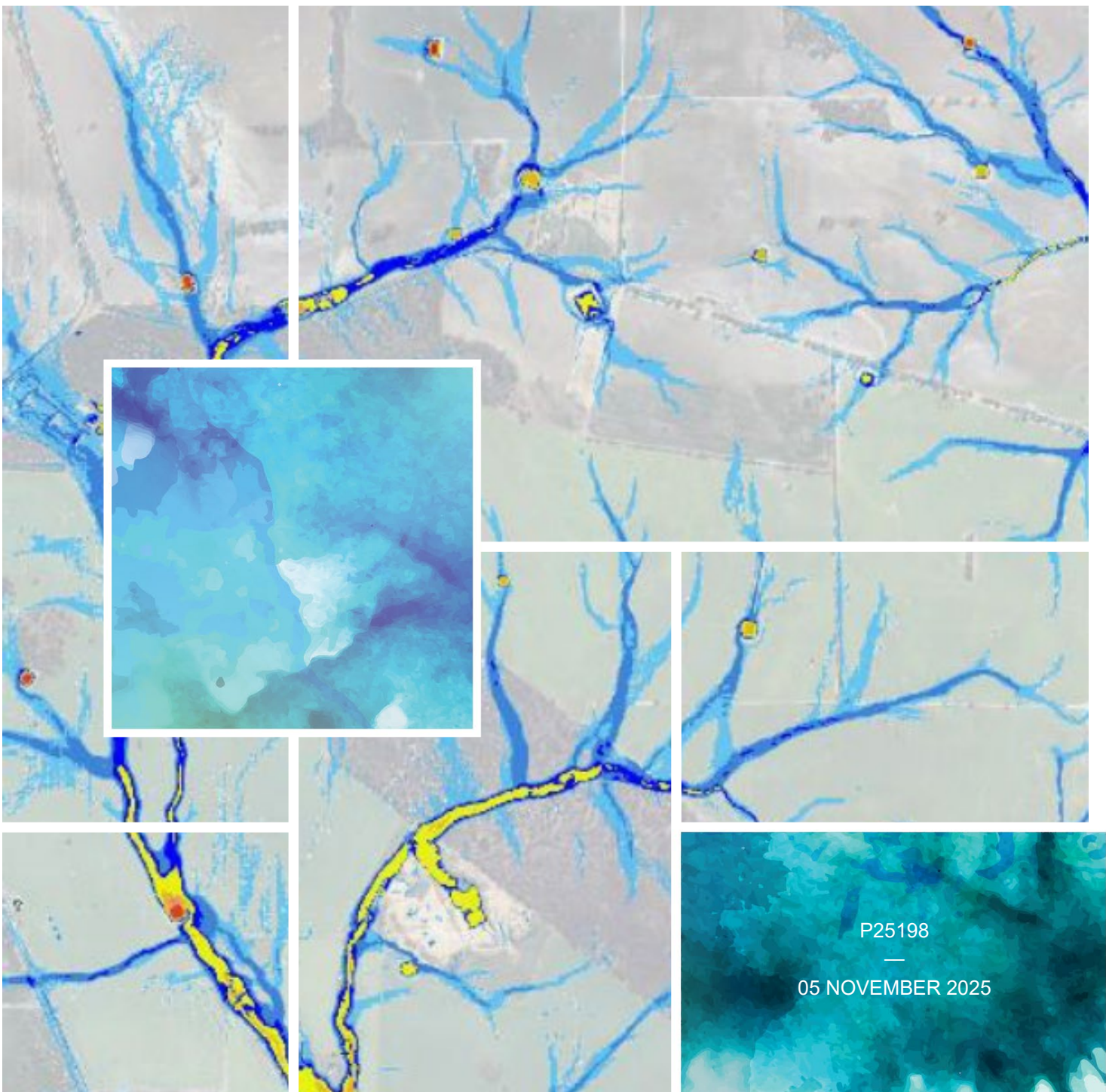


# WATERWAY MONITORING PLAN AND BASELINE MONITORING RESULTS (2025)

BRISBANE | **PERTH** | SINGAPORE | BRAZIL

AUSGOLD KATANNING GOLD PROJECT (KGP)



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THIS COMPANY IS REGISTERED FOR GST.

 **STREET**  
1/71 Troy Terrace  
Jolimont 6014  
WESTERN AUSTRALIA

 **REGISTERED**  
c/- de Blonk Smith and  
Young Accountants  
GPO 119, Brisbane 4001  
QUEENSLAND

 **POSTAL**  
PO Box 1034  
West Leederville 6901  
WESTERN AUSTRALIA

 **CONTACT**  
+61 (0)8 6218 0900 P  
infowa@hydrobiology.com

ABN 68 120 964 650

[www.hydrobiology.com](http://www.hydrobiology.com)

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---

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# 1. INTRODUCTION

This Waterway Monitoring Plan provides a practical, map-based guide for Ausgold's sampling team to undertake baseline surface water quality sampling in key drainage lines before mining commences at the Katanning Gold Project (KGP).

Sampling will be event-based, targeting flow events following rainfall, and will focus on parameters relevant to gold mining activities. The plan is designed to support effective baseline monitoring and future compliance requirements.

The report also documents the 2025 monitoring (3 rounds), presenting a tabulated summary of the results and the key learnings derived from applying the plan (Section 6). These insights will inform the design and optimisation of subsequent monitoring rounds.

This is the first year of surface-water monitoring at the KGP, and the plan adopts an initial, flexible approach. It was intended to make the most of the winter-flow window before pre-construction activities begin, potentially as early as August next year. The programme is deliberately adaptive: sampling locations, parameters and frequencies may be altered as observations are collected, data are interpreted, and the project progresses.

## 1.1 PURPOSE

- To guide Ausgold's in-house team in monitoring surface water quality in drainage lines that may receive runoff from proposed mining areas.
- To support the collection of reliable baseline data on surface water quality prior to mining, informing future environmental management and compliance.

## 1.2 MONITORING OBJECTIVES

- Establish baseline surface water quality conditions in ephemeral flow systems that respond rapidly to seasonal rainfall prior to mining commencement.
- Measure key water quality parameters relevant to gold mining, including suspended solids, pH, salinity, metals, major ions and nutrients during active flow periods.
- Guide internal understanding of site conditions and support future regulatory engagement, with sampling designed to align with relevant DWER guidance for water quality monitoring at mine sites and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018), while maintaining flexibility appropriate to a baseline data collection phase.

## 1.3 SCOPE

- Currently excludes flow or depth measurements; however, these components can be incorporated into the program at a later stage as the project progresses.
- Currently excludes sediment sampling but may be incorporated if water quality results indicate elevated levels of key parameters.
- Excludes groundwater monitoring.
- Laboratory coordination and fieldwork logistics are managed by Ausgold's internal team.
- Assumes all sampling is conducted by Ausgold's internal team.

# 2. MONITORING FRAMEWORK

## 2.1 SITE TOPOGRAPHY, CATCHMENT DELINEATION AND DRAINAGE DIRECTIONS

The proposed mine is situated on a hill with a maximum elevation of 394 m AHD. According to DWER mapping (DWER 2017), the area is divided into four sub-catchments; however, only three of these intersect with the proposed mine infrastructure (see Figure 1, Figure 2 and Figure 3). The southernmost of these sub-catchments can be further divided into two smaller catchments, described below:

- Sub-catchment 1: includes the northern sides of the largest Waste Rock Landform (WRD Main), the eastern half of one of the northern Waste Rock Landform (WRD N2), a topsoil stockpile, and a portion of the eastern side of the Jinkas pit, and drains towards the north.
- Sub-catchment 2: includes the Jackson Pit, Olympia Pits, a large northern portion of the Jinkas Pit, two of the northern Waste Rock Landform (WRD N1 A & B) and the western half of WRD N2, and drains to the northeast.
- Subcatchment 3A: includes a topsoil stockpile and the Tailings Storage Facility (TSF) and drains towards the east.
- Subcatchment 3B: includes the Dingo Pits, the southern portion of WRD Main and Jinkas Pit, the two southern Waste Rock Landforms (WRD S 1 & 2), six topsoil stockpiles (including the long-term stockpile), the Run-of-Mine (ROM) pad and process plant area. It drains towards the south.

These sub-catchments ultimately connect to regional surface water systems as outlined below:

- Sub-catchment 1 drains towards Datatine Gully, which flows into Dongolocking Creek and subsequently the Coblinine River.
- Sub-catchment 2 drains towards upper tributaries that join the Coblinine River upstream of Coyrecup Lake, a near-permanent saline lake situated on the river's floodplain.
- Sub-catchments 3A and 3B drain to upper tributaries of the Coblinine River further downstream from the point where Sub-catchment 2 connects.
- The Coblinine River flows into Lake Dumbleyung, a natural salt lake, which discharges into the Blackwood River, which flows to its estuary at Augusta (SRK 2025).

## 2.2 CLIMATIC CONTEXT AND EPHEMERAL FLOW REGIME

The project area consists of small, hilltop catchments that have been predominantly cleared for farmland. These factors contribute to a rapid hydrological response to rainfall events, with flow in drainage lines and creeks rising and falling quickly. The elevated position limits water accumulation, while the lack of vegetation cover and soil compaction typical of agricultural land reduce infiltration capacity, resulting in increased surface runoff that is generally short-lived following individual rainfall events.

Climatic data indicate a distinct seasonal rainfall pattern, with the majority of precipitation occurring during the cooler months of June to August. Median monthly pan evaporation exceeds median monthly rainfall in all months except June and July, highlighting a strong drying trend throughout much of the year. This combination of seasonal rainfall and high evaporative demand results in intermittent surface water flows, with streams and drainage lines generally dry outside of the winter/early spring rainfall period.

Notably, the highest recorded daily rainfall within the historical record was 93.5 mm on 21 January 1982 (WSP 2025), illustrating the potential for intense but sporadic flow events, even outside the typical rainfall season.

