

35 The Belubula River has significant connectivity with groundwater which causes an increase in flow in the sections of the Belubula River upstream of Canowindra, including all of the sections of the Belubula River that flow through the Relevant Area.

E. WATER AND LAND USE IN THE RELEVANT AREA

36 Since at least the early 1800s, land in the Relevant Area has been used for residential and agricultural purposes (**Land Usages**).

Particulars

i. The first and second plaintiffs' properties have been continually used for agricultural purposes since the 19th century, with Millamolong having been used for such a purpose since around the 1830s.

ii. The third plaintiff's property has been continually used for agricultural purposes since around 1826.

37 Since around 1973, land in the Relevant Area surrounding the Cadia Valley Operations has been zoned for agricultural and residential purposes.

38 Land in the Relevant Area has historically been suited to agricultural uses due to its clean air and access to clean water from the Lachlan River Catchment and aquifers, including the Orange Basalt Aquifer Source and the Lachlan Belt Groundwater Source.

39 At all material times, rain water in the Relevant Area is and has been used (including by the plaintiffs and Group Members) for uses including:

(a) drinking, particularly in the case of properties that are not connected to town water and rely on rainwater collected from gutters and roofs into rainwater tanks;

(b) domestic purposes (including cooking, bathing, showering, washing, and cleaning);

(c) gardening and other domestic irrigation purposes (including domestic fruit and/or vegetable gardens); and

(d) watering of livestock,

(together, the **Rain Water Usages**).

Particulars

i. The plaintiffs and some Group Members have rainwater tanks at their properties that are used for the Rain Water Usages.

40 At all material times, surface water in the Relevant Area, including the water in public waterways (including creeks and rivers) and dams is and has been used (including by the plaintiffs and Group Members) for:

(a) watering of livestock, including sheep and cattle;

(b) irrigation of crops;

(c) gardening and other domestic irrigation purposes;

(d) fishing;

(e) swimming; and

(f) recreational purposes,

(together, the **Surface Water Usages**).

Particulars

i. The first and second plaintiffs' properties:

A. are connected to the Belubula River which is used for Surface Water Usages including (a), (c), (d), (e) and (f) above; and

B. have dams which are used for Surface Water Usages including (a), (b), (c), (d), (e), and (f) above.

ii. The third plaintiff's property:

A. is connected to Flyers Creek which is used for Surface Water Usages including (a), (c) and (d) above; and

B. has dams which are used for Surface Water Usages including (a) and (b) above.

iii. Some Group Members' properties are connected to the Belubula River, Flyers Creek and/or Cadiangullong Creek

and/or have dams which are used for one or more of the Surface Water Usages. Further particulars will be provided after the initial trial of the plaintiffs' claims.

41 At all material times, groundwater in the Relevant Area is and has been used (including by the first and second plaintiffs and Group Members) for:

(a) watering of livestock, including sheep and cattle;

(b) irrigation of crops; and

(c) gardening and other domestic irrigation purposes,

(*together, the* **Groundwater Usages**).

Particulars

i. The first and second plaintiffs and some Group Members have private bores on their land which draw or used to draw water from groundwater in the Relevant Area for Groundwater Usages. The first and second plaintiffs' bores are used for Groundwater Usages (a), (b), and (c) above.

F. WASTE MATERIALS PRODUCED BY THE CADIA VALLEY OPERATIONS

F.1 Tailings

42 At all material times, the Cadia Valley Operations produced and continue to produce, waste material known as tailings (**Tailings**), including through the extraction process referred to in paragraphs 13 to 14 above and the processes used to extract valuable metals (such as gold, copper and molybdenum) from crushed ore.

43 Tailings comprise about 98% by weight of the material produced at the Cadia Valley Operations.

44 Tailings are ordinarily produced in slurry form consisting of a mixture of fine mineral particulars, water, and other liquids.

45 Tailings produced at the Cadia Valley Operations contain (amongst other things) material quantities of some or all of the following:

(a) heavy metals or metalloids (**Heavy Metals**), including:

i. aluminium;

ii. antimony;

iii. arsenic;

iv. barium;

v. cadmium;

vi. chromium;

vii. cobalt;

viii. copper;

ix. iron;

x. lead;

xi. manganese;

xii. mercury;

xiii. molybdenum;

xiv. nickel;

xv. selenium;

xvi. strontium;

xvii. vanadium; and

xviii. zinc.

(b) waste rock minerals, including sulfide-bearing minerals such as pyrite, chalcopyrite and bornite, and other minerals such as fluoride, chloride, calcium, magnesium, sodium, potassium (**Waste Rock Minerals**);

(c) Processing Chemicals.

Particulars

i. Serinus, 'Tailings dust environmental health assessment and monitoring study review: Cadia Valley Operations' (Final Report, 2 July 2021).

46 Since around 1998, Tailings have been stored in the NTSF.

47 Since around 2002, Tailings have been stored in the STSF.

48 Since around 1996, waste rock (including Waste Rock Minerals) have been stored in the NWRD and SWRD.

49 Since around May 2018, Tailings have been deposited in the Main Pit.

F.2 AMD

50 Acid mine drainage (**AMD**) is a process whereby acidic and metal-rich water is generated as a result of the oxidation of sulfide-bearing minerals associated with mining, such as the pyrite, chalcopyrite and bornite contained in the Waste Rock Minerals produced by the Cadia Valley Operations.

Particulars

i. The term AMD as pleaded in this Statement of Claim includes:

A. acidic drainage (pH <5), where sulfide oxidation exceeds neutralisation capacity;

B. neutral mine drainage, where sulfide oxidation occurs but is buffered by carbonate or silicate minerals, resulting in circumneutral pH combined with elevated sulfate and dissolved metals; and

C. saline or metalliferous drainage, characterised by high total dissolved solids and metal/metalloid concentrations under neutral or alkaline pH.

51 Since a date presently unknown by the plaintiffs, but no later than approximately 2024, AMD has been occurring at Cadia Valley Operations and in surrounding waterways.

52 Water affected by AMD:

(a) will typically be highly acidic (ph <5) unless sufficient buffering occurs;

(b) will dissolve and carry with it one or more of the Heavy Metals (including where those contaminants are naturally present in rock);

(c) may precipitate or adsorb one or more of the Heavy Metals in solid form as subsequent processes along the flow path neutralise the acidity and/or take some or all of the Heavy Metals out of solution;

(d) can cause severe impacts on water quality due to the acidity of the water, the presence of Heavy Metals, loss of aquatic and terrestrial biodiversity, degradation of soil and vegetation and long-term contamination of groundwater and surface water systems.

F.3 Mine Dust

53 At all material times, mining and ore processing at the Cadia Valley Operations produced, and continues to produce, particulate matter (**Mine Dust**).

54 Mine Dust is capable of becoming airborne by the operation of wind or other force.

55 Mine Dust contains one or more of the following:

(a) respirable crystalline silica (**Silica**);

(b) Heavy Metals;

(c) Waste Rock Minerals that may subsequently cause AMD; and

(d) other Tailings material.

Particulars

i. SOAF, [15], [32]-[34], [40], [44], [54].

ii. Zephyr Environmental Pty Ltd, 'Cadia Valley Operations Independent Air Quality Audit' (11 August 2022) (**Zephyr Report**).

F.4 Mine Waste Fluids

56 At all material times, mining and ore processing at the Cadia Valley Operations produced, and continues to produce, waste in a fluid or liquid form (**Mine Fluids**).

Particulars

i. Mine Fluids include fluids used in the process referred to at paragraph 14(a) above, mine process water, including process water from the dewatering facility in Blayney, and leachate from tailings.

57 Mine Fluids contain one or more of the following:

(a) Heavy Metals;

(b) Waste Rock Minerals;

(c) Processing Chemicals;

(d) nitrates or other nitrogen compounds;

(e) PFAS.

58 Further, Mine Fluids contain:

(a) water affected by AMD; and/or

(b) when in surface water, Waste Rock Minerals that may subsequently cause AMD.

59 Since a date which is presently unknown to the plaintiffs, but no later than 2019, Mine Fluids have been recorded in surface water at the Cadia Valley Operations, including the Main Pit, Upper Rodds Creek Dam, and Lower Rodds Creek Dam.

Particulars

i. Since around May 2018, Tailings have been deposited in the Main Pit.

ii. Since at least 2019, mine process water has been recycled from the Tailings storage facilities, and as part of this process has been stored in the Upper Rodds Creek Dam.

iii. Since at least 2019, mine process water that contains one or more of the Processing Chemicals has been pumped into the Tailings storage facilities including Lower Rodds Creek Dam.

iv. Since at least 2019, Mine Fluids have been recorded in surface water monitoring at the Cadia Valley Operations, including material exceedances of the relevant guideline values for one or more of the Heavy Metals:

A. "Cadia Valley Operations Annual Environmental Management Report 2019-2020" (Appendix 1: Surface and Groundwater Assessment, by GHD);

B. "Cadia Valley Operations Annual Environmental Management Report 2020-2021" (Appendix 7: Surface Water Assessment, by GHD);

C. "Cadia Valley Operations Annual Review 2021-2022" (Appendix 4: Surface Water Assessment, by GHD);

D. "Cadia Valley Operations Annual Review 2022-2023" (Appendix 3: Surface Water Assessment, by GHD);

E. "Cadia Valley Operations Annual Review 2023-2024" (Appendix 4: Surface Water Assessment, by Engeny); and

F. "Cadia Valley Operations Annual Review 2024-2025" (Appendix 8: Surface Water and Groundwater Assessment, by Engeny).

v. Since at least 2024, PFAS have been recorded in surface water monitoring at the Cadia Valley Operations, including material exceedances of the relevant guideline values:

A. "Cadia Valley Operations Annual Review 2024-2025" (Appendix 8: Surface Water and Groundwater Assessment, by Engeny).

vi. Further particulars may be provided after discovery and the service of evidence.

60 Since a date which is presently unknown to the plaintiffs, but no later than 2019, Mine Fluids have permeated the groundwater beneath the Cadia Valley Operations.

Particulars

i. Since at least 2019, Tailings leachate has seeped from the Tailings storage facilities including the NTSF, STSF and Main Pit.

ii. Since at least 2019, Mine Fluids have been recorded in groundwater monitoring bores at or near the Cadia Valley Operations, including material exceedances of the relevant guideline values for one or more of the Heavy Metals:

A. "Cadia Valley Operations Annual Environmental Management Report 2019-2020" (Appendix 1: Surface and Groundwater Assessment, by GHD);

B. "Cadia Valley Operations Annual Environmental Management Report 2020-2021" (Appendix 8: Annual Groundwater Monitoring Review, by AGE);

C. "Cadia Valley Operations Annual Review 2021-2022" (Appendix 5: Annual Groundwater Monitoring Review, by AGE);

D. "Cadia Valley Operations Annual Review 2022-2023" (Appendix 4: Annual Groundwater Monitoring Review, by AGE);

E. "Cadia Valley Operations Annual Review 2023-2024" (Appendix 3: Annual Groundwater Monitoring Review, by AGE); and

F. "Cadia Valley Operations Annual Review 2024-2025" (Appendix 8: Surface Water and Groundwater Assessment, by Engeny).

iii. Since at least 2024, PFAS have been recorded in groundwater monitoring bores at or near the Cadia Valley Operations, including material exceedances of the relevant guideline values.

A. "Cadia Valley Operations Annual Review 2024-2025" (Appendix 8: Surface Water and Groundwater Assessment, by Engeny).

iv. Further particulars may be provided after discovery and the service of evidence.

G. RELEASE OF WASTE MATERIALS OUTSIDE OF MINE BOUNDARIES

G.1 Mine Dust emissions

G.2 Mine Dust emissions from Ventilation Rises

61 The process of panel caving pleaded at paragraphs 13 to 16 above produces large amounts of Mine Dust which needs to be extracted from the underground mine site at Cadia East.

62 At all material times, Cadia East has had a ventilation system that includes vertical intake and exhaust shafts that extend from underground to the surface (**Ventilation Rises**).

63 The following Ventilation Rises have been installed at Cadia East:

(a) VR31 and VR51, which are exhaust rises that were commissioned in 2010 and are operated with underground fans;

(b) VR71, which is an exhaust rise that was commissioned in 2011 and is operated with underground fans;

(c) VR81, also known as VR8 or VR8-1, which is an exhaust rise that was initially commissioned in 2011 and operated with underground fans;

(d) VR121 and VR122, which were initially commissioned in 2019 and operated as exhaust fans, but changed to an intake location in December 2020.

Particulars

i. An aerial image depicting the location of the ventilation rises for Cadia East is at **Annexure E** to this Statement of Claim.

64 The Ventilation Rises at Cadia East expel air and Mine Dust from the underground mine into the atmosphere above ground.

Particulars

i. SOAF, [12].

65 In around December 2020, the defendant removed the underground axial fans at VR81 and replaced those fans with three large centrifugal surface fans (**Surface Fans**) to increase airflow and ventilate a larger underground area.

Particulars

i. SOAF, [29].

66 After the Surface Fans were fully commissioned in around February 2021, there was a significant increase in Mine Dust emissions from VR81.

Particulars

i. SOAF, [34], [40], [44].

G.3 Mine Dust emissions from tailings facilities

67 In around March 2018, there was a collapse of the southern wall of the NTSF (**NTSF Failure**).

68 In around 2018, after the NTSF Failure, the defendant ceased depositing tailings in the NTSF.

69 In around 2018, the defendant ceased regularly depositing tailings in the STSF.

70 From around 2019, the surface of the tailings stored in the NTSF and STSF dried out and some of the tailings on the surface became airborne in the form of Mine Dust.