## 2.3 DRAINAGE FLOWPATHS AND INTERACTION WITH MINING INFRASTRUCTURE

Flow paths and catchments across the site were delineated based on topographic data (Figure 1). The relationship between flow paths and proposed mining infrastructure is illustrated in Figure 2 and Figure 3, providing a clear indication of key areas where surface runoff is likely to intersect or interact with mining disturbance features. These locations represent critical points for monitoring, particularly drainage lines downstream of:

- Perimeter drains, sediment retention ponds and downstream seepage collection ponds associated with Waste Rock Landforms;
- Perimeter drains and sediment retention ponds around the Tailings Storage Facility (TSF) and downstream seepage collection ponds;
- Stormwater ponds receiving runoff from the Site Plant Area and Run of Mine (ROM) pad; and
- Localised diversion systems managing non-contact water from upstream small catchments around pits.

Additionally:

- Catchment outlets that receive combined runoff from multiple disturbed areas; and
- Reference sites i.e. locations along drainage lines outside the mine footprint that do not receive runoff from disturbed areas, selected to have similarly sized catchments for comparison with monitoring sites downstream of mining activities.

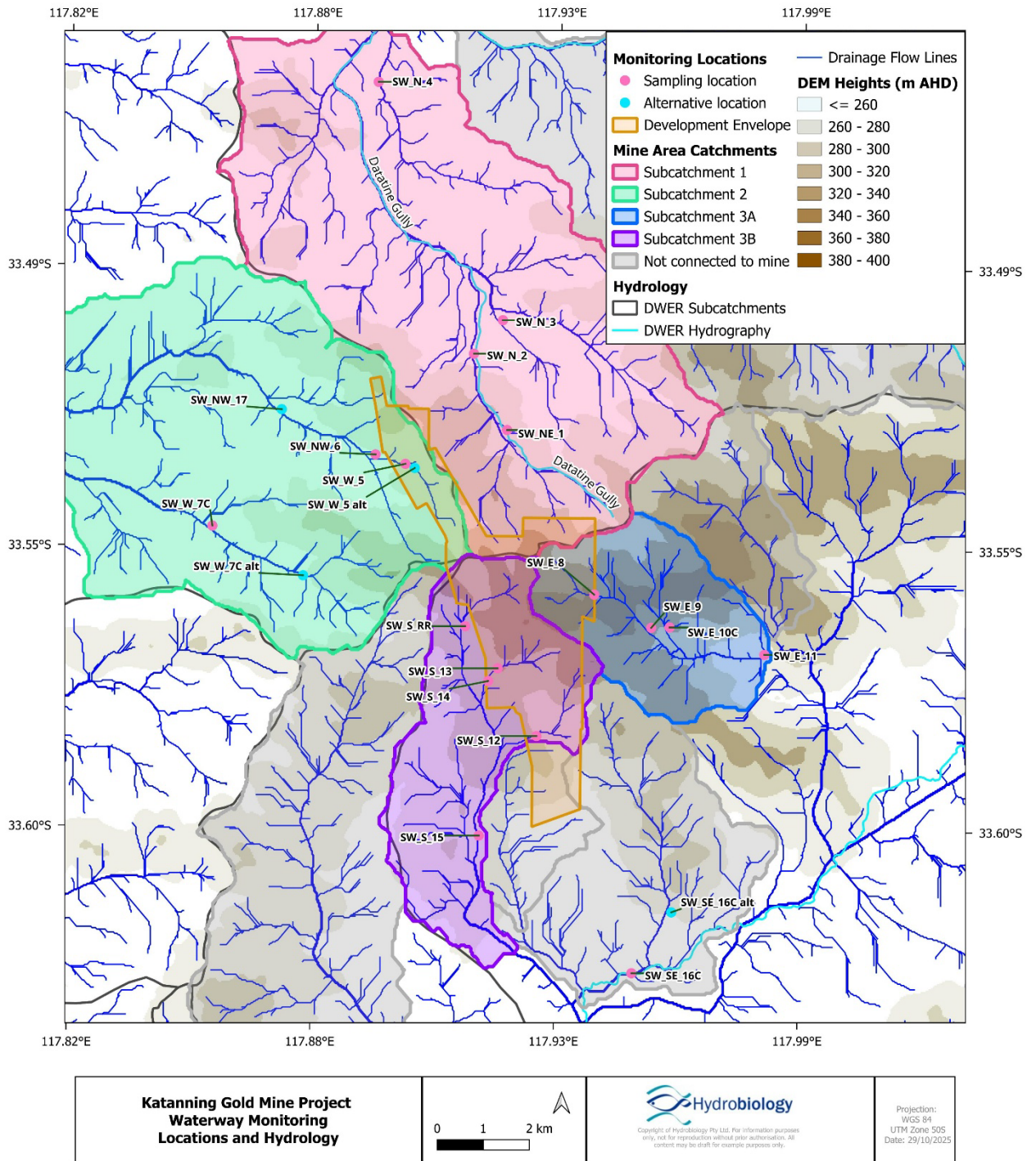


Figure 1 Site Hydrology

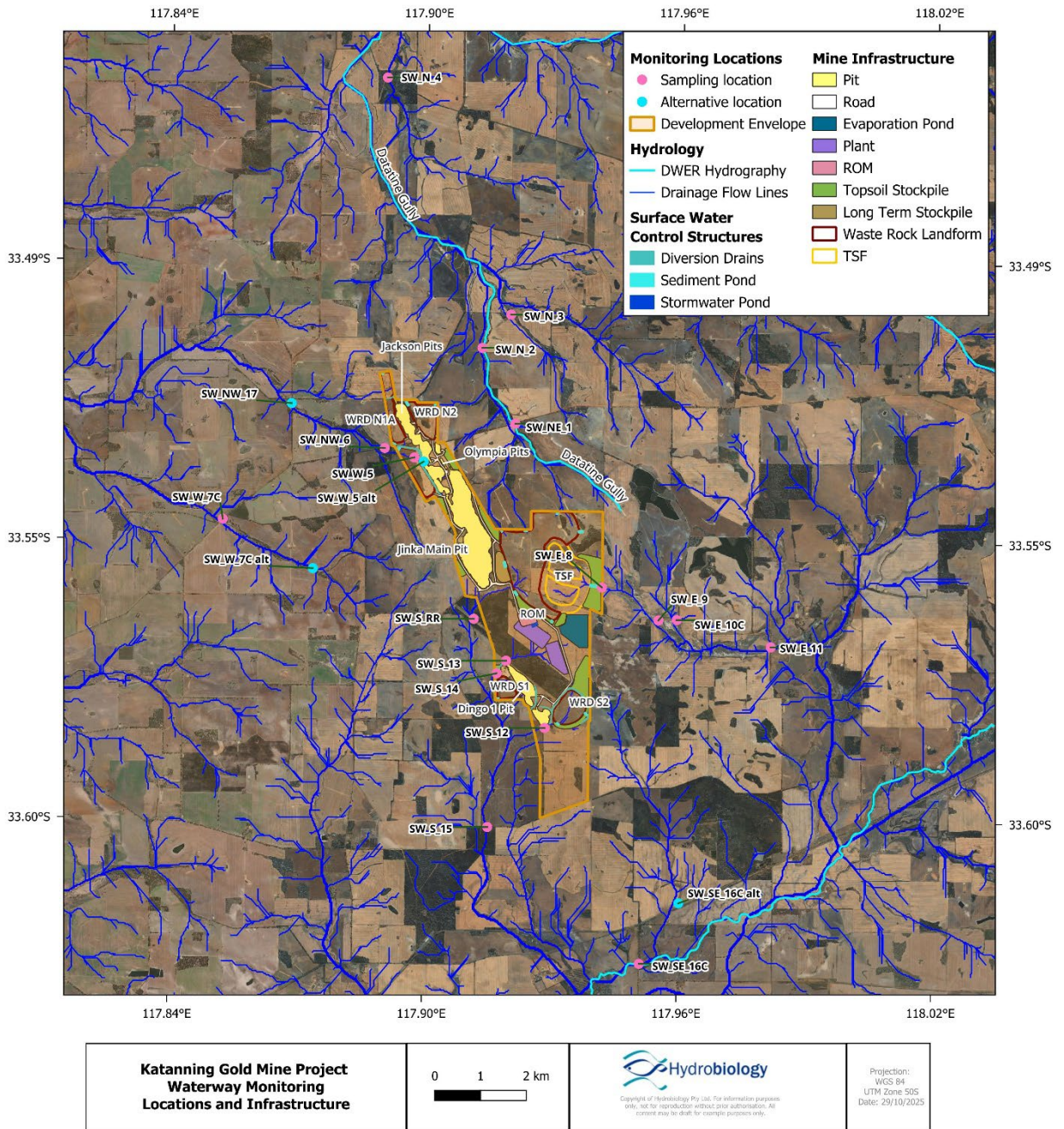


Figure 2 Proposed Mine Layout

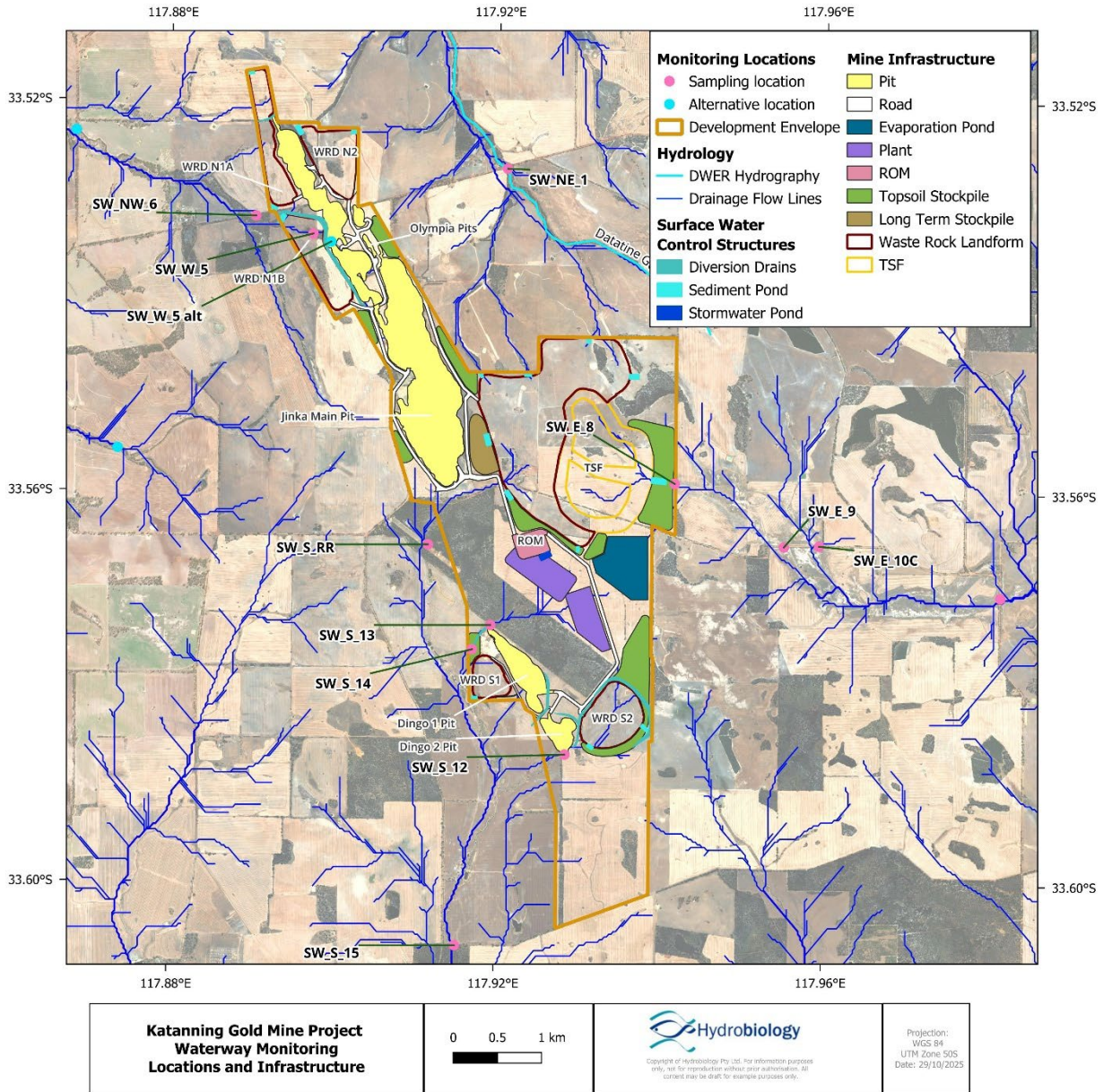


Figure 3 Proposed Mine Layout (Closeup)

# 3. MONITORING PROGRAM

Sampling during 2025 and early 2026 is intended to establish a baseline dataset under current land use conditions, noting that grazing and fertiliser use in degraded drainage lines have already altered the natural baseline. The initial data collection phase is for internal guidance only. A more structured, spatio-temporal monitoring framework may be considered in consultation with regulators from late 2025 onwards.

## 3.1 MONITORING FREQUENCY

### 3.1.1 SUGGESTED FREQUENCY

- Event-based sampling focused during typical peak flow season, with up to four sampling events per year, depending on flow availability.
- At least one sampling round should occur between July and October, which typically corresponds to the seasonal peak flow period.
- Additional sampling may be undertaken opportunistically, particularly following significant unseasonal rainfall events (e.g. summer storms) that generate flow
- Where possible, sampling should occur as quickly as possible (within 24 hours) following significant rainfall (e.g. >10–15 mm, depending on soil wetness), as peak runoff is expected to occur shortly after rain and recede rapidly.

The timing of sampling will depend on flow availability and rainfall patterns. Table 1 provides indicative timing to support planning, while allowing flexibility to respond to actual conditions.

Table 1 Indicative Monitoring Frequency Guidance

Period	Monitoring Opportunity	Notes
July–October	Aim for at least one event	Typical seasonal flow period, monitor when flow occurs
Remainder of year	Opportunistic, as feasible	Only if significant rainfall occurs

### 3.1.2 RATIONALE

- Ephemeral nature of flow: Sampling should occur only when runoff is present - typically immediately following rainfall events that generate flow in the drainage lines.
- Seasonal flow patterns: The winter to early spring period (July–October) is typically when surface water flow is most likely, due to seasonal rainfall and saturated catchments. However, unseasonal rainfall events outside this period may also generate short-duration flows and provide additional sampling opportunities.
- Data robustness: Where feasible, aim to capture up to four discrete sampling events per year, including any significant unseasonal flow events, to represent a broad range of flow and water quality conditions.

## 3.2 MONITORING LOCATIONS

The locations selected for surface water monitoring are shown in Figure 4 and summarised in Table 2 (coordinates) and Table 3 (site justification). Sites have been positioned downstream of proposed mining disturbance features within each subcatchment. Reference sites have also been proposed within each subcatchment at locations that will not receive runoff from the mine. Seventeen locations were selected by Ausgold and reviewed by Hydrobiology. Four alternative locations (SW\_W\_5A, SW\_W\_7CA, SW\_NW\_17 and SW\_W16A) were suggested by Hydrobiology to ensure that reference sites are more comparable to the monitoring sites or address anticipated site infrastructure.

Table 2 Monitoring Site Coordinates

Number	Name	Type	Latitude	Longitude	Easting	Northing
1	SW_NE_1	Compliance	-33.527	117.921	585523	6289920
2	SW_N_2	Compliance	-33.512	117.913	584807	6291582
3	SW_N_3C	Reference	-33.505	117.920	585437	6292305
4	SW_N_4	Reference	-33.459	117.890	582732	6297487
5	SW_W_5	Compliance	-33.534	117.897	583317	6289179
	SW_W_5A	" "	-33.534	117.899	583516	6289096
6	SW_NW_6	Compliance	-33.532	117.890	582663	6289384
7	SW_W_7C	Reference	-33.546	117.852	579126	6287840
	SW_W_7A	" "	-33.556	117.874	581098	6286765
	SW_NW_17	Compliance	-33.523	117.868	580629	6290376
8	SW_E_8	Compliance	-33.559	117.942	587414	6286345
9	SW_E_9	Compliance	-33.565	117.955	588648	6285626
10	SW_E_10C	Reference	-33.565	117.959	589047	6285632
11	SW_E_11	Compliance	-33.571	117.982	591107	6285033
12	SW_S_12	Compliance	-33.587	117.928	586158	6283274
13	SW_S_15	Compliance	-33.606	117.915	584909	6281105
14	SW_S_13	Compliance	-33.574	117.919	585318	6284745
15	SW_S_14	Compliance	-33.576	117.917	585115	6284467
16	SW_S_RR	Compliance	-33.565	117.912	584613	6285656
17	SW_SE_16C	Reference	-33.633	117.951	588216	6278115
	SW_W_16A	" "	-33.621	117.960	589088	6279445

Table 3 Site Justification and Monitoring Rationale

Name	Type	Justification/ Notes
<b>Subcatchment 1</b>		
<b>SW_NE_1</b>	Compliance	Located on Datatine Gully, downstream of mine infrastructure in Subcatchment 1.
<b>SW_N_2</b>	Compliance	Further downstream on Datatine Gully, continuing to monitor potential impacts from Subcatchment 1.
<b>SW_N_3</b>	Reference	Tributary of Datatine Gully, not expected to receive runoff from proposed mine infrastructure. Two possible options for reference sites in Subcatchment 1* * currently inaccessible, access agreement pending?
<b>SW_N_4</b>	Reference	
<b>Subcatchment 2</b>		
<b>SW_W_5</b>	Compliance	Located on diversion drain for proposed WRD N1B. Current location may be atop proposed WRD N1B – consider adjusting site placement ( <b>SW_W_5A</b> )
<b>SW_NW_6</b>	Compliance	Downstream of diversion drain and sediment ponds for proposed WRD N1B
<b>SW_W_7C</b>	Reference	Drainage line to the south, not expected to receive runoff from proposed mine infrastructure. Consider moving further upstream so more similar catchment size to compliance sites in Subcatchment 2 ( <b>SW_W_7A</b> ) but this may be difficult due to accessibility. OR add a new compliance site to compare it to ( <b>SW_NW_17</b> ).
<b>SW_NW_17</b>	Compliance	Suggested new site further downstream of SW_W_5 and SW_NW_6. More comparable to reference site (similar catchment size).
<b>Subcatchment 3</b>		
<b>SW_E_8</b>	Compliance	Downstream of sediment pond for proposed TSF; provides assurance that control measures are functioning.
<b>SW_E_9</b>	Compliance	Located further downstream of TSF.
<b>SW_E_10C</b>	Reference	Separate drainage line nearby to SW_E_9, not expected to receive runoff from proposed mine infrastructure.
<b>SW_E_11</b>	Compliance	Furthest downstream site of the TSF series, established to verify that downstream water quality remains unaffected by TSF operations.

Name	Type	Justification/ Notes
<b>Subcatchment 3B</b>		
<b>SW_S_12</b>	Compliance	Downstream of WRD S2; to verify that runoff from the waste rock landform is effectively managed on-site.
<b>SW_S_13</b>	Compliance	Upstream of Dingo Pit surcharge/future diversion drain.
<b>SW_S_14</b>	Compliance	Downstream of Dingo Pit surcharge/future diversion drain.
<b>SW_S_15</b>	Compliance	Main outlet of catchment 3B; integrates and captures all potential water quality influences within this catchment.
<b>SW_S_RR</b>	Compliance	Downstream of WRD Main and ROM pad stormwater pond. Within rifle range, currently inaccessible.
<b>SW_SE_16C</b>	Reference	Minor river (tributary of Cobline River). Reference site for Subcatchment 3B. Would be better to site off main river as this appears to be distantly connected to mine runoff. A suggested alternative location is <b>SW_SE_16A</b> (not expected to receive runoff from proposed mine infrastructure_.