71 From around late 2019, there was a significant increase in Mine Dust from the NTSF and STSF.

G.4 Mine Dust travel

72 Mine Dust from the sources pleaded at paragraphs 64, 66, 70 and 71 above:

(a) has regularly travelled and continues to travel through the air beyond the mine boundaries up to at least 17 kilometres from the centre of the Cadia Valley Operations;

(b) has regularly travelled and continues to travel through the air across the Relevant Area including on occasions in the form of visible dust plumes or clouds; and

(c) has regularly deposited and continues to deposit on surface water and land in the Relevant Area, including on plaintiffs' and Group Members' properties and

on roofs, gutters, and other locations where the dust can run off into rainwater tanks.

Particulars

i. Dust plumes or clouds emanating from the Cadia Valley Operations have been witnessed by local residents on a regular basis since around 2013, including on 18-19 March 2018, 24 February 2019, 6 September 2019, 12 February 2021, 5 January 2022, 1 March 2022, 19 April 2022, 26 September 2022, 13 October 2022, 31 October 2022, 2-3 and 12-13 November 2022, 9 January 2023, 4 February 2023, 20 March 2023, 22-25 May 2023, 15 March 2024, and 18 April 2025.

ii. Images of dust plumes or clouds travelling over land owned, leased or occupied by the plaintiffs and/or Group Members are reproduced at **Annexure F.**

iii. The substances present in dust samples taken from the plaintiffs' properties are consistent with the dust having originated from the Cadia Valley Operations.

iv. In respect of the first and second plaintiffs' properties, see **Annexure H** which contains a schedule of the highest concentrations of each contaminant detected by sampling and laboratory testing at specified locations at their properties.

v. In respect of the third plaintiff's property, see **Annexure I** which contains a schedule of the highest concentrations of each contaminant detected by sampling and laboratory testing at specified locations at her property.

vi. Further particulars may be provided after discovery and the service of evidence.

G.5 Mine Fluids emissions

73 Since a date which is presently unknown to the plaintiffs, but no later than 2024, Mine Fluids have left, and continue to leave, the boundaries of the Cadia Valley Operations by:

(a) permeating the groundwater beneath the Cadia Valley Operations and flowing with that groundwater beyond the boundaries of the Cadia Valley Operations; and/or

(b) flowing into and through the surface waterways that run through or adjacent to the Cadia Valley Operations, including Flyers Creek, Cadiangullong Creek, Copper Gully Creek, Rodds Creek and connecting waterways.

Particulars

i. Paragraphs 24 to 35 and 56 to 60 above are repeated.

ii. Since at least 2024, Mine Fluids, including Heavy Metals and PFAS, have been recorded in groundwater monitoring bores located outside the boundaries of the Cadia Valley Operations as pleaded at paragraph 74 below.

iii. Since at least 2024, Mine Fluids have been detected and observed in waterways outside the boundaries of the Cadia Valley Operations as pleaded at paragraph 74 below.

iv. Further particulars may be provided after discovery and the service of evidence.

74 Mine Fluids that have left the boundaries of the Cadia Valley Operations have spread, and will continue to spread, throughout groundwater and surface waterways within the Relevant Area by:

(a) flowing with the groundwater and being transmitted to surface waterways, including Flyers Creek, Cadiangullong Creek, and the Belubula River, through ground to surface water connectivity, including through unfractured rock, fractured rock, and fault lines such as the Werribee Fault and the Warrengong Fault; and/or

(b) flowing through waterways that connect to Flyers Creek, Cadiangullong Creek, and the Belubula River.

Particulars

i. Paragraphs 20 to 35 and 56 to 60 above are repeated.

ii. Since at least 2024, material exceedances of the relevant guideline values for one or more of the Heavy Metals, for PFAS, for sulfates, for total dissolved solids (**TDS**) and other values have been recorded in groundwater monitoring bores in

the Relevant Area outside the boundaries of the Cadia Valley Operations:

A. "Cadia Valley Operations Annual Review 2023-2024" (Appendix 3: Annual Groundwater Monitoring Review, by AGE); and

B. "Cadia Valley Operations Annual Review 2024-2025" (Appendix 8: Surface Water and Groundwater Assessment, by Engeny).

iii. Since at least 2024, Mine Fluids containing Heavy Metals, PFAS and hydrocarbons, have been detected in waterways in the Relevant Area, including in Flyers Creek, Cadiangullong Creek, and the Belubula River.

iv. Since at least 2024, material exceedances of the relevant guideline values for one or more of the Heavy Metals, including arsenic, cadmium, chromium, copper, lead, molybdenum, nickel, selenium, vanadium, and/or zinc, and for PFAS have been recorded in waterways in the Relevant Area, including Flyers Creek, Cadiangullong Creek and the Belubula River.

v. Since at least 2024, visual indicators of contamination by Mine Fluids, such as dead diatoms forming a "white stripe" along the river banks, the presence of orange coloured precipitate, and oily sheens, have been observed in waterways in the Relevant Area, including Flyers Creek and the Belubula River.

vi. Since at least 2024, river foam building up in large quantities has been observed in waterways in the Relevant Area, including Flyers Creek, Cadiangullong Creek and the Belubula River. Testing has shown that the foam contains PFAS, Heavy Metals, hydrocarbons and other indicators of Mine Fluids at high concentrations.

vii. Images of Mine Fluids travelling through the Relevant Area as particularised above are reproduced at **Annexure G**.

viii. Further particulars may be provided after discovery and the service of evidence.

75 Mine Fluids have discharged and continue to be discharged onto land in the Relevant Area (including on land owned, leased or occupied by the plaintiffs and some Group

Members) through or over which water containing the Mine Fluids flows, or on to which it is discharged or applied (by, in particular, irrigation), including:

(a) river banks;

(b) paddocks;

(c) dams and ponds;

(d) bores;

(e) livestock drinking troughs.

Particulars

i. In respect of the first and second plaintiffs' properties, see **Annexure H** which contains a schedule of the highest concentrations of each contaminant detected by sampling and laboratory testing at specified locations at their properties.

ii. In respect of the third plaintiff's property, see **Annexure I** which contains a schedule of the highest concentrations of each contaminant detected by sampling and laboratory testing at specified locations at her property.

H. CONTAMINATION OF THE RELEVANT AREA

H.1 Harmful properties of Waste Materials

76 The presence of Mine Dust in material quantities in the air, on land and in water in the Relevant Area is:

(a) damaging to the environment;

(b) causative of adverse health effects in livestock;

(c) causative of adverse health effects in humans; and/or

(d) further or in the alternative, increasing the risk of adverse health effects on humans and livestock.

Particulars

i. As pleaded at paragraph 55 above, Mine Dust contains Silica, Heavy Metals and Waste Rock Minerals, and other Tailings material.

ii. When humans or livestock are exposed to material quantities of Heavy Metals, those metals can have serious adverse health

effects as further particularised in the Toxicity Table at **Annexure J**.

iii. When humans or livestock are exposed to material quantities of airborne particulate matter, it can have serious adverse health effects as further particularised in the Toxicity Table at **Annexure J**.

iv. When humans or livestock are exposed to Silica, it can have serious adverse health effects, including lung diseases such as silicosis in humans, as further particularised in the Toxicity Table at **Annexure J**.

v. Waste Rock Minerals are damaging to the environment, human health and livestock health because when humans or livestock are exposed to material quantities of Waste Rock Minerals, they can have adverse health effects further particularised in the Toxicity Table at **Annexure J**.

vi. The presence of Waste Rock Minerals can produce or encourage AMD in waterways, which process can result in the further deposit of Heavy Metals, elevated sulfates, and acidic water which is damaging to ecology and which can have adverse health effects as particularised in the Toxicity Table at **Annexure J**.

vii. Further particulars may be provided after the service of expert evidence.

77 The presence of Mine Fluids in material quantities on land and in water in the Relevant Area is:

(a) damaging to the environment;

(b) causative of adverse health effects in livestock;

(c) causative of adverse health effects in humans; and/or

(d) further or in the alternative, increasing the risk of adverse health effects on humans and livestock.

Particulars

i. As pleaded at paragraphs 56 to 58 above, Mine Fluids contain one or more of the Heavy Metals, Waste Rock Minerals, Processing Chemicals, PFAS and water affected by AMD.

ii. When humans or livestock are exposed to material quantities of Heavy Metals and/or PFAS, this can have serious adverse health effects as further particularised in the Toxicity Table at **Annexure J**.

iii. The Processing Chemicals include chemicals that are recognised as hazardous under the Globally Harmonised System of Classification of Chemicals (GHS), including because the chemicals can cause skin corrosion, eye damage/irritation, and organ toxicity. Further particulars will be provided after discovery of documents recording the precise chemical mixtures used by the defendant at the Cadia Valley Operations.

iv. When humans or livestock are exposed to PFAS, this can have serious adverse health effects including adverse effects on blood cholesterol, blood uric acid, liver and kidney function, immune response, hormonal levels and developmental outcomes.

v. Waste Rock Minerals and water affected by AMD are damaging to the environment, human health and livestock health because when humans or livestock are exposed to material quantities of Waste Rock Minerals, they can have adverse health effects further particularised in the Toxicity Table at **Annexure J**.

vi. The presence of Waste Rock Minerals can produce or encourage AMD in waterways, which process can result in the further deposit of Heavy Metals, elevated sulfates and acidic water which is damaging to ecology and which can have adverse health effects as particularised in the Toxicity Table at **Annexure J**.

vii. Further particulars may be provided after expert evidence.

H.2 Contamination of air in the Relevant Area

78 By reason of the matters pleaded in paragraph 72 above, air in the Relevant Area has been, and is likely to continue to be, contaminated by Mine Dust emanating from the Cadia Valley Operations.

Particulars

i. The particulars to paragraph 72 above are repeated.

79 By reason of the matters pleaded in paragraph 78 above, air in the Relevant Area has become hazardous, and will remain hazardous or in the alternative, potentially hazardous to persons occupying land in the Relevant Area (**Air Contamination**).

H.3 Contamination of the Relevant Area's surface water

80 By reason of the matters pleaded in paragraphs 72 to 74 above, surface water in the Relevant Area has been, and is likely to continue to be, contaminated by Mine Dust and/or Mine Fluids emanating from the Cadia Valley Operations, including:

(a) surrounding creeks and rivers, such as Flyers Creek, Cadiangullong Creek and the Belubula River; and

(b) dams and ponds on properties within the Relevant Area.

Particulars

i. The particulars to paragraphs 72 to 74 are repeated

ii. Material exceedances of the relevant guideline values for one or more of the Heavy Metals, including arsenic, cadmium, chromium, copper, lead, molybdenum, nickel, selenium, vanadium, and/or zinc, and for PFAS, have been recorded in Flyers Creek, Cadiangullong Creek and the Belubula River.

iii. Indicators of AMD, such as elevated sulfates, elevated electrical conductivity and elevated metals such as iron, aluminium and manganese, have been detected in waterways in the Relevant Area, including Flyers Creek and the Belubula River.

iv. Fish containing PFAS have been detected in Cadiangullong Creek and the Belubula River, with fishing restrictions put in place by the NSW NSW Environmental Protection Authority (**EPA**) on 20 August 2025 for Cadiangullong Creek and the Belubula River.

v. Material exceedances of the relevant guideline values for one or more of the Heavy Metals, including arsenic, have been recorded in dams and ponds on properties in the Relevant Area; see **Annexure H** and **Annexure I**.

vi. Indicators of AMD, such as elevated sulfates, elevated electrical conductivity and elevated Heavy Metals such as arsenic, iron, aluminium and manganese, have been detected, on properties including the first and second plaintiffs' properties.

vii. Further particulars may be provided after discovery and the service of evidence.

81 By reason of the matters pleaded in paragraph 80 above, surface water in the Relevant Area has become hazardous and will remain hazardous or in the alternative, potentially hazardous and unfit for the Surface Water Usages (**Surface Water Contamination**).

H.4 Contamination of the Relevant Area's groundwater

82 By reason of the matters pleaded in paragraphs 72 to 74 above, groundwater in the Relevant Area has become, and is likely to continue to be, contaminated by Mine Fluids emanating from the Cadia Valley Operations.

Particulars

i. The particulars to paragraphs 72 to 74 are repeated.

ii. Heavy Metals, including manganese, have been recorded in monitoring bore MB 119 at the third plaintiff's property.

iii. Further particulars may be provided after discovery and the service of evidence.

83 By reason of the matters pleaded in paragraph 82 above, groundwater in the Relevant Area has become, and will continue and remain, hazardous or in the alternative, potentially hazardous and unfit for the Groundwater Usages (**Groundwater Contamination**).

H.5 Contamination of the Relevant Area's land

84 By reason of the matters pleaded in paragraphs 72 to 75 above, land in the Relevant Area has become, and is likely to continue to be, contaminated by Mine Dust and/or Mine Fluids emanating from the Cadia Valley Operations.

Particulars

i. The particulars to paragraphs 72 to 75 are repeated.

ii. The contamination includes (but is not limited) to:

A. Mine Dust settling on private properties in the Relevant Area, including rooftops;

B. Mine Fluids flowing over or into private properties in the Relevant Areas.

i. The matters referred to above have led and will continue to lead to:

C. contamination of water in rainwater tanks located on private properties within the Relevant Area;

D. contamination of water in dams and ponds on private properties within the Relevant Area;

E. contamination of bores, and related livestock drinking water systems, located on private properties within the Relevant Area;

F. contamination of livestock.

85 By reason of the matters pleaded in paragraph 84 above, land in the Relevant Area has become hazardous and will remain hazardous or in the alternative, potentially hazardous to human and animal health and unfit for the Rain Water Usages and/or Land Usages (**Land Contamination**).

H.6 Injurious affection to land in the Relevant Area

86 Land in the Relevant Area (including the land owned, leased or occupied by the plaintiffs and Group Members) has become, and is likely to remain:

(a) affected by the Air Contamination;

(b) affected by the Land Contamination;

(c) affected by the Surface Water Contamination; and/or

(d) affected by the Groundwater Contamination.