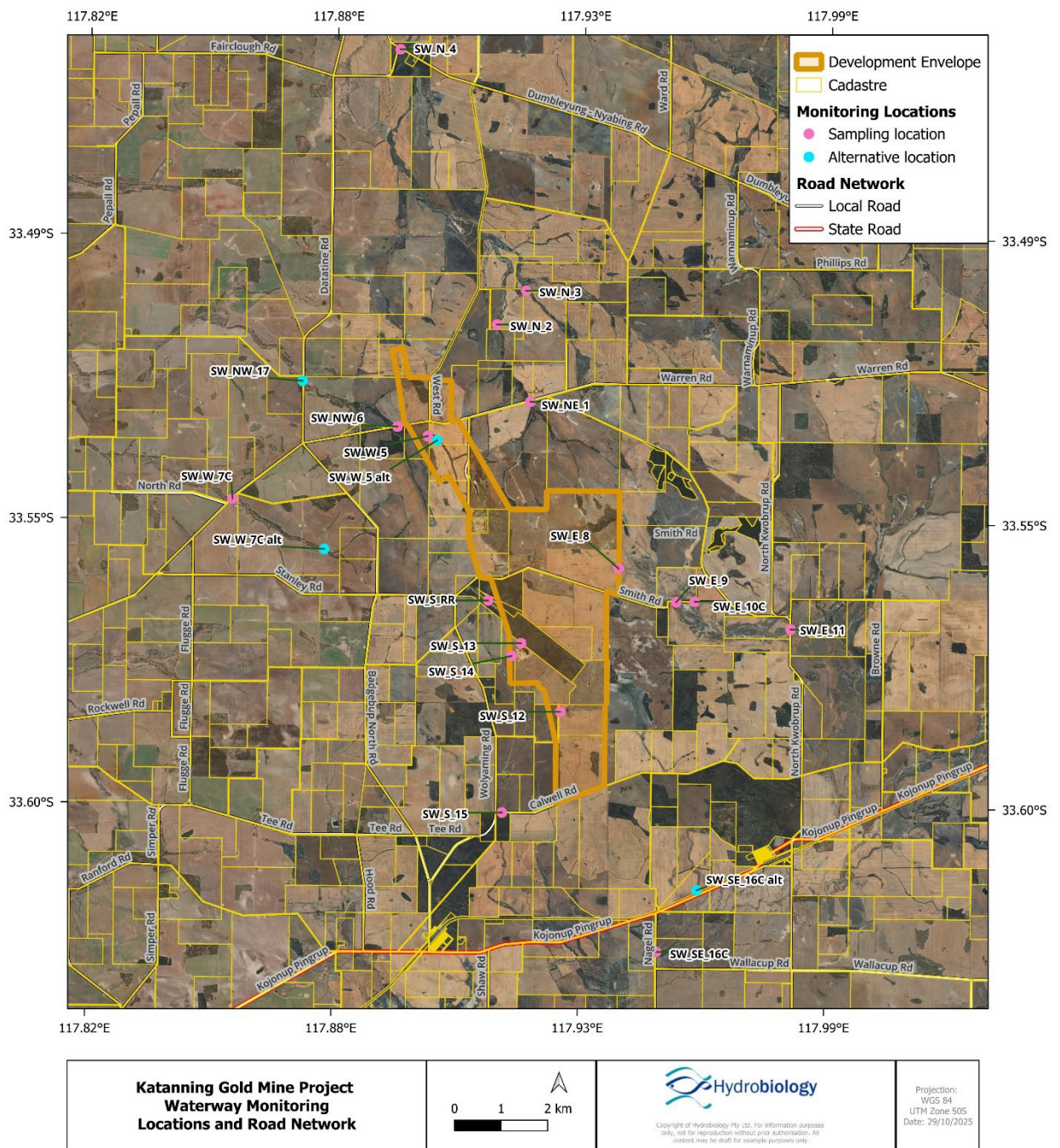


Figure 4 Monitoring Locations

### 3.3 WATER QUALITY PARAMETERS

#### 3.3.1 FIELD MEASUREMENTS

The following water quality parameters are recommended for measurement at each surface water sampling site to provide a snapshot of current conditions and support effective baseline monitoring. Measurements should be taken using a calibrated multi-parameter water quality meter according to

the procedure outline in Section 3.4.2. While a YSI ProDSS (or similar) provides the full suite of parameters, it is noted that Ausgold currently has access to TPS equipment, which may limit the number of parameters that can be measured in the field.

Parameters currently measurable with TPS equipment:

- pH (A snapshot of current acid-base status)
- Electrical Conductivity (EC) (Salinity/ionic content)
- Temperature (Context for DO/chemical reactions)

Parameters ideally included but may not be currently measurable with TPS equipment:

- Dissolved Oxygen (DO)\* (Aquatic health, oxidation potential)
- Turbidity\*\* (Sediment runoff, erosion impacts)
- Redox potential (optional) (Useful in sulphidic geology)

\* While it is ideal to include DO measurements in water quality monitoring, it is acknowledged that the current TPS equipment may not support this parameter, and it is understood Ausgold the client has opted not to prioritise it during this initial monitoring phase. DO measurement is recommended for consideration in future monitoring rounds, especially if equipment capabilities or site conditions change.

\*\* Turbidity may require additional field equipment not currently available with TPS meters. Since Total Suspended Solids (TSS) will be analysed in the laboratory, turbidity measurement will be included if appropriate field instruments become available.

### 3.3.2 LABORATORY ANALYSIS

It is recommended the following parameters be analysed by the laboratory for surface water samples collected during the monitoring program. The purpose of including these parameters is outlined in brackets. This represents a comprehensive suite to be analysed initially. If certain parameters are consistently not detected or are unlikely to be present due to site geology or operational processes, the suite may be refined in subsequent sampling rounds to focus on key analytes.

#### Core Water Chemistry Indicators

- pH and EC (Validate field measurements)
- Total Suspended Solids (TSS) (Measures actual particulate load)
- Hardness (Influences metal toxicity and water chemistry interpretation)
- Alkalinity (Influences buffering capacity and acid-base balance)
- Acidity (Important if Acid Mine Drainage [AMD] is a potential risk)

### Essential Major Ions

- Calcium ( $\text{Ca}^{2+}$ ) (Common in hardness/salinity calculations)
- Chloride ( $\text{Cl}^-$ ) (Indicator of salinity / contamination e.g. seepage)
- Magnesium ( $\text{Mg}^{2+}$ ) (Works with Ca for hardness and TDS)
- Sodium ( $\text{Na}^+$ ) (Key salinity ion)
- Sulphate ( $\text{SO}_4^{2-}$ ) (Key Acid Mine Drainage [AMD] indicator / mine water signature)

### Nutrients

- $\text{NO}_x$  (Nitrate + Nitrite) (Mobile, bioavailable nitrogen form)
- Total Nitrogen (TN) (Indicator of overall nutrient enrichment)
- Total Phosphorus (TP) (Often the limiting nutrient in freshwaters)

### Metals and Metalloids Suite

It is recommended both total and dissolved fractions are analysed to provide data on total loading and bioavailability (i.e. potential toxicity).

For the initial sampling round, total metals will be analysed to establish the presence and concentration of metals in the water. Dissolved metals will be analysed in subsequent rounds if total metal concentrations are elevated.

- Aluminium (Al) (Toxic under low pH; mobilised from sediments)
- Antimony (Sb) (Associated with gold ores and processing)
- Arsenic (As) (Common in WA gold ore; toxic at low levels)
- Cadmium (Cd) (Toxic heavy metal; industrial/mining source)
- Chromium (Cr) (Can be toxic in hexavalent form)
- Cobalt (Co) (Trace metal associated with mining activities)
- Copper (Cu) (Toxic to aquatic life; corrosion or tailings source)
- Iron (Fe) (Mobilised under disturbed or acidic conditions [ARD risk])
- Lead (Pb) (Legacy and mining-related contamination)
- Manganese (Mn) (Mobilised in low-oxygen or acidic conditions)
- Mercury (Hg) (Highly toxic; may occur in mineralised zones)
- Molybdenum (Mo) (Associated with ore and metallurgical waste)
- Nickel (Ni) (Toxic metal; may occur naturally in ultramafic areas)
- Silver (Ag) (Trace element; associated with mining or processing)
- Zinc (Zn) (Common aquatic toxicant; machinery or runoff-related)
- Gold (Au) (Not typically toxic; included due to geology and mining relevance)

### Additional Parameters

- Cyanide (Include if proposed for processing on site e.g. gold leaching)
- Dissolved Organic Carbon (DOC) (Influences metal toxicity, may help indicate GW influence in SW)

## 3.4 MONITORING PROTOCOLS

A field observation form (FoF) and sampling checklist are provided in Appendices A and B, respectively.

### 3.4.1 SITE OBSERVATIONS

On each sampling occasion at each site, record the unique sample number, time and date of sampling, flow code (F: flowing, S: stationary, D: dry) and any other relevant comments about the water (e.g. colour, odour, presence of litter, weeds etc.). These details should be recorded on the FoF.

Additionally, photos should be taken at an established photo point facing both upstream and downstream using a geotagged photo smartphone app such as *Solocator* to document site conditions.

### 3.4.2 CONTAMINATION PREVENTION MEASURES DURING SAMPLING

Field personnel should wear powder-free nitrile gloves during sample handling to prevent contamination. The collection vessel and any non-disposable equipment should be cleaned before use (e.g. rinsed with DI water) and between sites if re-used. Avoid disturbing water upstream of the sampling point or disturbing sediment and handle lids and bottles carefully to avoid touching inside surfaces. Document any deviations from standard procedures (e.g. equipment failure, bottle breakage) in the FoF.

### 3.4.3 FIELD MEASUREMENTS

A TPS water quality meter (or equivalent) will be used to collect in-situ physicochemical measurements prior to any disturbance of the water column. The water quality meter must be calibrated prior to the field trip, with calibration records and procedures retained on file. If the meter is used over multiple days, pH calibration should also be performed at the end of each day.

The in-situ recordings will be taken in the surface layer of the water column, at a depth of 30 cm. Where this is not possible, due to shallow water depths, a note will be made in the FoF. The readings should also be recorded on the FoF.

### 3.4.4 SURFACE WATER SAMPLE COLLECTION

During sampling, the sampler must follow any instructions provided by the analytical laboratory, which are typically supplied when bottles are issued or with the laboratory quote. This may include guidance on the correct bottle type, use of fixatives (such as acid or other chemical preservatives), and whether the sample needs to be filtered.

A polyethylene collection vessel is attached to an extendable pole and placed into the water to a depth of approximately 30 cm, with the mouth facing upstream. Where this depth is not possible due to shallow water, a note should be made in the FoF. In shallow conditions, care must be taken not to disturb the sediment during sampling. The collection vessel should be moved slowly into the oncoming flow to avoid water from behind the bottle washing into it.

- The collection vessel is rinsed three times with water from the stream, and the rinse water is poured downstream.
- The collection vessel is then filled with the stream water.
- For bottles that do not contain fixatives: the bottle should be rinsed three times with the sampling water (either filtered or unfiltered, depending on the analysis).
- For unfiltered samples: The bottle is filled with water collected from the water body using the collection vessel.

- For filtered samples: water in the collection vessel is drawn into a disposable sterile syringe and passed through a 0.45 µm syringe filter into the sample bottle. A new syringe and filter must be used for each sample site.
- Once filled, sample bottles must be placed in an esky with ice or ice bricks.

### Sample Labelling and Identification

All sample containers should be clearly labelled at the time of collection to prevent mix-ups in the field. Labels should include the following information, as a minimum:

- A unique Sample ID (including site name or code)
- Date of collection (formatted as DD.MM.YY)
- Preservation method, if applicable
- Client or project name
- Sampler initials

Where blank or replicate samples are collected, these should be assigned distinct Sample IDs (e.g. Z1 for field blank, Z2 for water replicate) to clearly differentiate them from standard site samples.

### 3.4.5 QUALITY CONTROL SAMPLE COLLECTION

During each sampling event, a replicate and a field blank water sample should be collected at one randomly selected site.

#### Field Blank

Field blanks are samples of laboratory-grade deionised (DI) water prepared and handled in the field using the same procedures as surface water samples. The detection of analytes in a field blank may indicate problems in one or more of the sampling, handling or analysis steps (DoW, 2009). The field blank should be collected using the same procedure as the surface water samples except it will be from a bottle of DI water instead of a stream.

#### Replicate Sample

The replicate sample is a second sample collected from the same site at the same time, using exactly the same methods as the original. Replicate samples can be used to detect both natural variations in the environment and variations caused by field sampling methods (DoW, 2009).

### 3.4.6 LABORATORY PROCEDURES

#### Laboratory Details

Samples for laboratory analysis will be submitted to a NATA accredited laboratory, capable of performing the analysis of the parameters listed in Section 3.3.2.

#### Sample Delivery

Water samples must be placed in eskies with ice immediately after collection and kept chilled throughout transport and storage.

As sampling will occur in Katanning over two to three days, it is unlikely that samples can be delivered to a laboratory in Perth on the same day. Samples will therefore be stored in a refrigerator overnight at the end of each sampling day, in accordance with the laboratory's holding time requirements, and transported to the laboratory as soon as practical.

Each batch of samples must be accompanied by a completed Chain of Custody (CoC) form, detailing:

- Sample IDs
- Sampling dates and times
- Requested analyses for each sample.

A copy of the CoC form should be retained by the sampler for record-keeping.

### **Laboratory Report**

The laboratory report should include the following in both electronic (Excel) and final (pdf) laboratory reports:

- Date and time of sample analysis;
- Analytical method code and description for each parameter;
- All laboratory Quality Control results including analyte recovery, accepted recovery range, lab blanks, lab duplicates, lab blank spike recovery, matrix spike recovery; and
- Comments on where sample holding times were met for each analysis.

Copies of all laboratory reports, including QC results, should be emailed to the sampler and any other designated project personnel.

### **Limits of Reporting**

Laboratory limits of reporting (LORs) must be sufficiently low to allow comparison with the ANZG (2018) 80% species protection guideline values for relevant analytes.

# 4. QUALITY ASSURANCE AND DATA HANDLING

## 4.1 QUALITY ASSURANCE/QUALITY CONTROL

Quality Assurance and Quality Procedures are outlined in the monitoring protocols Section 3.4 and are summarised below:

### Field QA/QC

- **Meter Calibration:** The water quality meter must be calibrated prior to field deployment, with calibration records retained on file. For multi-day use, pH calibration must be repeated at the end of each sampling day.
- **Contamination prevention measures:** including the use of gloves, cleaning of equipment, and procedures to avoid sample contamination, are outlined in Section 3.4.2.
- **Sample Container Rinsing:** Collection vessels and sample bottles (if not pre-preserved) should be rinsed three times with sample water before use.
- **Sterile Sampling:** For filtered samples, a new sterile syringe and filter must be used at each site to avoid cross-contamination.
- **Quality Control Sample Collection:** Collection of a replicate and a field blank during each sampling event (see Section 3.4.5)
- **Sample labelling:** All samples should be clearly labelled in the field to prevent mix-ups and ensure traceability. Labelling requirements, including unique identifiers for blanks and replicates are detailed further in Section 3.4.4.

### Sample Handling and Transport

- **Cold Chain Management:** Samples must be placed on ice immediately after collection, stored in a refrigerator overnight when necessary, and transported to the laboratory under chilled conditions.
- **Chain of Custody (CoC):** Each sample batch is accompanied by a completed CoC form (see Section 3.4.6)

### Laboratory QA/QC

- **Laboratory Quality Standards:** Laboratory analyses will be conducted by a NATA-accredited laboratory with appropriate quality control measures in place. The required reporting of laboratory QC results, method details, and limits of reporting is outlined in Section 3.4.6.

## 4.2 DATA MANAGEMENT

- **Field Data Recording:**

Field measurements and observations should be recorded using standardised field observation sheets (see Appendix A).

- **Data Storage:**

To support data integrity, access, and future analysis, it is recommended all field and laboratory data is uploaded to a designated shared drive or internal database. Suggested file formats include Excel (.xlsx) or CSV (.csv). Data may also be imported into ESDAT or (an environmental data management and analysis system) or equivalent systems as required.

- **Data Validation and Quality Checks:**

After sampling, data should undergo routine validation checks to ensure completeness, accuracy, and usefulness for decision-making, including:

- Identification of outliers or anomalous values.
- Review for missing or incomplete data.
- Comparison to relevant guideline values for preliminary screening.

# 5. ROLES AND RESPONSIBILITIES

Table 4 outlines the key roles and responsibilities of personnel and organisations involved in the surface water monitoring program, from field sampling through to laboratory analysis and data management.

Table 4 Roles and Responsibilities

Company/ Name	Role	Responsibilities
Ausgold (John Cooper)	Field Lead	Conduct site observations, measurements, and sampling per protocols (Section 3.4.1 to 3.4.5), ensuring all QC requirements (Section 4) are met. Responsible for sample storage, maintaining cold chain, and completing Chain of Custody forms and coordinating sample transport to the laboratory.
Ausgold	Field Sampler(s)	Conduct site observations, measurements, and sampling per protocols (Section 3.4.1 to 3.4.5), ensuring all QC requirements (Section 4) are met. Responsible for sample storage, maintaining cold chain, completing Chain of Custody forms, and handing over samples for transport.

Company/ Name	Role	Responsibilities
Hydrobiology	Data Management	Coordinate data storage i.e upload of all field and laboratory data to shared drives or databases. Perform data validation and quality checks including identification of outliers, review of missing/incomplete data, and preliminary comparison to guideline values.
Laboratory (NATA-accredited)	Laboratory Analysis	Perform sample analysis and provide analytical reports, including method details, QC documentation (e.g., recovery rates, holding time compliance, limits of reporting), as outlined in Section 3.4.6.

# 6. 2025 MONITORING RESULTS

## 6.1 SAMPLING FREQUENCY

In 2025, three event-based sampling rounds were completed across the KGP surface-water network:

Round	Date (2025)	Key Hydro-Meteorological Observations
1	13 <sup>th</sup> and 15 <sup>th</sup> August	Wet conditions prevailed; all sampled sites were flowing, reflecting a broadly saturated catchment after above average winter rainfall.
2	1 <sup>st</sup> and 2 <sup>nd</sup> September	Ground remained wet but a brief lull in rainfall occurred just before sampling. Flows were still evident; followed rainfall above the long-term August average.
3	7 <sup>th</sup> and 9 <sup>th</sup> October	Most sites still retained water, but flows were waning. Low-flow conditions and isolated pooling were the dominant features, indicating the catchment was moving toward the drier phase of the seasonal cycle.

## 6.2 SAMPLE LOCATIONS

Overall, the 2025 monitoring achieved good spatial coverage of the Katanning Gold Project drainage network. Fifteen key catchment points were successfully sampled, providing a robust baseline for downstream water-quality assessment. The following sites were inaccessible at the time of sampling but several of these locations can be excluded from the baseline programme without compromising data quality as detailed below:

- **Sites that can be omitted** – *SW\_N\_2* (downstream influence already captured by *SW\_NE\_1*); *SW\_N\_3C* (hydrologically represented by *SW\_N\_4*) and *SW\_W\_7A* (redundant when *SW\_NW\_17* is sampled).
- **Sites that remain inaccessible** – *SW\_S\_RR* and *SW\_W\_5A*. These locations were identified as potentially valuable for future rounds; should access be gained, they will be incorporated to enhance the representativeness of the dataset.

## 6.3 SAMPLE ANALYSIS

### 6.3.1 FIELD MEASUREMENTS

Field-based physicochemical measurements were not recorded during the 2025 sampling rounds.

If subsequent reviews indicate that physicochemical measurements are useful for interpreting baseline conditions or meeting regulatory requirements, the monitoring programme will incorporate on-site measurements. This adjustment reflects the adaptive nature of the plan, which is designed to evolve as project needs and data quality considerations become clearer.