87 Further or alternatively, by reason of:

(a) the Air Contamination;

(b) the Surface Water Contamination;

(c) the Groundwater Contamination; and/or

(d) the Land Contamination,

land in the Relevant Area (including the land owned, leased or occupied by the plaintiffs and Group Members) has become, and is likely to remain, subject to ongoing exposure to Mine Dust and/or Mine Fluids (**Ongoing Contaminant Exposure**).

88 Further or alternatively, by reason of the matters pleaded in paragraphs 86 and/or 87 above, the productivity of livestock, and the ability to sell crops and feedstock grown and livestock pastured on land in the Relevant Area, may be impaired by the Air Contamination, Surface Water Contamination, Groundwater Contamination and/or Land Contamination.

Particulars

i. The productivity of livestock may be adversely affected if livestock do not have access to clean drinking water: see Livestock Drinking Water Guidelines and the Toxicity Table at **Annexure J**.

ii. Material exceedances of the Livestock Drinking Water Guidelines, including for one or more of the Heavy Metals, sulfates and TDS, have been recorded in the Relevant Area, including in Flyers Creek, the Belubula River, and livestock drinking water ponds, dams and troughs on land owned, leased or occupied by the plaintiffs and some Group Members.

iii. There is a material risk that persons who sell animal products that are grown in the Relevant Area and are required to provide a commodity vendor declaration under the Livestock Production Assurance program may be unable to state that the property has not been exposed to any persistent chemicals, such as lead, arsenic and cadmium.

iv. There is a material risk that persons who sell animal products that are grown in the relevant area may not be able to sell those products into markets with maximum residue levels for PFAS contaminants, such as the EU.

v. Further particulars may be provided following the service of evidence.

89 By reason of the matters pleaded in paragraphs 86 to 88 above, land in the Relevant Area has become, and is likely to remain, injuriously affected in its value.

I. THE DEFENDANT'S LIABILITY

I.1 Private nuisance

90 The defendant has created, and continued, a material injury to the land owned, leased or occupied by the plaintiffs and Group Members because, by reason of the defendant's use of land for the Cadia Valley Operations, the plaintiffs and Group Members' land:

(a) is and has been affected by the Air Contamination;

(b) is and has been affected by the Land Contamination; and/or

(c) is and has been affected by the Surface Water Contamination; and/or

(d) is and has been affected by the Groundwater Contamination.

91 Alternatively, the defendant, through the use of land for the Cadia Valley Operations, has substantially interfered and continues to substantially interfere with the common and ordinary use and enjoyment of the land owned, leased or occupied by the plaintiffs and the Group Members, in that:

(a) Mine Dust and/or Mine Fluids travel over or through their land and deposit on the land;

(b) those occupying their land are subject to the Ongoing Contaminant Exposure;

(c) their land is and has been affected by the Air Contamination;

(d) their land is and has been affected by the Land Contamination;

(e) their land is and has been affected by the Surface Water Contamination;

(f) their land is and has been affected by the Groundwater Contamination;

(g) they are no longer able safely to use their land for the Rain Water Usages and/or Land Usages;

(h) they are no longer able safely to use surface water on their land for the Surface Water Usages; and/or

(i) they are no longer able safely to use private bores on their land to access groundwater for Groundwater Usages.

Particulars

i. As to the common and ordinary use of land owned, leased or occupied by the plaintiffs and Group Members, paragraphs 5, 6, 36 to 41 and any particulars thereto are repeated.

ii. Further particulars of the use of land owned, leased or occupied by Group Members will be provided after the initial trial of the plaintiffs' claims.

92 The defendant's use of the land for the Cadia Valley Operations:

(a) was not and is not a common and ordinary use of land in the Relevant Area;

(b) alternatively, was not and is not conveniently done.

Particulars

i. The operation of a mine (including the undertaking of the activities pleaded in paragraph 10 above) was not a

common and ordinary use of land in the Relevant Area. The particulars to paragraph 91 above are repeated.

ii. The defendant's use of the land was not conveniently done as it involved the emission of material amounts of harmful Mine Dust and Mine Fluids into the Relevant Area as pleaded in paragraphs 61 to 75 above.

iii. The plaintiffs otherwise rely on the defendant's onus to establish that its use of land was common and ordinary and, even if it was, that the use of the land was conveniently done. Further particulars may be provided after discovery and/or evidence.

93 By reason of the matters pleaded in paragraphs 90 and/or 91 and 92 above, the plaintiffs and the Group Members have suffered, and may continue to suffer, loss and damage.

Particulars

iv. The loss and damage that the plaintiffs have suffered, and/or will continue to suffer, includes:

A. diminution in the value of their land;

B. diminution of amenity value of their land;

C. consequential loss of profit from their farming businesses;

D. costs of making good the effects of the private nuisance;

E. distress, annoyance and convenience.

v. Further particulars may be provided after discovery and the service of evidence.

vi. The particulars of the losses of Group Members will be provided after the initial trial of the plaintiffs' claims.

94 In the premises, the defendant has committed and is continuing to commit the tort of private nuisance and is liable to pay damages to the plaintiffs and the Group Members..

I.2 Public Nuisance

95 By its use of land for the Cadia Valley Operations, the defendant has endangered the health, property or comfort of the public, in that:

(a) air in the Relevant Area is and has been affected by Mine Dust;

(b) public waterways (including creeks and rivers) in the Relevant Area are and have been affected by Mine Dust and/or Mine Fluids; and

(c) groundwater in the Relevant Area is and has been affected by Mine Fluids.

96 Further or alternatively, by its use of land for the Cadia Valley Operations, the defendant has caused substantial and unreasonable obstruction or inconvenience to the public in the exercise of public rights, in that:

(a) air in the Relevant Area is and has been affected by Mine Dust;

(b) public waterways (including creeks and rivers) in the Relevant Area are and have been affected by Mine Dust and/or Mine Fluids; and

(c) groundwater in the Relevant Area is and has been affected by Mine Fluids.

97 The defendant knew or ought to have known of the nuisance to the public as pleaded in paragraphs 95 and 96 above.

Particulars

i. The defendant has been aware of the Mine Dust nuisance since at least around 2019, when the defendant started receiving increased complaints from members of the public about tailings dust emissions from the Cadia Valley Operations.

ii. Further or alternatively, the defendant has been aware of the Mine Dust nuisance since at least around 17 December 2021, when the defendant started receiving sampling reports detailing the Mine Dust emissions from its Ventilation Rises such as VR8.

iii. On 31 July 2020, the EPA issued Penalty Notice No. 3173529270 regarding dust emissions from the Cadia Valley Operations on 26 February 2020, 20 March 2020, 16 April 2020 and 26 April 2020. The defendant paid a penalty of $15,000 in respect of that notice.

iv. On 5 August 2022, the EPA issued Penalty Notice No. 3173540141 regarding failure to maintain appropriate levels of dust mitigation at the NSTF and STSF, resulting in dust emissions from the Cadia Valley Operations travelling onto Group Members' properties. The

defendant paid a penalty of $15,000 in respect of that notice.

v. The defendant has been aware of the Mine Fluids nuisance since at least around 14 March 2025 when the plaintiffs through their solicitors wrote to notify the defendant and the EPA of the contaminated water issues.

98 By reason of the matters pleaded in paragraph 95 to 96 above, the plaintiffs and the Group Members have suffered, and continue to suffer, loss and damage.

Particulars

i. The particulars at paragraph 92 are repeated.

99 The loss and damage suffered by the plaintiffs and the Group Members is substantial and appreciably greater in degree than that suffered by the general public.

100 In the premises, the defendant has committed and is continuing to commit the tort of public nuisance and is liable to pay damages to the plaintiffs and the Group Members..

J. FURTHER RELIEF

J.1 Injunctive relief

101 Unless enjoined by the Court, the defendant is likely to continue causing the nuisance pleaded at paragraphs 90 to 100 above by operating the Cadia Valley Operation in such a way that:

(a) continues to produce Mine Dust;

(b) continues to produce Mine Fluids; and/or

(c) results in:

i. the Air Contamination;

ii. the Land Contamination;

iii. the Surface Water Contamination;

iv. the Groundwater Contamination; and/or

v. the Ongoing Contaminant Exposure.

J.2 Aggravated and exemplary damages

102 The damage and loss caused by the defendant's conduct as pleaded in this Statement of Claim has been aggravated by:

(a) the defendant knowingly and recklessly exposing the plaintiffs and Group Members to Mine Fluids and/or Mine Dust;

Particulars

i. The particulars to paragraph 97 are repeated.

(b) the defendant initially denying that Mine Dust contained one or more of the Heavy Metals, including representing that the clouds of Mine Dust emanating from the Cadia Valley Operations were only "steam";

Particulars

i. Entries in the Dust Complaints Register for Cadia Valley Operations, including for 22 April 2022 ("*It was confirmed that the dust was in fact the steam from the vent rises, and it was pooling due to an inversion layer*").

ii. Representations made by representatives of the defendant at various meetings with local residents including the plaintiffs, on dates prior to the publication of the Zephyr Report.

(c) the defendant failing to promptly notify the Environment Protection Authority (or the public) of the exceedances of the emissions criteria then specified in Condition 17 of Project Approval 06_0295 for the Cadia Valley Operations which were recorded from at least around November 2021;

Particulars

i. SOAF, [37], [50].

(d) the defendant denying that Mine Dust or Mine Fluids are leaving the boundaries of the Cadia Valley Operations;

Particulars

i. Newcrest email to EPA dated 10 January 2022 ("*Cadia personnel did observe visible dust from the Northern Tailings Storage Facility (NTSF) on the morning of the 18th however this was dissipating over the Southern Tailings Storage Facility (STSF) and not observed leaving the site boundary*").

ii. Newmont letter to residents dated 10 September 2024 ("*There are no water contaminants moving off the mine lease*").

iii. Newmont Q&A for CCOP dated 8 September 2025 ("*There is absolutely no evidence to support that private bores to the west*

of the Cadiangullong Creek have tailings and this is extremely unlikely").

(e) the defendant terminating grazing rights agreements with the first and second plaintiffs and some Group Members, on the stated grounds that the plaintiffs and Group Members were investigating this class action.

Particulars

i. The defendant terminated the Narambon GRA by letter to Meadow Vale from the defendant's subsidiary Contango Agricultural Company Pty Ltd, signed by Lori Douglas, General Manager, Newmont Cadia, received on around 8 August 2025.

ii. The defendant has served termination notices on other Group Members expressing similar reasons.

103 Further or alternatively, the defendant's conduct pleaded at (b) to (d) of paragraph 102 above materially delayed the plaintiffs and Group Members becoming aware of the existence, nature, and extent of Air Contamination, Surface Water Contamination, Groundwater Contamination and Land Contamination (or a material part of that contamination), thus denying the plaintiffs and Group Members the opportunity to take reasonable precautions to protect their persons, their properties and their businesses from the effects of the Air Contamination, Surface Water Contamination, Groundwater Contamination and Land Contamination.

104 Further or alternatively, the defendant has shown a conscious and contumelious disregard for the plaintiffs' and Group Members' rights.

Particulars

i. Paragraph 102 above is repeated.

105 In the premises, the plaintiffs and Group Members are entitled to aggravated and/or exemplary damages.

K. COMMON QUESTIONS

106 The questions of fact or law common the claims of Group Members are:

(a) Are Mine Dust and Mine Fluids:

i. damaging to the environment;

ii. causative of adverse health effects in livestock; and/or

iii. causative of adverse health effects in humans.

(b) Whether Mine Dust and/or Mine Fluids have been and/or are being emitted from the Cadia Valley Operations.

(c) Whether the Cadia Valley Operations is a substantial cause of one or more of the Mine Dust and/or Mine Fluids detected in:

i. air in the Relevant Area;

ii. surface water in the Relevant Area;

iii. groundwater in the Relevant Area; or

iv. land in the Relevant Area.

(d) Whether any or all of the Air Contamination, Surface Water Contamination, Groundwater Contamination and/or the Land Contamination constitute a material injury to the plaintiffs' and Group Members' land in the Relevant Area.

(e) Whether the plaintiffs' and Group Members' use of land they owned, leased or occupied for agricultural and/or residential purposes is a common and ordinary use.

(f) Whether one or more of the matters pleaded at paragraph 91 above constitute a substantial interference with the plaintiffs' and Group Members' enjoyment of their respective interests in land in the Relevant Area.

(g) Whether the defendant's use of land for the Cadia Valley Operations was a common and ordinary use and, if it was, whether that use was conveniently done.

(h) Whether, by its use of land for the Cadia Valley Operations, the defendant has endangered the health, property or comfort of the public, as pleaded in paragraph 95 above.

(i) Whether, by its use of land for the Cadia Valley Operations, the defendant has caused substantial and unreasonable obstruction and or inconvenience to the public in the exercise of public rights, as pleaded in paragraph 96 above.

(j) Whether and, if so, when, the defendant knew or ought to have known of the nuisance to the public, as pleaded in paragraph 97 above.

SIGNATURE OF LEGAL REPRESENTATIVE

I certify under clause 4 of Schedule 2 to the *Legal Profession Uniform Law Application Act 2014* that there are reasonable grounds for believing on the basis of provable facts and a

reasonably arguable view of the law that the claim for damages in these proceedings has reasonable prospects of success.

I have advised the plaintiffs that court fees may be payable during these proceedings. These fees may include a hearing allocation fee.

Signature	
Capacity	Solicitor on record
Date of signature	1 FEB 2026

NOTICE TO DEFENDANT

If you do not file a defence within 28 days of being served with this statement of claim:

- **You will be in default in these proceedings.**
- **The court may enter judgment against you without any further notice to you.**

The judgment may be for the relief claimed in the statement of claim and for the plaintiff's costs of bringing these proceedings. The court may provide third parties with details of any default judgment entered against you.