### 6.3.2 LABORATORY ANALYSIS

A comprehensive laboratory suite was applied to all water samples, covering all relevant parameters listed in Section 3.3.2 together with the following additional analytes:

- Potassium (K<sup>+</sup>) (Contributes to salinity and ionic strength)
- Total Cations and Total Anions (Ionic balance and verify analytical quality of water samples)
- Ionic Balance (Overall water chemistry consistency or geochemical changes)
- Alkalinity (Influences buffering capacity and acid-base balance)
- Acidity (Important if Acid Mine Drainage [AMD] is a potential risk)
- Organic N (Nitrogen contributions from organic matter)
- Ammonia-N (Form of nitrogen, highly toxic to aquatic organisms)
- Total Kjeldahl Nitrogen (TKN) (Overall bioavailable nitrogen in the water)
- Phosphate (PO<sub>4</sub><sup>3-</sup>) (Mobile, bioavailable phosphorus form)
- Boron (B) (May be mobilised from geological formations)
- Selenium (Se) (Trace element associated with sulfide-rich ores)

Cyanide (as Weak Acid Dissociable or WAD cyanide) and dissolved organic carbon (DOC) were not included; they could be added if on-site processing (e.g., gold leaching), if DOC-driven metal-toxicity assessments become relevant, or if there is a need to evaluate potential groundwater influence on the surface-water system.

## 6.4 KEY LEARNINGS FROM PLAN IMPLEMENTATION

The 2025 monitoring captured the transition from peak winter-season flow (Round 1) through a moderate-flow period (Round 2) to the onset of low-flow conditions (Round 3), offering a representative baseline for the peak-flow season at KGP. Monitoring achieved good spatial coverage of the KGP drainage network. Adding the currently inaccessible sites (SW\_S\_RR and SW\_W\_5A) when they become reachable add to the spatial resolution of the monitoring network. The sample analysis is sufficiently broad to serve as the reference baseline for the project, and individual parameters may be removed or new ones introduced as project requirements and data-quality considerations evolve. Monitoring will continue, and this work provides a sound foundation for future investigations.

## 6.5 PRELIMINARY RESULTS

Raw water quality results collected from this initial monitoring round are presented in Appendix C, together with a preliminary comparison to guideline values.

The following guideline exceedances were recorded, and these will be investigated in future reporting:

- **pH** exceeded the ANZECC (2000) default trigger value (DTV) for slightly disturbed south-west Australian upland rivers
- **Nutrients (nitrogen and phosphorus)** exceeded the ANZECC (2000) DTV.
- **Metals (aluminium, boron, copper, lead and zinc)** exceeded the ANZG (2025) freshwater toxicant default guideline values (DGVs).
- **Salinity** ranged from **marginal to saline**.

Plots of the parameters that exceeded guideline values are shown in Figure 5 to Figure 16 below.

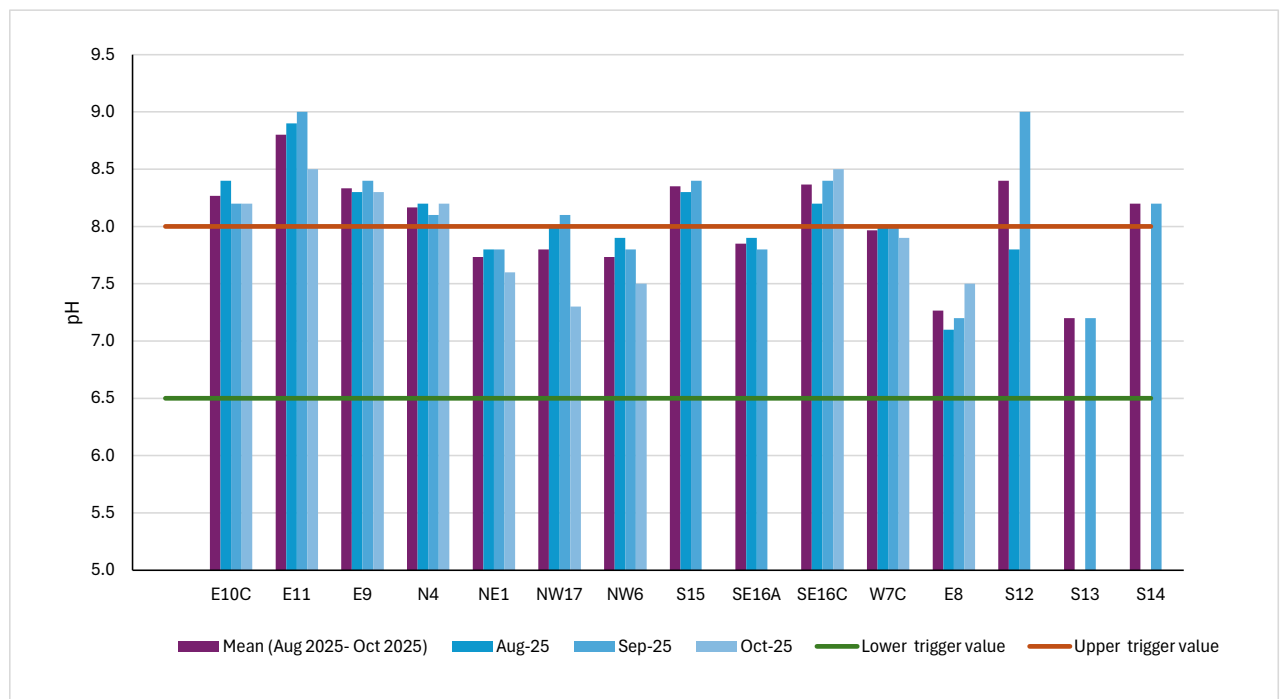


Figure 5 pH of the KGP drainage network (2025)

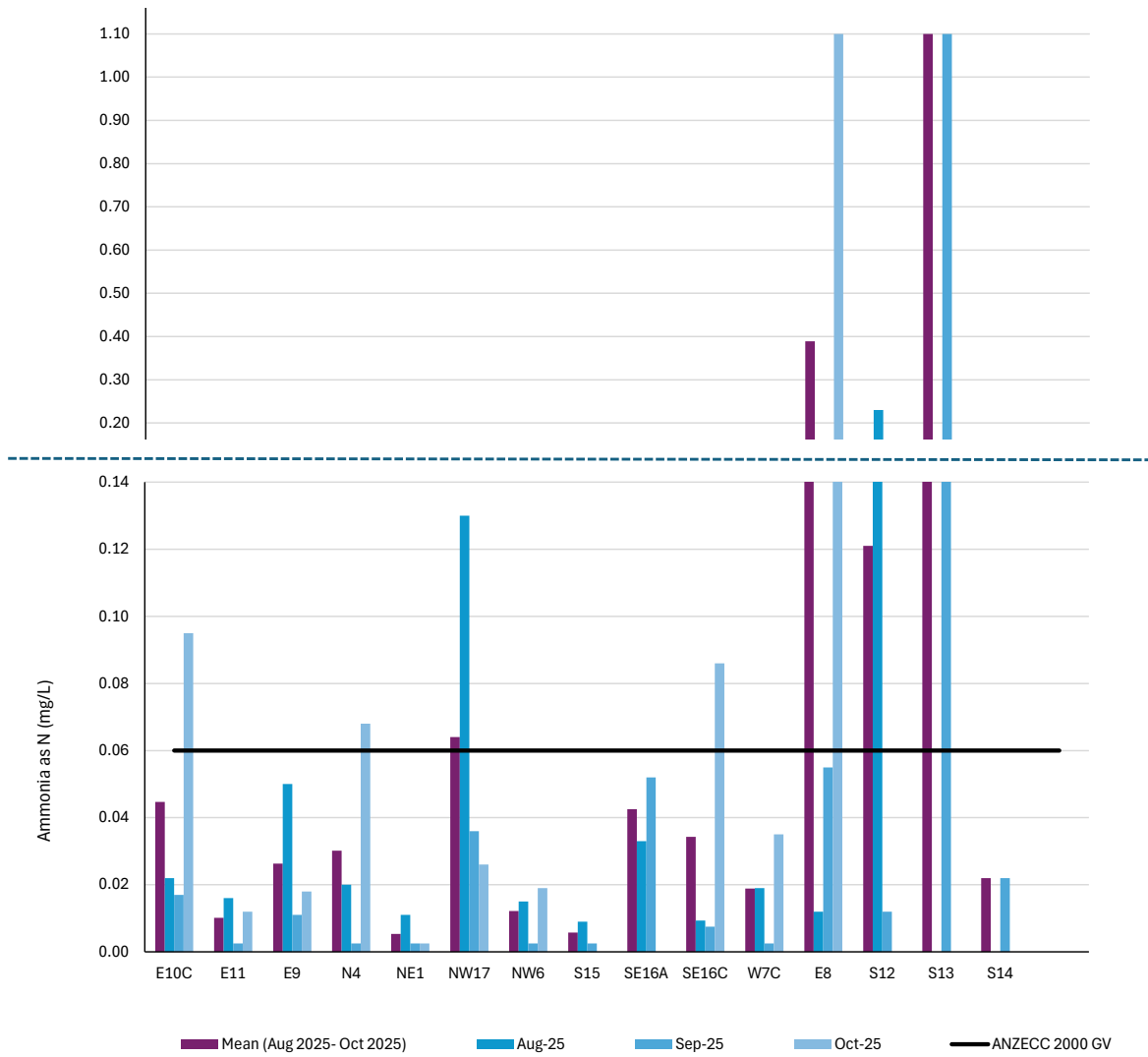


Figure 6 Ammonia Nitrogen in the KGP drainage network (2025)

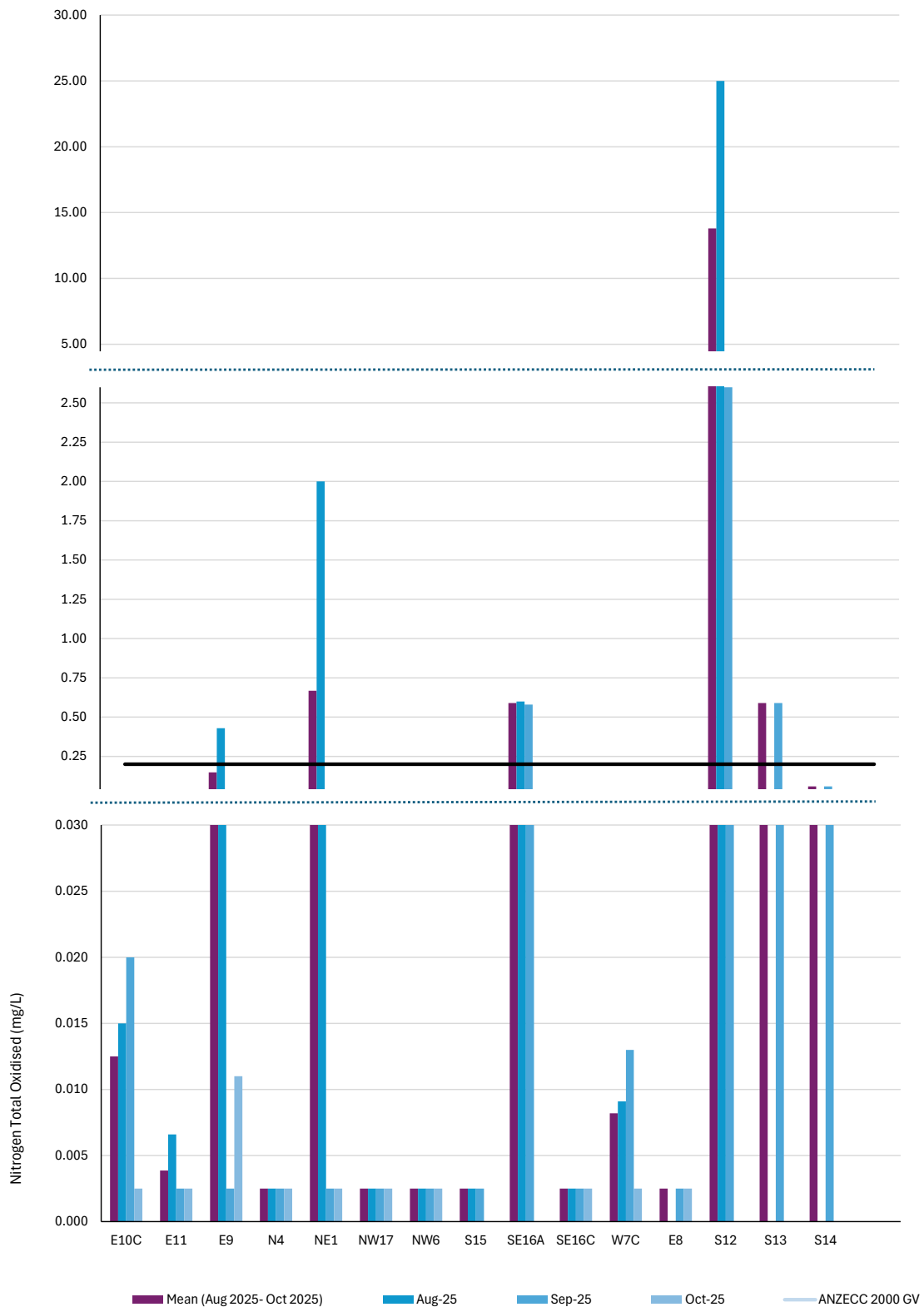


Figure 7 Total Oxidised Nitrogen (NO<sub>x</sub>) in the KGP drainage network (2025)

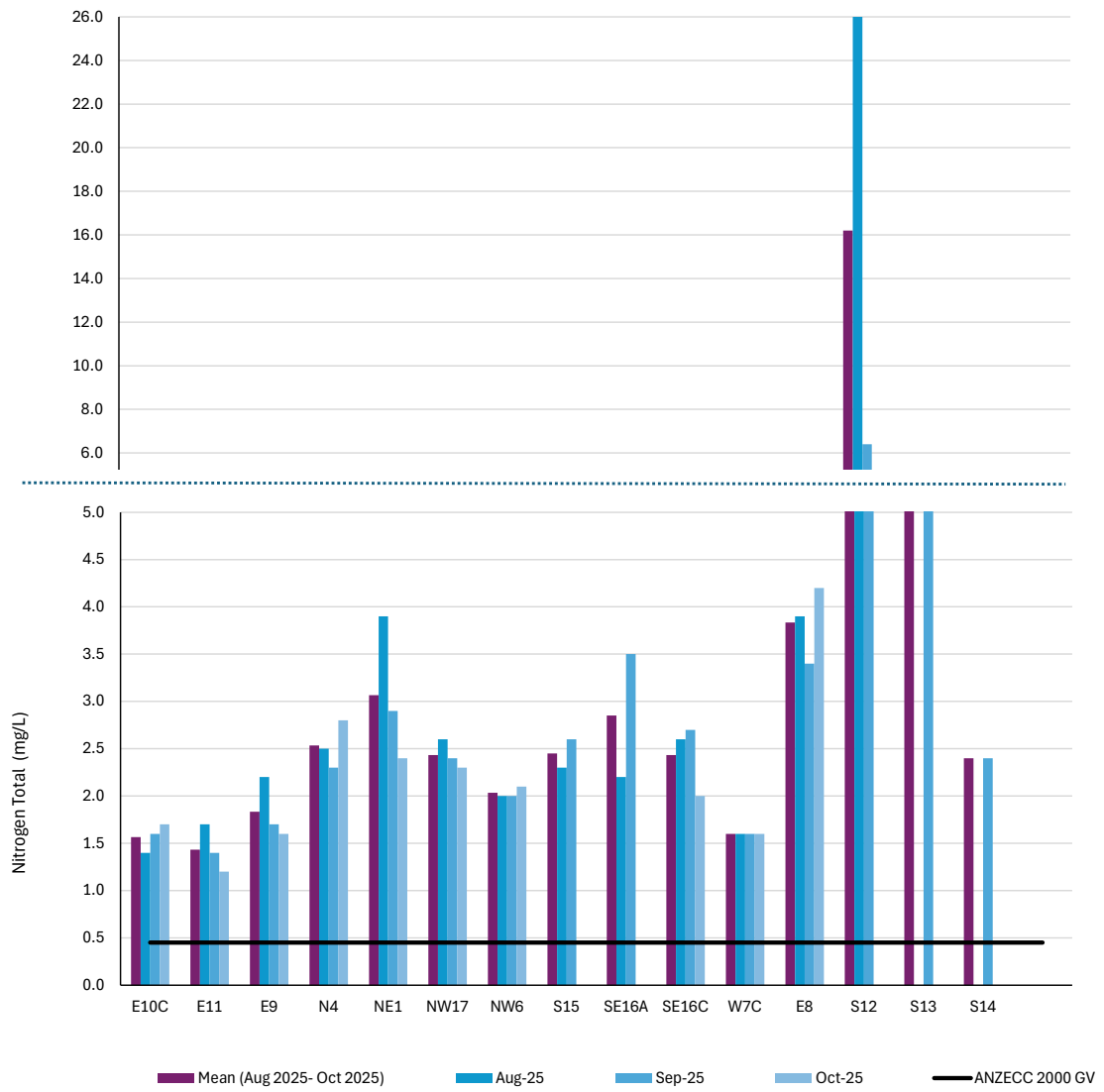


Figure 8 Total Nitrogen in the KGP drainage network (2025)

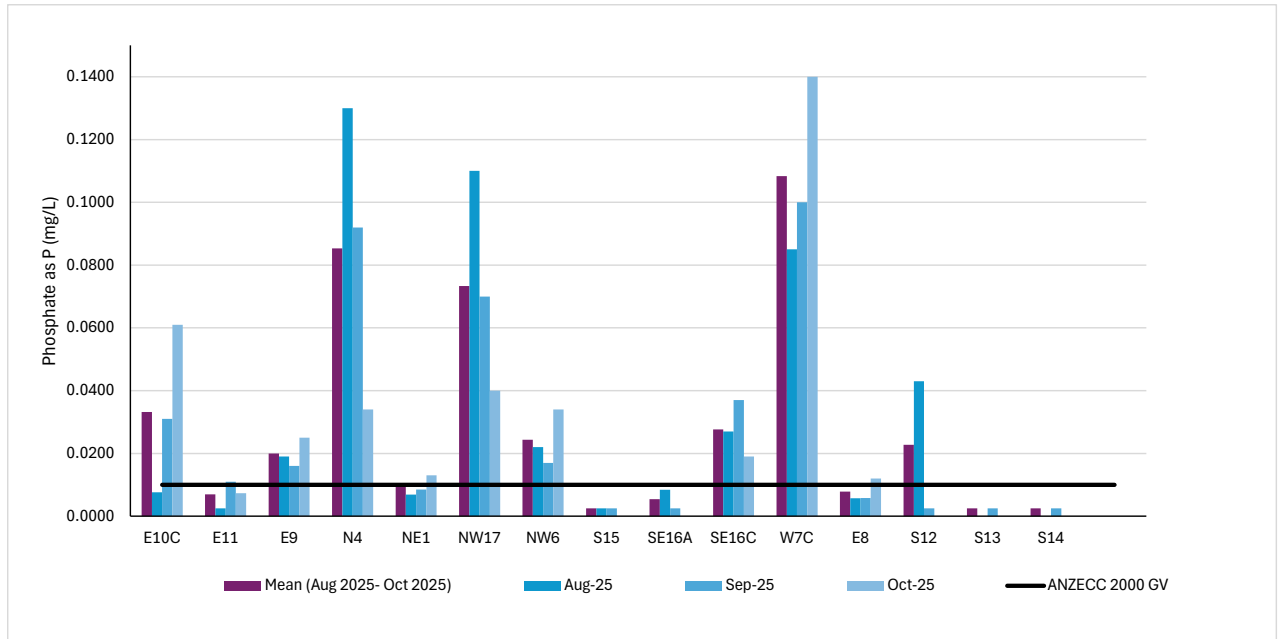


Figure 9 Phosphate in the KGP drainage network (2025)