HOW TO RESPOND

Please read this statement of claim very carefully. If you have any trouble understanding it or require assistance on how to respond to the claim you should get legal advice as soon as possible.

You can get further information about what you need to do to respond to the claim from:

- A legal practitioner.
- LawAccess NSW on 1300 888 529 or at www.lawaccess.nsw.gov.au.
- The court registry for limited procedural information.

You can respond in one of the following ways:

1 **If you intend to dispute the claim or part of the claim,** by filing a defence and/or making a cross-claim.

2 **If money is claimed, and you believe you owe the money claimed,** by:

- Paying the plaintiff all of the money and interest claimed. If you file a notice of payment under UCPR 6.17 further proceedings against you will be stayed unless the court otherwise orders.
- Filing an acknowledgement of the claim.
- Applying to the court for further time to pay the claim.

3 **If money is claimed, and you believe you owe part of the money claimed**, by:

- Paying the plaintiff that part of the money that is claimed.
- Filing a defence in relation to the part that you do not believe is owed.

Court forms are available on the UCPR website at www.ucprforms.nsw.gov.au or at any NSW court registry.

REGISTRY ADDRESS	
Street address	Law Courts Building, 184 Phillip Street, Sydney NSW 2000
Postal address	GPO Box 3, Sydney NSW 2001
Telephone	1300 679 272

AFFIDAVIT VERIFYING

Name	Oliver Stuart Hensman Gayner
Address	Level 22, 66 Goulburn Street, Sydney NSW 2000
Occupation	Principal Lawyer
Date	1 FEB 2026

I, Oliver Stuart Hensman Gayner, of Level 22, 66 Goulburn Street, Sydney NSW 2000, Principal Lawyer, solemnly, sincerely and truly declare and affirm:

1 I am a Principal Lawyer at William Roberts Lawyers of Level 22, 66 Goulburn Street, Sydney NSW 2000, solicitors for the three plaintiffs in this proceeding. I have day to day conduct of this proceeding on behalf of the plaintiffs.

2 I have undertaken extensive investigations into the allegations of fact pleaded in the statement of claim, including document review and research, conferring with witnesses and site attendances.

3 I am duly authorised to swear this affidavit on behalf of the plaintiffs.

4 I believe that the allegations of fact in the statement of claim are true.

AFFIRMED at Sydney, NSW, 2000

Signature of deponent

Name of witness	Claudia Trovato
Address of witness	Level 22, 66 Goulburn Street, Sydney NSW 2000
Capacity of witness	Solicitor

And as a witness, I certify the following matters concerning the person who made this affidavit (the **deponent**):

1 I saw the face of the deponent.

2 I have known the deponent for at least 12 months.

Signature of witness

Note: The deponent and witness must sign each page of the affidavit. See UCPR 35.7B.

PARTY DETAILS

PARTIES TO THE PROCEEDINGS

Plaintiffs	Defendant
Frances Mary Retallack, First Plaintiff	Cadia Holdings Pty Ltd, Defendant
Michael Leslie Retallack, Second Plaintiff	
Jann Maree Harries, Third Plaintiff	

FURTHER DETAILS ABOUT PLAINTIFFS

First plaintiff

Name	Frances Mary Retallack
Address	Millamolong 425 Millamolong Road Mandurama NSW 2792

Second plaintiff

Name	Michael Leslie Retallack
Address	Millamolong 425 Millamolong Road Mandurama NSW 2792

Third plaintiff

Name	Jann Maree Harries
Address	Old Errowanbang 64 Old Errowanbang Road Errowanbang NSW 2791

Legal representative for plaintiffs

Name	Oliver Gayner
Practising certificate number	115209
Firm	William Roberts Lawyers
Address	Level 22, 66 Goulburn Street Sydney NSW 2000
DX address	Not applicable
Telephone	02 9552 2111
Fax	02 9552 1911
Email	WR-Cadia@williamroberts.com.au
Electronic service address	WR-Cadia@williamroberts.com.au

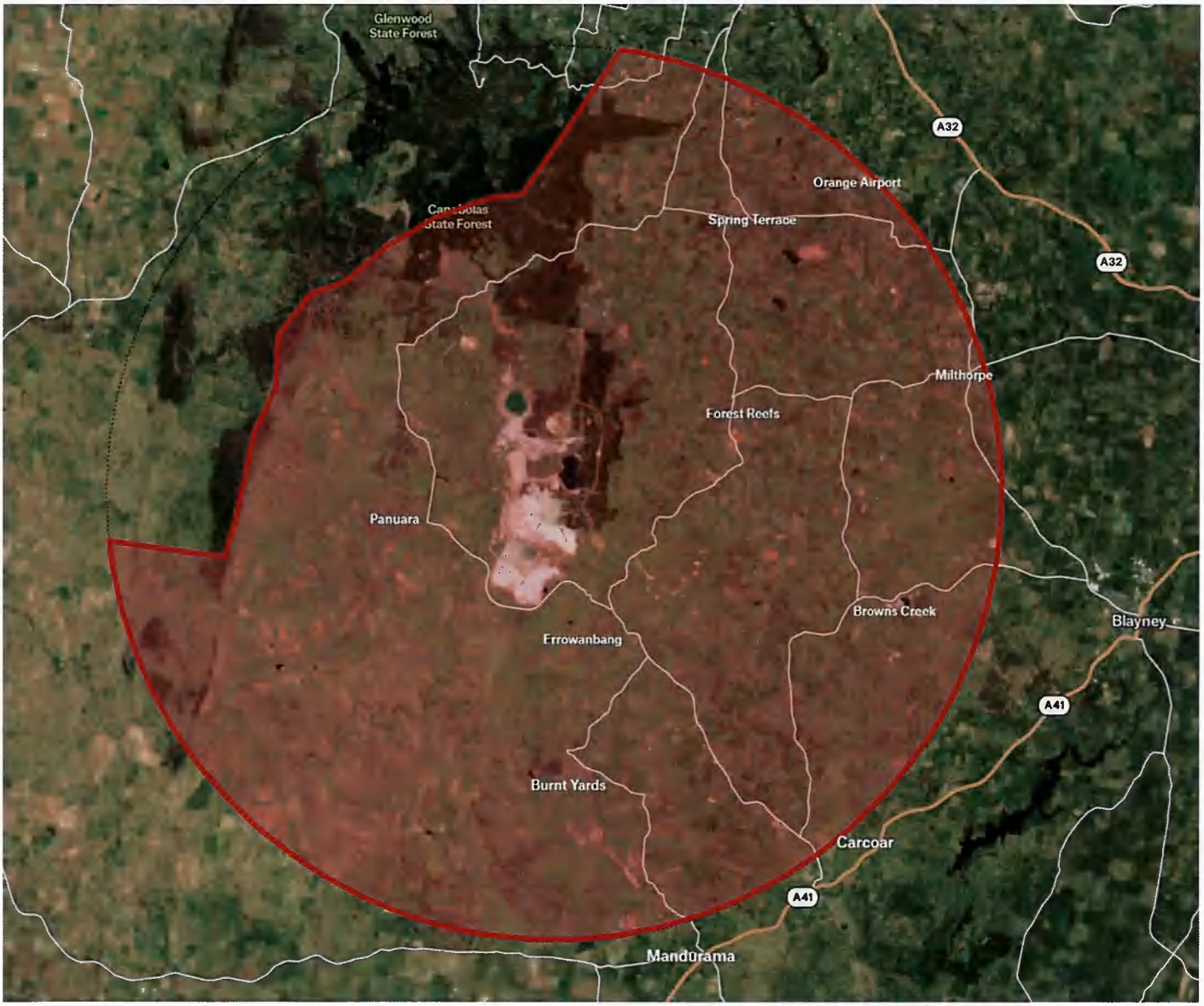
DETAILS ABOUT DEFENDANT

Defendant

Name	Cadia Holdings Pty Ltd
Address	Level 5 500 Hay Street Subiaco WA 6008

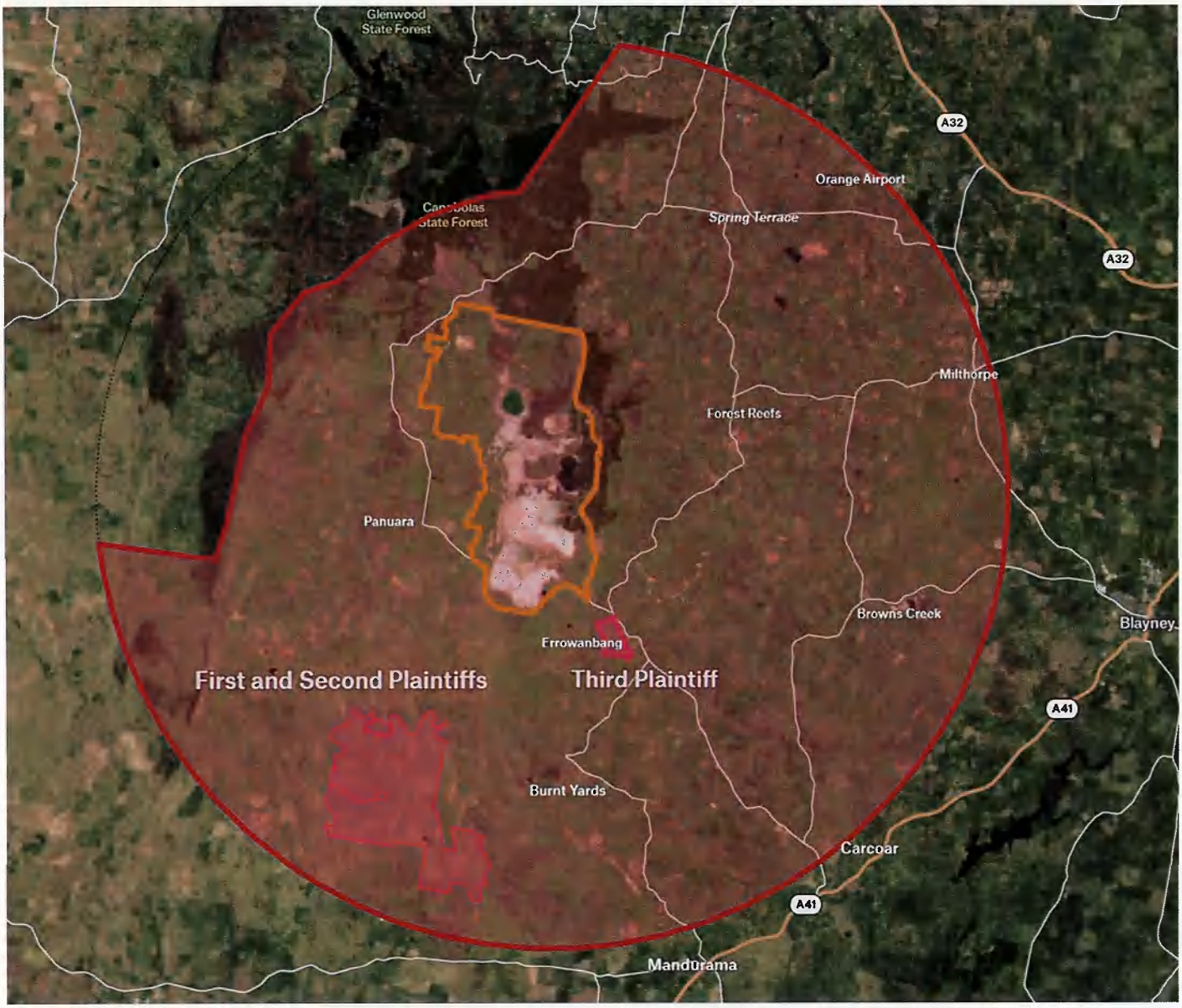
Annexure A

Relevant Area:



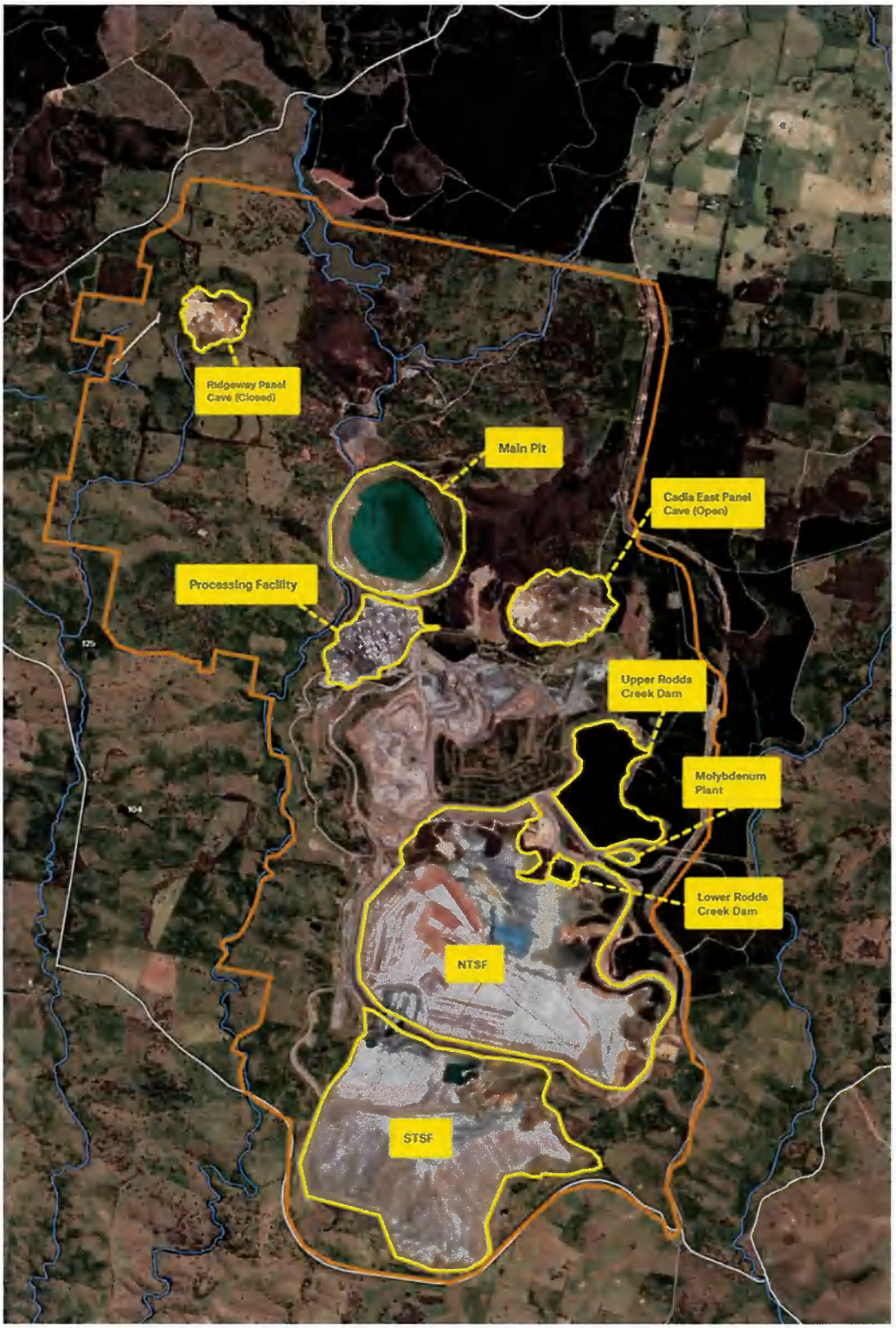
Annexure B

Location of plaintiffs' properties



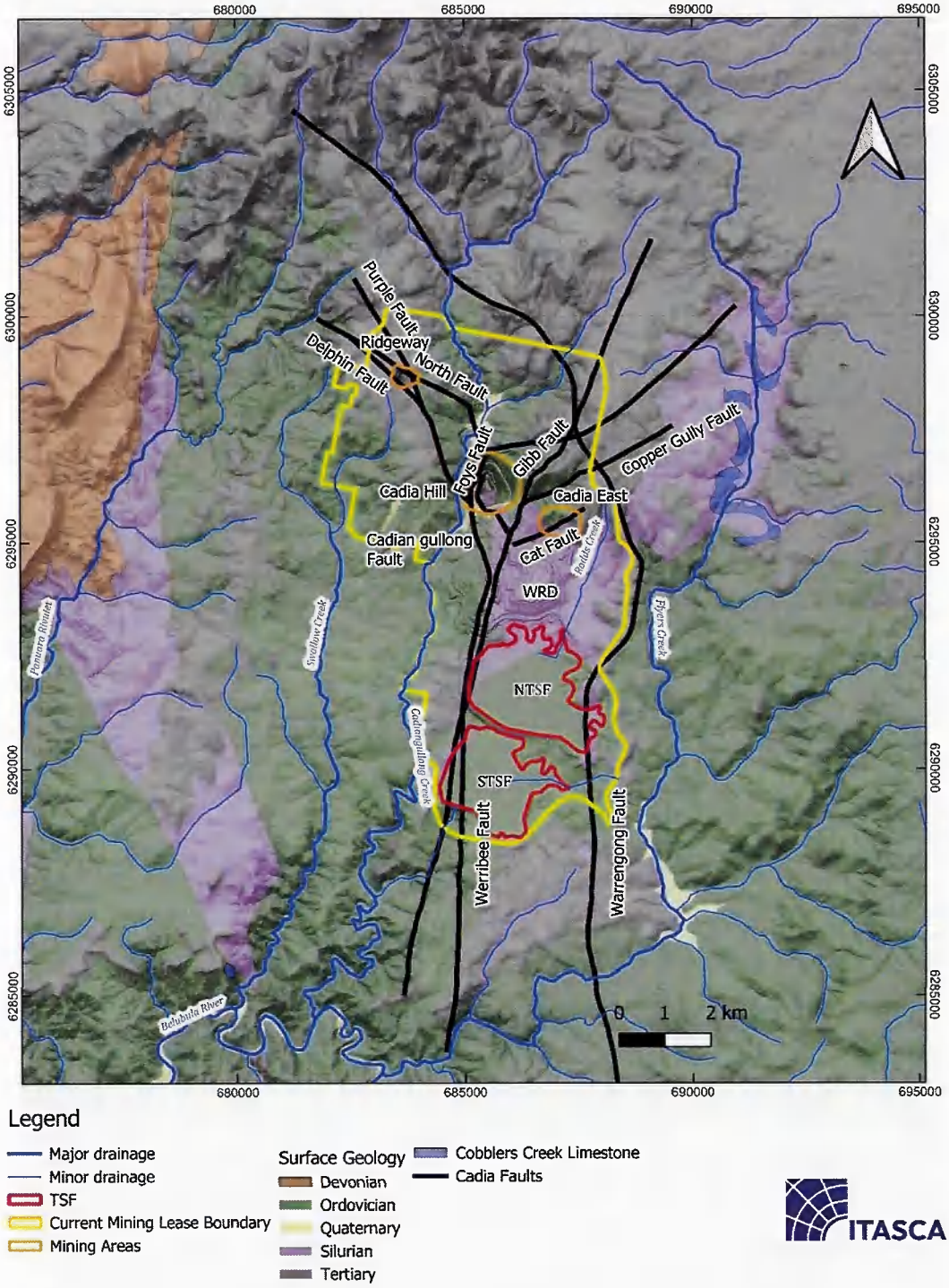
Annexure C

Cadia Valley Operations



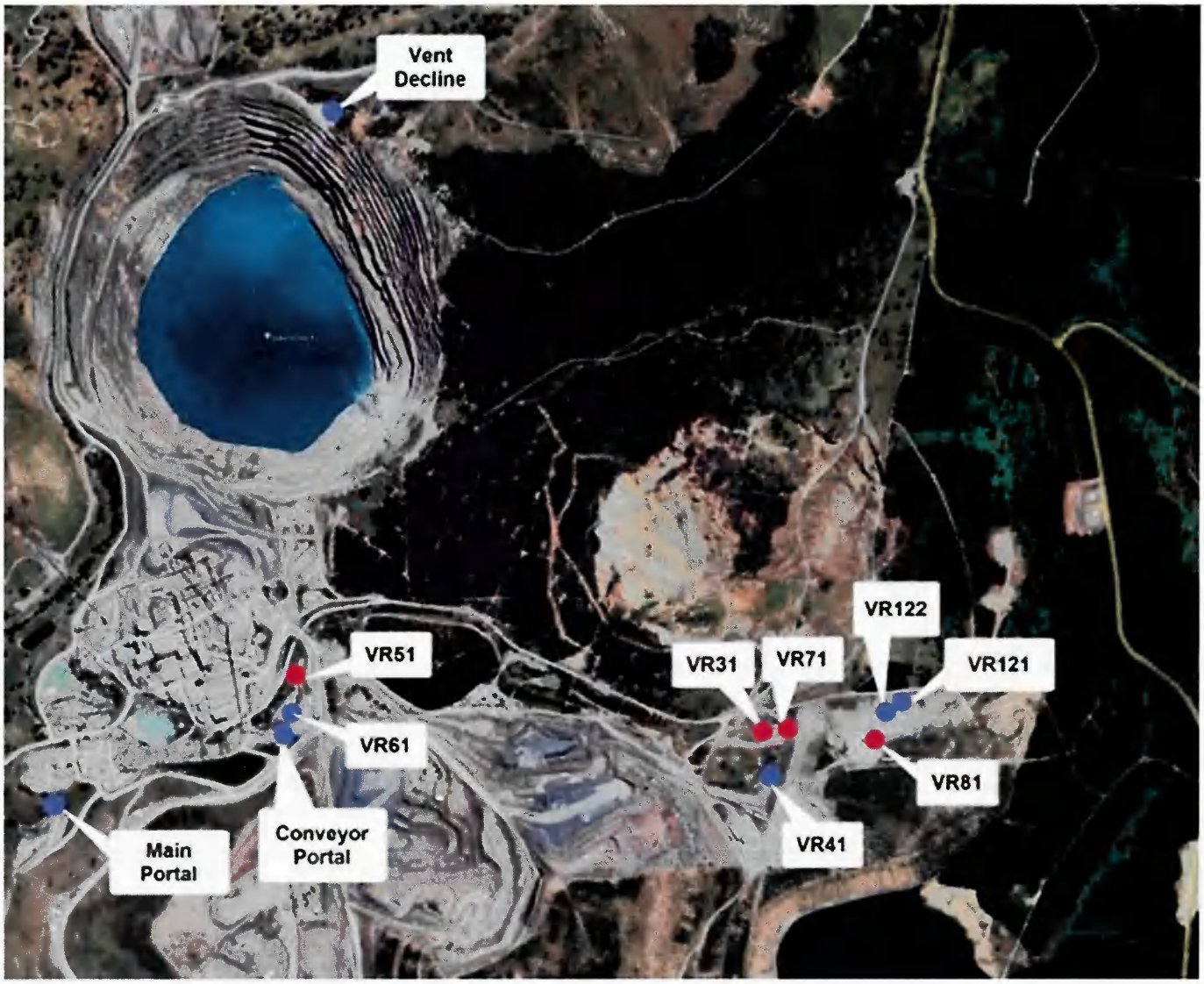
Annexure D

Geological and Hydrogeological features of Relevant Area sourced from the 'EIS Roundtable Session Groundwater Presentation July 2025' available on Newmont Corporation's website



Annexure E

Ventilation Rises at Cadia East



Legend: Blue – Intake, Red – exhaust.

Annexure F

Images of Mine Dust emissions

Figure 1: 26 April 2019 - Mine Dust event photographed from property near Cadia Road, Errowanbang NSW 2791

Figure 2: 19 April 2022 – Mine Dust event photographed from Old Errowanbang

Figure 3: 19 April 2022 – Aerial photograph of Mine Dust event

Figure 4: 19 April 2022 – Mine Dust event photographed from Meribah Road

Figure 5: 12 May 2022 – Mine Dust event photographed from Old Errowanbang

Figure 6: 26 September 2022 – Mine Dust event and Old Errowanbang photographed from Burnt Yards Road near Ellerys Lane

Figure 7: 13 October 2022 – Mine Dust event photographed from Millamolong

Figure 8: 31 October 2022 – Mine Dust event photographed from Millamolong

Figure 9: 29 May 2023 – Mine Dust event photographed from Old Errowanbang

Figure 10: 14 October 2025 – Bottom sediment extracted from the rainwater tank at the Old Errowanbang farm stay

Annexure G

Images of water contamination in the Relevant Area

Figure 1: 24 May 2024 - Belubula River in Burnt Yards

Figure 2: 26 July 2024 - Flyers Creek at Old Errowanbang

Figure 3: 2 August 2024 – Cattle drinking Belubula river water at Wongalong, Mandurama

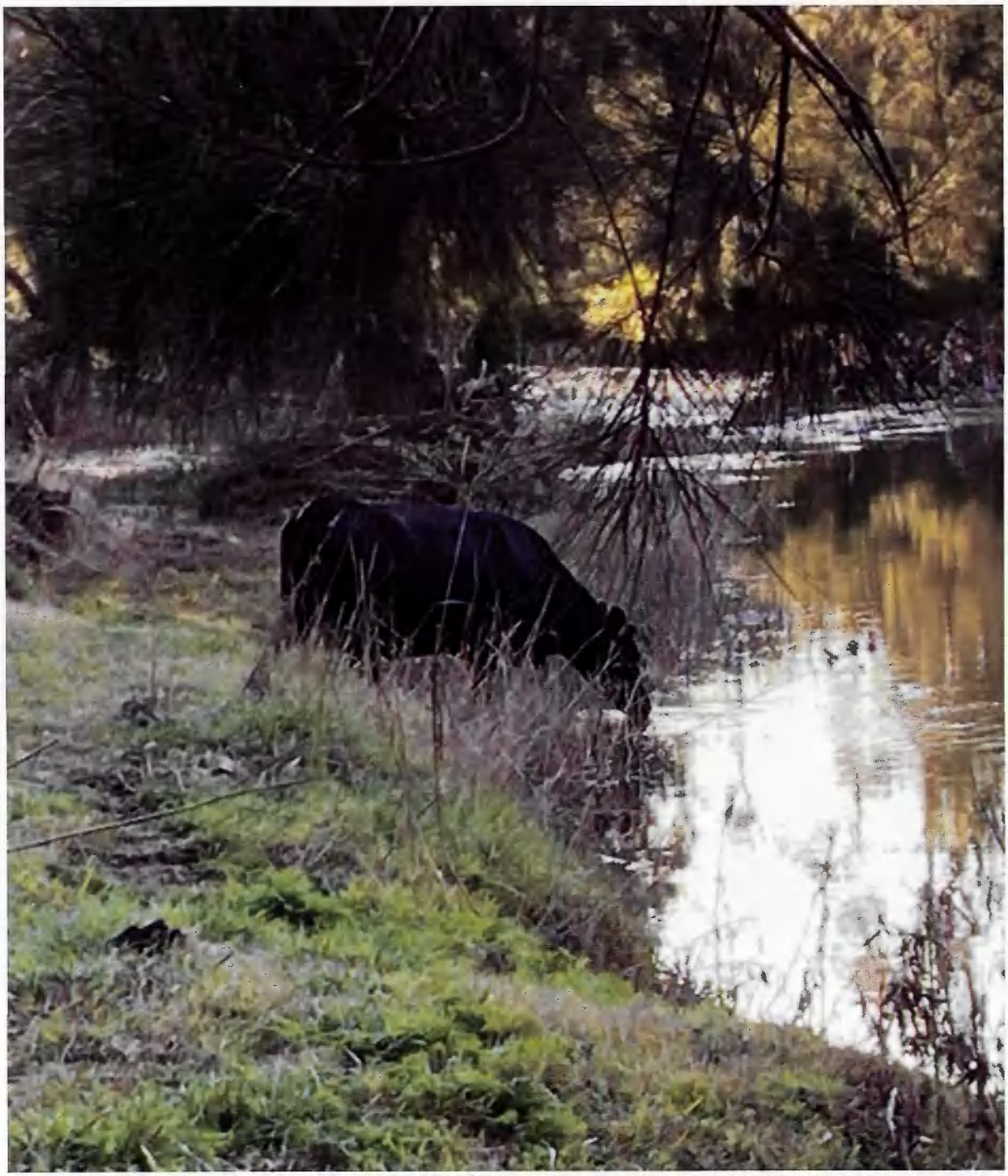


Figure 4: 3 August 2024 - Belubula River at Millamolong

Figure 5: 26 August 2024 - Belubula River at Wongalong, Mandurama

Figure 6: 8 September 2024 – Flyers Creek at Burnt Yards

Figure 7: 25 February 2025 – Sediment from livestock drinking water trough, fed by bore water from a property near Four Mile Creek Road, Panuara

Figure 8:

30 June 2025 – Livestock drinking water pond at Millamolong, near the confluence of Cadiangullong Creek and the Belubula River

Figure 9: 15 July 2025 – Livestock drinking water pond at Wongalong, Mandurama, close to banks of the Belubula River

Figure 10: 16 July 2025 – Ponds at Millamolong off the Belubula River

Figure 11: 24 August 2025 – Belubula River at Millamolong

Annexure H

Property Contamination Schedule – Millamolong

Gutter Dust - Main Barn

Contaminant	Value (mg/kg)	Approximate location (lat; lon)	Sample Date	Source
Antimony (Sb)	5.254	-33.604492321528745; 148.95463218341044	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Arsenic (As)	22.949	-33.604492321528745; 148.95463218341044	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Cadmium (Cd)	0.199	-33.604492321528745; 148.95463218341044	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Chromium (Cr)	108.736	-33.604492321528745; 148.95463218341044	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Cobalt (Co)	17.324	-33.604492321528745; 148.95463218341044	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Copper (Cu)	92.717	-33.604492321528745; 148.95463218341044	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Lead (Pb)	64.713	-33.604492321528745; 148.95463218341044	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Manganese (Mn)	1,269.529	-33.604492321528745; 148.95463218341044	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Molybdenum (Mo)	5.119	-33.604492321528745; 148.95463218341044	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Nickel (Ni)	54.575	-33.604492321528745; 148.95463218341044	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Vanadium (V)	34.583	-33.604492321528745; 148.95463218341044	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Zinc (Zn)	15,100.202	-33.604492321528745; 148.95463218341044	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report

Rainwater Tank (Sediment) - Main Homestead

Contaminant	Value (mg/kg)	Approximate location (lat; lon)	Sample Date	Source
Antimony (Sb)	1.882	-33.60454; 148.95454	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Arsenic (As)	6.0	-33.60454; 148.95454	11 March 2023	ALS Report No. ES2308550 (Sludge 12)

Contaminant	Value (mg/kg)	Approximate location (lat; lon)	Sample Date	Source
Cadmium (Cd)	3.0	-33.60454; 148.95454	11 March 2023	ALS Report No. ES2308550 (Sludge 12)
Chromium (Cr)	63.481	-33.60454; 148.95454	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Cobalt (Co)	12.659	-33.60454; 148.95454	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Copper (Cu)	72.494	-33.60454; 148.95454	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Lead (Pb)	61.311	-33.60454; 148.95454	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Manganese (Mn)	832.967	-33.60454; 148.95454	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Mercury (Hg)	0.2	-33.60454; 148.95454	11 March 2023	ALS Report No. ES2308550 (Sludge 12)
Molybdenum (Mo)	1.379	-33.60454; 148.95454	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Nickel (Ni)	22.763	-33.60454; 148.95454	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Vanadium (V)	75.009	-33.60454; 148.95454	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report
Zinc (Zn)	11,200	-33.60454; 148.95454	11 March 2023	ALS Report No. ES2308550 (Sludge 12)
Zirconium (Zr)	147.588	-33.60454; 148.95454	17 December 2024	UQ Elemental Data/ICP-MS 7900 Report

Rainwater Tank (Water) - Main Homestead

Contaminant	Value (µg/L)	Approximate location (lat; lon)	Sample Date	Source
Aluminium (Al)	20,000	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)
Cadmium (Cd)	5.6	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)
Iron (Fe)	25,000	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)
Lead (Pb)	75	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)
Manganese (Mn)	810	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)
Perfluorooctanesulfonic acid (PFOS)	0.0058	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)
Perfluorohexanesulfonic acid (PFHxS)	0.0009	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)
Perfluorooctanoic acid (PFOA)	0.002	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)
Perfluorobutanoic acid (PFBA)	0.009	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)
Perfluorobutanesulfonic acid (PFBS)	0.0007	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)
Perfluorohexanoic acid	0.002	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)

Contaminant	Value (µg/L)	Approximate location (lat; lon)	Sample Date	Source
Perfluoroheptanoic acid	0.001	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)
Perfluorodecanoic acid	0.002	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)
Zinc (Zn)	21,000	-33.60454; 148.95454	12 December 2025	Envirolab Report No. 398285 (FMB 1)

River, Dam and Pond Water

Contaminant	Value (µg/L)	Approximate location (lat; lon)	Sample Date	Source
Aluminum (Al)	150,000	-33.561428; 148.962496	31 August 2025	Envirolab Report No. 389894 (GL#1,2,3,4)
Arsenic (As)	2,600	-33.566484; 148.957770	28 August 2025	Envirolab Report No. 389593 (GL Pond 10B)
Barium (Ba)	2,300	-33.566484; 148.957770	30 September 2025	Envirolab Report No. 392014 (SW07 RP)
Cadmium (Cd)	4.1	-33.561428; 148.962496	31 August 2025	Envirolab Report No. 389894 (GL#1,2,3,4)
Chromium (Cr)	290	-33.561428; 148.962496	31 August 2025	Envirolab Report No. 389894 (GL#1,2,3,4)
Chloride (Cl)	41	-33.566484; 148.957770	28 August 2025	Envirolab Report No. 389593 (GL Pond 10B)
Copper (Cu)	1,500	-33.561428; 148.962496	31 August 2025	Envirolab Report No. 389894 (GL#1,2,3,4)
Hydrocarbons C10 – C36 fraction (sum)	8,720	-33.561428; 148.962496	7 July 2024	ALS Report No. ES2423065 (River Gloucester)
Hydrocarbons C10 – C40 fraction (sum)	8,850	-33.561428; 148.962496	7 July 2024	ALS Report No. ES2423065 (River Gloucester)
Iron (Fe)	820,000	-33.561428; 148.962496	31 August 2025	Envirolab Report No. 389894 (GL#1,2,3,4)
Lead (Pb)	290	-33.561428; 148.962496	31 August 2025	Envirolab Report No. 389894 (GL#1,2,3,4)
Manganese (Mn)	14,000	-33.566484; 148.957770	30 September 2025	Envirolab Report No. 392014 (SW07 RP)
Mercury (Hg)	1.5	-33.566484; 148.957770	30 September 2025	Envirolab Report No. 392014 (SW07 RP)
Nickel (Ni)	220	-33.561428; 148.962496	31 August 2025	Envirolab Report No. 389894 (GL#1,2,3,4)
Perfluorohexane sulfonic	12	-33.561428; 148.962496	24 August 2025	Envirolab Report No. 389256 (BGL)

Contaminant	Value (µg/L)	Approximate location (lat; lon)	Sample Date	Source
acid (PFHxS)				
Perfluorooctanoic Acid (PFOA)	6.9	-33.561428; 148.962496	24 August 2025	Envirolab Report No. 389256 (BGL)
Perfluorooctanesulfonic acid (PFOS)	770	-33.561428; 148.962496	24 August 2025	Envirolab Report No. 389256 (BGL)
PFOS and PFHxS (combined value, prior to June 2025)[1]	127	-33.561428; 148.962496	7 July 2024	ALS Report No. ES2423065 (River Gloucester)
Selenium (Se)	17	-33.566484; 148.957770	30 September 2025	Envirolab Report No. 392014 (SW07 RP)
Sulphate (SO42-)	45	-33.566484; 148.957770	28 August 2025	Envirolab Report No. 389593 (GL Pond 10A)
Vanadium (V)	1,400	-33.561428; 148.962496	31 August 2025	Envirolab Report No. 389894 (GL#1,2,3,4)
Zinc (Zn)	1,400	-33.561428; 148.962496	31 August 2025	Envirolab Report No. 389894 (GL#1,2,3,4)

[1] Between August 2018 and June 2025, the Australian Drinking Water Guidelines measured PFOS and PFHxS in combination, with the relevant guideline being 0.07 µg/L.

Annexure I

Property Contamination Schedule – Old Errowanbang

Rainwater Tank (Water) – Main Homestead

Contaminant	Value (µg/L)	Approximate Location (lat; lon)	Sample Date	Source
Aluminum (Al)	44,013	-33.542316; 149.041257	16 December 2024	UNSW ICP-MS / MW digestion report Ref: CCL#25005
Cadmium (Cd)	6.5	-33.542316; 149.041257	30 August 2023	Envirolab Report No. 332414-[R00] (HARBOTTOM)
Chromium (Cr)	141	-33.542316; 149.041257	16 December 2024	UNSW ICP-MS / MW digestion report Ref: CCL#25005
Iron (Fe)	50,736	-33.542316; 149.041257	16 December 2024	UNSW ICP-MS / MW digestion report Ref: CCL#25005
Lead (Pb)	1,100	-33.542316, 149.041257	30 August 2023	Envirolab Report No. 332414-[R00] (HARBOTTOM)
Manganese (Mn)	354	-33.542316; 149.041257	16 December 2024	UNSW ICP-MS / MW digestion report Ref: CCL#25005
Nickel (Ni)	27	-33.542316; 149.041257	16 December 2024	UNSW ICP-MS / MW digestion report Ref: CCL#25005
Zinc (Zn)	38,000	-33.542316; 149.041257	30 August 2023	Envirolab Report No. 332414-[R00] (HARBOTTOM)
Perfluorobutanesulfonic acid (PFBS)	0.002	-33.542316; 149.041257	10 December 2025	Envirolab Report No. 398285 (HAB-1)
Perfluorooctanoic acid (PFOA)	0.0004	-33.542316; 149.041257	10 December 2025	Envirolab Report No. 398285 (HAB-1)
Perfluorooctanesulfonic acid (PFOS)	0.0025	-33.542316; 149.041257	10 December 2025	Envirolab Report No. 398285 (HAB-1)
Perfluorobutanoic acid (PFBA)	0.008	-33.542316; 149.041257	10 December 2025	Envirolab Report No. 398285 (HAB-1)

Gutter Dust – Main Homestead

Contaminant	Value (mg/kg)	Approximate Location (lat; lon)	Sample Date	Source
Arsenic (As)	5.17	-33.5426927; 149.0406291	16 December 2024	UNSW ICP-MS / MW digestion report Ref: CCL#25005
Cadmium (Cd)	0.252	-33.5426927; 149.0406291	16 December 2024	UNSW ICP-MS / MW digestion report Ref: CCL#25005
Chromium (Cr)	63.4	-33.5426927; 149.0406291	16 December 2024	UNSW ICP-MS / MW digestion report Ref: CCL#25005
Copper (Cu)	141	-33.5426927; 149.0406291	16 December 2024	UNSW ICP-MS / MW digestion report Ref: CCL#25005
Lead (Pb)	23.6	-33.5426927; 149.0406291	16 December 2024	UNSW ICP-MS / MW digestion report Ref: CCL#25005
Nickel (Ni)	17	-33.5426927; 149.0406291	16 December 2024	UNSW ICP-MS / MW digestion report Ref: CCL#25005
Zinc (Zn)	18,589	-33.5426927; 149.0406291	16 December 2024	UNSW ICP-MS / MW digestion report Ref: CCL#25005

Rainwater Tank (Water) – Farm Stay

Contaminant	Value (µg/L)	Approximate Location (lat; lon)	Sample Date	Source
Aluminum (Al)	350,000	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185 (Old E Tank 2 #3)
Antimony (Sb)	12	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185 (Old E Tank 2 #3)
Arsenic (As)	64	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185 (Old E Tank 2 #3)
Cadmium (Cd)	2.4	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185 (Old E Tank 2 #3)
Chromium (Cr) (Total)	610	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185 (Old E Tank 2 #3)
Copper (Cu)	2,000	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185 (Old E Tank 2 #3)
Iron (Fe)	320,000	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185 (Old E Tank 2 #3)

Contaminant	Value (µg/L)	Approximate Location (lat; lon)	Sample Date	Source
Lead (Pb)	280	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185 (Old E Tank 2 #3)
Manganese (Mn)	5,400	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185(Old E Tank 2 #3)
Mercury (Hg)	3.8	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185 (Old E Tank 2 #3)
Nickel (Ni)	250	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185(Old E Tank 2 #3)
Selenium (Se)	21	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185 (Old E Tank 2 #3)
Zinc (Zn)	57,000	-33.542389877, 149.040543626	14 October 2025	Envirolab Report No. 395185(Old E Tank 2 #3)

River, Dam and Pond Water

Contaminant	Value (µg/L)	Approximate Location (lat; lon)	Sample Date	Source
Arsenic (As)	6	-33.536963458; 149.033589045	24 August 2025	Envirolab Report No. 389255 (DS06)
Copper (Cu)	7	-33.536963458; 149.033589045	24 August 2025	Envirolab Report No. 389255 (DS06)
Chromium (Cr)	3	-33.536963458; 149.033589045	24 August 2025	Envirolab Report No. 389255 (DS06)
Lead (Pb)	3	-33.536963458; 149.033589045	24 August 2025	Envirolab Report No. 389255 (DS06)
Nickel (Ni)	8	-33.536963458; 149.033589045	24 August 2025	Envirolab Report No. 389255 (DS06)
Zinc (Zn)	8	-33.536963458; 149.033589045	24 August 2025	Envirolab Report No. 389255 (DS06)

Monitoring Bore MB119

Contaminant	Value (µg/L)	Approximate Location (lat; lon)	Sample Date	Source
Arsenic (As)	3	-33.544304; 149.043906	5 February 2025	CVO Data
Manganese (Mn)	0.823	-33.544304; 149.043906	18 March 2024	CVO Data

Errowanbang Weir

Contaminant	Value (µg/L)	Approximate Location (lat; lon)	Sample Date	Source
Arsenic (As)	4	-33.544722; 149.043056	17 July 2024	ALS Report No. ES2424644 (ER – Weir)
Cadmium (Cd)	0.5	-33.544722; 149.043056	19 August 2024	ALS Report No. ES2427843 (ERW)
Chromium (Cr)	21	-33.544722; 149.043056	19 August 2024	ALS Report No. ES2427843 (ERW)
Copper (Cu)	149	-33.544722; 149.043056	19 August 2024	ALS Report No. ES2427843 (ERW)
Lead (Pb)	12	-33.544722; 149.043056	19 August 2024	ALS Report No. ES2427843 (ERW)
Nickel (Ni)	19	-33.544722; 149.043056	19 August 2024	ALS Report No. ES2427843 (ERW)
Zinc (Zn)	156	-33.544722; 149.043056	19 August 2024	ALS Report No. ES2427843 (ERW)

Annexure J

Toxicity Table

Heavy Metals

Key Hazardous Properties (Human Health / Environment)	ADWG Health	LDWG	ANZECC (99% ecosystem protection save where otherwise stated)	ANZECC Sediment	Other
	mg / L	mg / L	µg / L	mg / kg	Variable
Aluminium (Al)					
• Group 1 carcinogen (aluminium production) (**International Agency for Research on Cancer (IARC), World Health Organisation (WHO)**) • There is considerable evidence that aluminium is neurotoxic (**Australian Drinking Water Guidelines (ADWG)**) • High levels of aluminium affect phosphorus absorption and metabolism in animals, resulting in phosphorus deficiency. Symptoms of phosphorus deficiency include reduced growth, soft bones and fractures, and infertility (**Livestock Drinking Water Guidelines (LDWG)**)	N/A	<5, livestock <3.6, chickens	27, if pH >6.5	N/A	Aesthetic: 0.2 mg/L (**ADWG**)
Antimony (Sb)					
• Group 2A carcinogen (trivalent antimony) (**IARC, WHO**) • Exposure to Antimony can cause a variety of adverse health effects in humans, including cardiovascular effects as well as respiratory diseases such as emphysema (**Safe Work Australia, 2020**)	0.003	N/A	N/A	2	N/A
Arsenic (As)					
• Group 1 carcinogen (Arsenic and inorganic arsenic compounds) (**IARC, WHO**) • In humans, consumption of elevated levels of arsenic through drinking water is causally related to the development of cancer at several sites, particularly skin, bladder kidney and lung (**ADWG**) • Other adverse health effects that may be associated with long-term ingestion of inorganic arsenic include developmental effects, diabetes, pulmonary disease and cardiovascular disease. Arsenic-induced myocardial infarction in particular can be a significant cause of excess mortality (**WHO, 2022**) • Symptoms of arsenic intoxication in animals include diarrhoea, incoordination and anaemia (**LDWG**)	0.01	<0.025	1, As III 0.8, AsV	20	N/A

Key Hazardous Properties (Human Health / Environment)	ADWG Health	LDWG	ANZECC (99% ecosystem protection save where otherwise stated)	ANZECC Sediment	Other
	mg / L	mg / L	µg / L	mg / kg	Variable
Barium (Ba)					
• Chronic toxicity studies of barium chloride (a compound form of barium and chloride) in drinking water of rats and mice caused kidney effects at the higher doses used (**ADWG**)	2	N/A	<1,000 (Recreational purposes)	N/A	N/A
Cadmium (Cd)					
• Group 1 carcinogen (cadmium and cadmium compounds) (**IARC, WHO**) • In humans, long-term exposure can cause kidney dysfunction leading to the excretion of protein in the urine and osteomalacia (softening of the bones) (**ADWG**) • Cadmium is toxic to both animals and plants at low concentrations, and possibly has teratogenic, mutagenic and carcinogenic effects on livestock (**LDWG**) • Recorded as a chemical for which possible bioaccumulation and secondary poisoning effects should be considered (**Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC)**)	0.002	<0.01	0.06	1.5	N/A
Chromium (Cr)					
• Group 1 carcinogen (chromium VI compounds); Group 3 (chromium, metallic and chromium (III) compounds) (**IARC, WHO**) • Epidemiological studies have found an association between inhalation of hexavalent chromium compounds and lung cancer (**ADWG**) • Many hexavalent chromium compounds are carcinogenic to humans and animals. With animals, hexavalent chromium compounds (Chromium VI) can also cause mutations and chromosome aberrations (**ADWG**)	0.05, CrVI	<0.05, CrIII or CrVI	0.01, CrVI	80	N/A
Copper (Cu)					
• Copper is an essential trace element for humans but drinking water containing copper can cause gastrointestinal symptoms (nausea, abdominal pain and vomiting) and copper poisoning can result in cirrhosis of the liver and, in extreme cases, death (**ADWG**) • Excessive intake of copper by animals can lead to copper toxicosis in livestock. Copper initially accumulates in the liver of animals and may cause some reduction in growth. Chronic and acute effects such as liver damage and haemolytic jaundice can occur with extended exposure to high concentrations (**LDWG**)	2	<1, cattle; <0.5 sheep; <5, pigs and poultry	1	65	Aesthetic: 1 mg/L (**ADWG**)

Key Hazardous Properties (Human Health / Environment)	ADWG Health	LDWG	ANZECC (99% ecosystem protection save where otherwise stated)	ANZECC Sediment	Other
	mg / L	mg / L	µg / L	mg / kg	Variable
Cobalt (Co)					
• Cobalt metal (without tungsten carbide or other metal alloys) is classified as Group 2A carcinogenic (**IARC, WHO**) • If livestock diets are high in cobalt, the concentration in drinking water should be reduced (**LDWG**) • Concentrations of 1.1 mg/kg may result in a reduced appetite and some weight loss with calves (**LDWG**) • Chronic inhalation exposure can lead to irreversible lung damage (pulmonary fibrosis) (**Agency for Toxic Substances and Disease Registry (ATSDR), 2024**)	N/A	<1	50 (LTV in irrigation water, long term use); <100 (STV in irrigation water, short term use)	N/A	N/A
Iron (Fe)					
• High iron concentrations give water an undesirable rust-brown appearance and can cause staining of laundry and plumbing fittings, fouling of ion-exchange softeners, and blockages in irrigation systems. Growths of iron bacteria, which concentrate iron, may cause taste and odour problems and lead to pipe restrictions, blockages and corrosion (**ADWG**) • Excess intake of iron affects health through increasing reactive oxygen species (oxidative stress), which damages cell membranes and interrupts several biochemical reactions in the body (**LDWG**)	N/A	N/A	N/A	N/A	Aesthetic: 0.3 mg/L (**ADWG**) Maximum tolerable concentrations of dietary iron: 500 mg/kg for cattle, 500 mg/kg for sheep, 500 mg/kg for poultry (**LDWG**).
Lead (Pb)					
• Group 2A carcinogen (inorganic lead compounds) (**IARC, WHO**) • In humans, lead is a cumulative poison that can severely affect the central nervous system and is associated with numerous adverse effects, including increased blood pressure, cardiovascular effects, fatty liver disease, hip fractures, and kidney damage. Young children, infants and unborn babies are the most susceptible (**ADWG**)	0.005	<0.1	1	50	N/A

Key Hazardous Properties (Human Health / Environment)	ADWG Health	LDWG	ANZECC (99% ecosystem protection save where otherwise stated)	ANZECC Sediment	Other
	mg / L	mg / L	µg / L	mg / kg	Variable
• In animals, the toxicity depends on the type and age of the animal, the form of lead and the rate of lead ingestion. Symptoms of lead poisoning in mammals include neurological disturbances, gastrointestinal upset, haematologic abnormalities, immunosuppression, infertility and renal disease. Reduced resistance to diseases has been reporting following low-level intake of lead, and chronic effects such as anorexia and respiratory distress are associated with low-level poisoning (**LDWG**)					
Manganese (Mn)					
• Not classified as to its carcinogenicity to humans (**IARC, WHO**) • Manganese is an essential trace element for humans, but manganese toxicity can occur as a result of manganese dust inhalation in occupational settings (e.g. mining and welding) over long periods, and manganese in drinking water is associated with neurological effects such as intellectual impairment and poorer neurobehavioural function (**ADWG**) • Manganese is also an essential element in animal nutrition, but can be toxic in large amounts (**LDWG**)	0.1	<10	1,200	N/A	Aesthetic: 0.05 mg/L (**ADWG**)
Mercury (Hg)					
• Group 3 carcinogen (mercury and inorganic mercury compounds) (**IARC, WHO**) • In humans, exposure to inorganic mercury can cause various health effects including tremors, mental disturbances and gingivitis. The main toxic effects are to the kidney, leading to kidney failure (**ADWG**) • Mercury is one of the more toxic metals that may be present in the farm animal environment. Chronic mercury poisoning in animals results in loss of appetite, with consequent weight loss leading to possible hair loss, anal lesions and paralysis. Severe poisoning results in nervous system disorders and is usually fatal (**LDWG**) • Bioaccumulates and is likely to cause secondary poisoning (i.e. biomagnify) (**ANZECC**)	0.001	<0.002	0.06, inorganic	0.15, inorganic	N/A
Molybdenum (Mo)					
• Molybdenum is an essential trace element for humans and other animals. Data is scarce on the long- and short-term toxicity of molybdenum in humans (**ADWG**) • Effects of excessive intake in ruminants may include infertility, increased puberty age, testicular damage, and disorders of phosphorus metabolism that cause skeletal abnormalities and lameness (**LDWG**) • High intakes for humans has been linked to gout-like symptoms, joint pains of the legs and hands, and enlargement of the liver (**ADWG**)	0.05	<0.01	10 (LTV in irrigation water, long term use); 50 (STV in irrigation water, short	N/A	N/A

Key Hazardous Properties (Human Health / Environment)	ADWG Health	LDWG	ANZECC (99% ecosystem protection save where otherwise stated)	ANZECC Sediment	Other
	mg / L	mg / L	µg / L	mg / kg	Variable
• Effects of high intakes for animals include changes in skin and fur pigment, enlargement of joints, weight loss, diarrhoea and emaciation (**ADWG**)			term use)		
Nickel (Ni)					
• Group 1 carcinogen (nickel compounds); Group 2B carcinogen (nickel, metallic) (**IARC, WHO**) • In humans, long-term exposure may result in toxic effects to the kidney (**ADWG**) • A common skin allergen and can cause dermatitis (**ADWG**) • Inhalation of nickel can cause lung, sinus and nasal cancer (**ADWG**) • Animal studies have reported altered body weights, some evidence of liver toxicity and mild kidney toxicity with high nickel doses (**ADWG**)	0.02	<1	8	21	N/A
Selenium (Se)					
• Group 3 carcinogen (selenium and selenium compounds) (**IARC, WHO**) • Limited evidence around an association between selenium and an increase in prostate cancer and type 2 diabetes (**ADWG**) • Selenium is also an essential element in animal nutrition, but is toxic to animals at elevated concentrations. Chronic symptoms of selenium poisoning include loss of hair, lameness and decreased food intake, which may result in starvation. Acute selenium poisoning results in blindness, paralysis, difficulty breathing, diarrhoea and bloat, with death resulting from respiratory failure (**LDWG**)	0.004	<0.02	5, Total	N/A	N/A
Strontium (Sr)					
• Limited evidence of harmful impacts of strontium on humans and animals (**ATSDR**). • Animal studies showed that eating or drinking very large amounts of stable strontium can be lethal; growing bones were weakened. Strontium had more severe effects on bone growth in young animals than in adults (**ATSDR**)	N/A	N/A	N/A	N/A	N/A
Vanadium (V)					
• Toxic to animals at relatively low levels (**LDWG**) • Cattle: Calves showed stunted growth, pot belly, oedema, diarrhoea, and deaths (**LDWG**) • Sheep: Reduced feed intake and diarrhoea at 400 mg/day; death at 550 mg/day (**LDWG**)	N/A	<0.1	<100 (Toxicant guidelines for the protection	N/A	N/A

Key Hazardous Properties (Human Health / Environment)	ADWG Health	LDWG	ANZECC (99% ecosystem protection save where otherwise stated)	ANZECC Sediment	Other
	mg / L	mg / L	µg / L	mg / kg	Variable
• Poultry: Toxicity at 30 mg/kg diet - oxidative damage, renal/hepatic lesions; growth reduction at 13 mg/kg (**LDWG**)			of aquaculture species)		
Zinc (Zn)					
• Zinc is an essential element for humans, but consumption of very high amounts can result in nausea, vomiting, diarrhoea, cramps; major effects of long-term exposure can cause copper deficiency, anaemia, gastric erosion (**ADWG**) • Zinc is also an essential element in animal nutrition, but chronic overdosing can damage the liver, pancreas, kidneys; pregnant/young most at risk. Acute zinc toxicosis causes weight loss, diarrhoea, decreased appetite, decreased milk production, polyuria, listlessness; high zinc also affects copper uptake (**LDWG**)	N/A	<20	2.4	200	Aesthetic: 3 mg/L (**ADWG**)

PFAS

Key Hazardous Properties (Human Health / Environment)	ADWG (µg / L)	LDWG (µg / L)	ANZECC (µg / L)	ANZECC Sediment (mg / kg)	Other Guideline / reference Value
PFOS					
• Group 2B carcinogen (**IARC, WHO**) • Evidence of an association between elevated PFOS concentrations in blood and increased blood total cholesterol concentrations (**ADWG**) • PFAS are synthetic organic compounds, for which there is no natural background (ambient) level (**PFAS NEMP**)	0.008	N/A	0.00023	N/A	Tolerable daily intake: 0.02µg/kg_{bw}/day (PFOS and PFHxS combined) (**PFAS NEMP**) Recreational water quality guideline: 2 µg/L (PFOS and PFHxS combined) (**PFAS NEMP**) Residential with garden/ accessible soil: 0.003 mg/kg (PFOS and PFHxS combined) (**PFAS NEMP**)

Key Hazardous Properties (Human Health / Environment)	ADWG (μg / L)	LDWG (μg / L)	ANZECC (μg / L)	ANZECC Sediment (mg / kg)	Other Guideline / reference Value
• PFOS is persistent in the environment, bioaccumulative and toxic to aquatic life (**PFAS NEMP**)					Sites with mean livestock drinking water concentrations as low as 0.003 μg/L may exceed the European Commission Maximum Limits for PFOS in cattle meat (**Mikkonen, Taylor et al, 2023**)
PFHxS					
• PFHxS exposure is associated with potential thyroid effects and altered immune response (**ADWG**) • In animal studies, PFHxS has been linked to liver enlargement, and potential developmental effects (**ADWG**) • PFAS are synthetic organic compounds, for which there is no natural background (ambient) level (**PFAS NEMP**) • PFHxS is persistent in the environment, bioaccumulative and toxic to aquatic life (**PFAS NEMP**)	0.03	N/A	N/A	N/A	Tolerable daily intake: 0.02μg/kg$_{bw}$/day (PFOS and PFHxS combined) (**PFAS NEMP**) Recreational water quality guideline: 2 μg/L (PFOS and PFHxS combined) (**PFAS NEMP**) Residential with garden/ accessible soil: 0.003 mg/kg (PFOS and PFHxS combined) (**PFAS NEMP**)
PFOA					
• Group 1 carcinogen (**IARC, WHO**) • Sufficient evidence for cancer in experimental animals and 'strong' mechanistic evidence of key characteristics of carcinogens in exposed humans (**ADWG**) • PFAS are synthetic organic compounds, for which there is no natural background (ambient) level (**PFAS NEMP**) • PFOA is persistent in the environment, bioaccumulative and toxic to aquatic life (**PFAS NEMP**)	0.2	N/A	N/A	N/A	Tolerable daily intake: 0.16μg/kg$_{bw}$/day (**PFAS NEMP**) Recreational water quality guideline: 10 μg/L (PFOS and PFHxS combined) (**PFAS NEMP**) Residential with garden/ accessible soil: 0.06 mg/kg (**PFAS NEMP**)
PFBA					
• Evidence indicates that developmental, thyroid, and liver effects in humans are likely caused by PFBA exposure in utero or during adulthood (**IRIS EPA**)	N/A	N/A	N/A	N/A	Reference dose per kilogram body weight across a lifetime (measured in RfD): $>1 \times 10^{-3}$ (Hepatic and Thyroid health systems) and $>6 \times 10^{-3}$ (developmental health system) (**IRIS EPA**)

Waste Rock Minerals and other substances

Key Hazardous Properties (Human Health / Environment)	ADWG Health (mg / L)	LDWG (mg / L)	ANZECC (µg / L)	ANZECC Sediment (mg / kg)	Other Guideline / reference Value
Calcium					
• High calcium concentrations may cause calcious formations in the body of animals, or phosphorus deficiency by interfering with phosphorus absorption (**LDWG**) • Can contribute to poor growth, soft bones, fractures and infertility in animals (**LDWG**) • May cause scaling problems in pipes, troughs and fittings (**LDWG**)	N/A	<1,000	<1,000,000 (Livestock drinking water quality)	N/A	N/A
Chloride					
• Chloride is a major contributing ion of total dissolved solids (salinity) concentrations (**LDWG**) • Water with high TDS concentrations can cause physiological problems and sometimes death in land animals (**LDWG**) • High salinity water can cause gastrointestinal symptoms and reduce weight gain in animals and milk or egg production (**LDWG**) • Livestock generally find high-salinity water unpalatable, reducing water intake and increasing risk of urolithiasis (**LDWG**) • Issues concerning chloride in irrigation waters relate to the risk of foliar injury to crops (**ANZECC**)	N/A	No explicit standalone guideline; included in TDS, <500	<70,000 - <100,000 (Tolerance of chloride sensitive crops to chloride in irrigation water)	N/A	Aesthetic: 250 mg/L (**ADWG**)
Fluoride					
• Excess uptake of fluoride can result in tooth damage to growing animals and bone lesions in older animals (**LDWG**) • Chronic fluorosis is characterised by signs of malnutrition and skeletal and dental abnormalities (**LDWG**) • Moderate to severe dental disease can be caused by fluorosis and can affect food consumption, cause pain and loss of function (**LDWG**) • Concentrations above 1.5 mg/L may disturb tooth mineralization in humans (**ADWG**)	1.5	<2	<2,000 (Recommended water quality trigger values, low risk, for heavy metals and metalloids in	N/A	N/A

Key Hazardous Properties (Human Health / Environment)	ADWG Health (mg / L)	LDWG (mg / L)	ANZECC (µg / L)	ANZECC Sediment (mg / kg)	Other Guideline / reference Value
			livestock drinking water)		
Magnesium					
• Very high doses can cause scouring and diarrhoea, lethargy, lameness, decreased feed intake and decreased performance in animals (**LDWG**)	N/A	<500	<15,000 (Toxicant guidelines for the protection of aquaculture species)	N/A	N/A
Potassium					
• TDS includes ions such as potassium sulfates (**LDWG**) • Water with high TDS concentrations can cause physiological problems and sometimes death in land animals (**LDWG**) • Excessive mineral salts intake can increase incidence of eggshell defects in poultry (**LDWG**) • High salinity water can cause gastrointestinal symptoms and reduce weight gain in animals (**LDWG**)	N/A	No explicit standalone guideline; included in TDS, <500	N/A	N/A	N/A
Sodium					
• TDS includes ions such as sodium sulfates (**LDWG**) • Water with high TDS concentrations can cause physiological problems and sometimes death in land animals (**LDWG**) • Animals under physiological stress are particularly susceptible to mineral imbalances and salt poisoning (**LDWG**) • Reduced water intake owing to poor palatability can lead to urolithiasis in ruminants (**LDWG**)	N/A	No explicit standalone guideline; included in TDS, <500	<115,000 (Irrigation water for crops of varying sensitivity, causing foliar injury)	N/A	Aesthetic: 180 mg/L (**ADWG**)
Sulfate					
• Excessive concentrations of sulfate in water typically cause diarrhoea in livestock (**LDWG**) • Very high concentrations of sulfate in drinking water (7,200 mg/L) have been associated with an outbreak of polioencephalomalacia in cattle, with symptoms including depression, ataxia, cortical blindness, dysphagia and death (**LDWG**)	N/A	<500, livestock; <250, poultry; <2,650, pigs	<1,000,000 (Major ions of concern for livestock drinking water quality)	N/A	Aesthetic: 250 mg/L (**ADWG**)

Key Hazardous Properties (Human Health / Environment)	ADWG Health (mg / L)	LDWG (mg / L)	ANZECC (µg / L)	ANZECC Sediment (mg / kg)	Other Guideline / reference Value
• Ingestion of high doses by humans can result in catharsis (loosening of the bowels) with dehydration as a possible side effect (**ADWG**)					
Total Dissolved Solids (Salinity)					
• Water with high TDS concentrations can cause physiological problems and sometimes death in land animals (**LDWG**) • Livestock generally find high-salinity water unpalatable (**LDWG**) • Potential for reduced wool production, diarrhoea, mortality and decreased body weight gains at 10,000,000 µg/L - 13,000,000 µg/L (**LDWG**)	N/A	<500	<5,000,000, beef cattle <4,000,000, dairy cattle <6,000,000, pigs <3,000,000, poultry (Tolerances of livestock to total dissolved solids (salinity) in drinking water, loss of production and decline in animal condition and health)	N/A	Aesthetic: 1,200 mg/L (unpalatable) (**ADWG**)

pH (Acidic / Alkaline Water)

Key Hazardous Properties (Human Health / Environment)	ADWG	LDWG	ANZECC	ANZECC Sediment	Other Guideline / reference Value
• The greatest hazard with high or low pH is the potential for deterioration as a result of corrosion or fouling (**ANZECC**) • In humans, extreme values of pH result in irritation of the eyes, skin and mucous membranes. Eye irritation and exacerbation of skin disorders have been associated	6.5 – 8.5	N/A	6 – 8.5, groundwater 6 – 9, surface water	N/A	N/A

Key Hazardous Properties (Human Health / Environment)	ADWG	LDWG	ANZECC	ANZECC Sediment	Other Guideline / reference Value
with pH values above 11. Gastrointestinal irritation may occur in sensitive individuals at pH values above 10. Below pH 4, redness and irritation of the eyes have been reported, with the severity increasing with decreasing pH. Below pH 2.5, damage to the epithelium is irreversible and extensive (**ADWG**)			(General water uses)		

Airborne particulate matter and Silica

Key Hazardous Properties (Human Health / Environment)
Particulate Matter (Including but not limited to $PM_{2.5}$ and PM_{10})
• Long-term and short-term exposures to ambient air particulate matter have been associated with detrimental health effects. Long-term exposure contributes to the initiation and progression of disease over months or years. These include conditions such as cardiovascular-related mortality, atherosclerosis, ischaemic heart disease, complications of diabetes, respiratory-related mortality, asthma symptoms, reduced lung function in children, reduced lung function in susceptible adults, and lung cancer, amongst others (***Hime et al.*, 2015, pp. 40-41, as cited in Serinus Report, p. 9**). • There is strong evidence of negative impacts on respiratory and cardiovascular systems from both short-term (24-hours) and longterm (annual) exposures to particulate air pollution (**Serinus Report, p. 9**). • Short-term exposure affects susceptible members of the population because of existing chronic disease, compromised respiratory function in the developing lungs of children, or compromised physiological function in the elderly from the effects of ageing (***Brook et al.*, 2020, as cited in *Hime et al.*, 2015, p. 40, as cited in Serinus Report, p. 9**). • The moderate/low pulmonary retention of some metals, such as Fe, Ca, Mg, Zn, Cu, and Co, indicates that once particulate matter is deposited in the lungs, a series of chemical, physical, and biochemical processes facilitates the leaching of these metals from pulmonary particulate matter. These metals can then rapidly diffuse through lung tissue and potentially migrate to other parts of the body. Other metals can remain bound to the lungs for longer periods, being slowly released into the body, depending on the leaching behavior of each metal. Therefore, the presence of particulate matter in the lungs could be considered as a proxy of acute and chronic exposure to metals (***Ellwanger et al.*, 2025, p. 5**) • Available studies concerning anthracosis ("non-pathogenic" deposition of particulate matter in the lungs) in animal populations shows that particulate matter deposition in animals' lungs can affect body condition, inflammation levels, and is associated with lung cancer development. Similar to what is observed in humans, ***Ellwanger et al.*, (2025)** speculate that metals bound to PM (particulate matter) are responsible, at least in part, for the animal health problems associated with PM exposure (**p. 7**) • PM (particulate matter) can interact with other atmospheric components and can be associated with the formation of secondary pollutants, such as ground-level ozone and harmful gases (***Matei et al.*, 2025, p. 4**) • Depending on their chemical composition, the effects of settling of particulate matter may include: making lakes and streams acidic; changing the nutrient balance in coastal waters and large river basins; depleting the nutrients in soil; damaging farm crops; affecting the diversity of ecosystems; and contributing to acid rain effects (**US EPA, 2025; *Matei et al.* 2025, p. 12**).
Silica
• Crystalline forms of silica, when ground into small particles, can lodge deep into the lungs and cause a range of respiratory illnesses including silicosis (**Serinus Report, pp. 9-10**). • Exposure to Silica can cause tumours. The carcinogenic potential of RCS primarily results from genotoxicity by indirect mechanisms related to damage of lung cells, leading to inflammation and a tumor-promoting inflammatory microenvironment (***Boers*, 2024, p. 36**). • RCS is also associated with pathological mechanisms that could result in chronic obstructive pulmonary disease; renal damage; cardiovascular diseases; and autoimmune diseases (***Boers*, 2024, pp. 40-42**). • Genotoxic effects have been noted in animals and humans (***Borm et al.*, 2018, p. 14**). Although, humans appear to exhibit the adverse effects of silica exposure at lower levels than animals (**Serinus Report, p. 10**). • Regardless of the potential variability in toxicity of various forms of Silica, all forms are toxic (**OEHHA 2005, p. 38, as cited in Serinus Report, p. 10**).