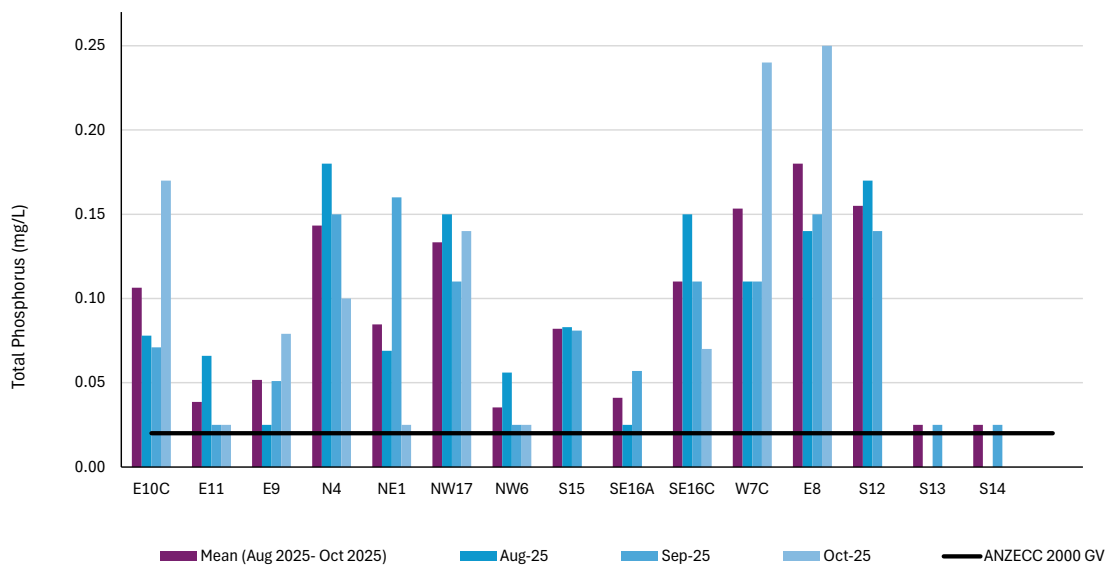


Figure 10 Total Phosphorus in the KGP drainage network (2025)

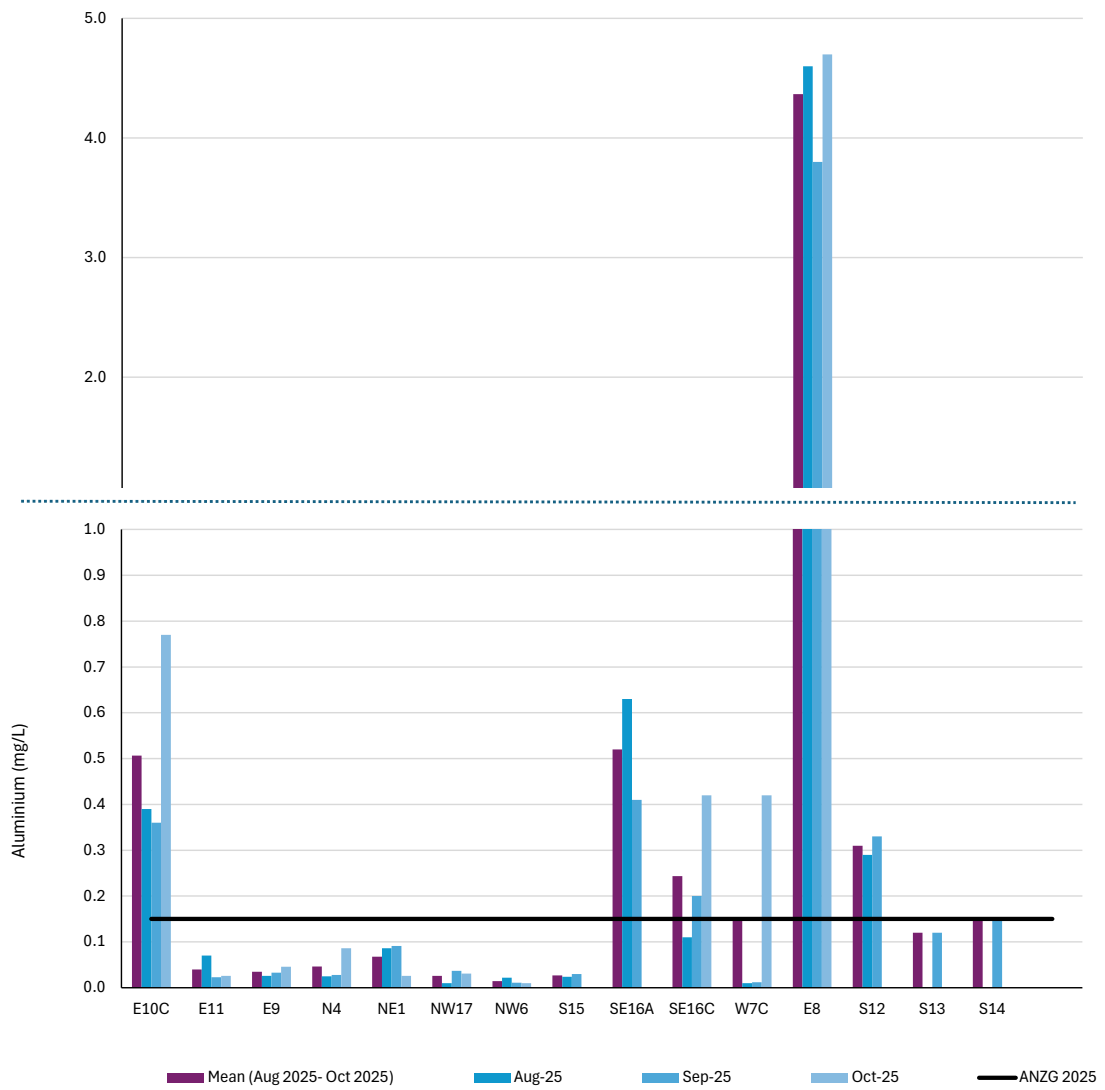


Figure 11 Aluminium (Al) in the KGP drainage network (2025)

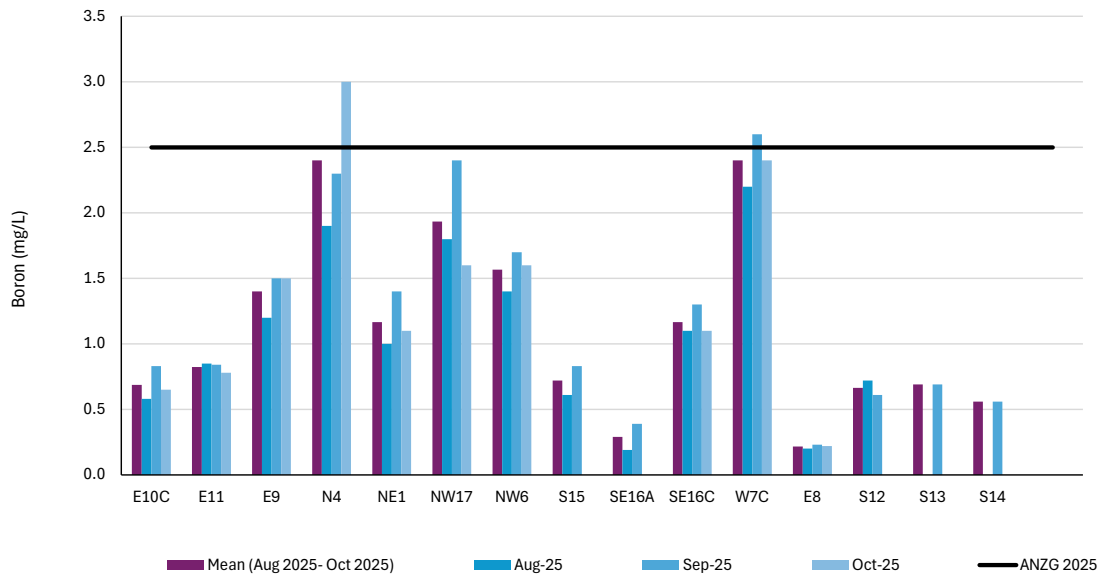


Figure 12 Boron (B) in the KGP drainage network (2025)

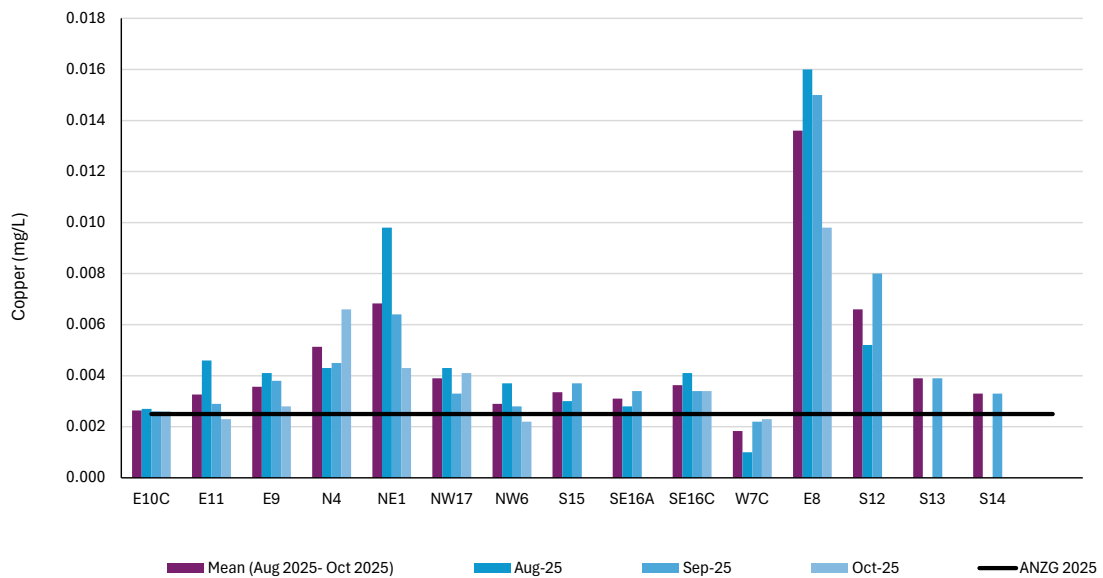


Figure 13 Copper (Cu) in the KGP drainage network (2025)

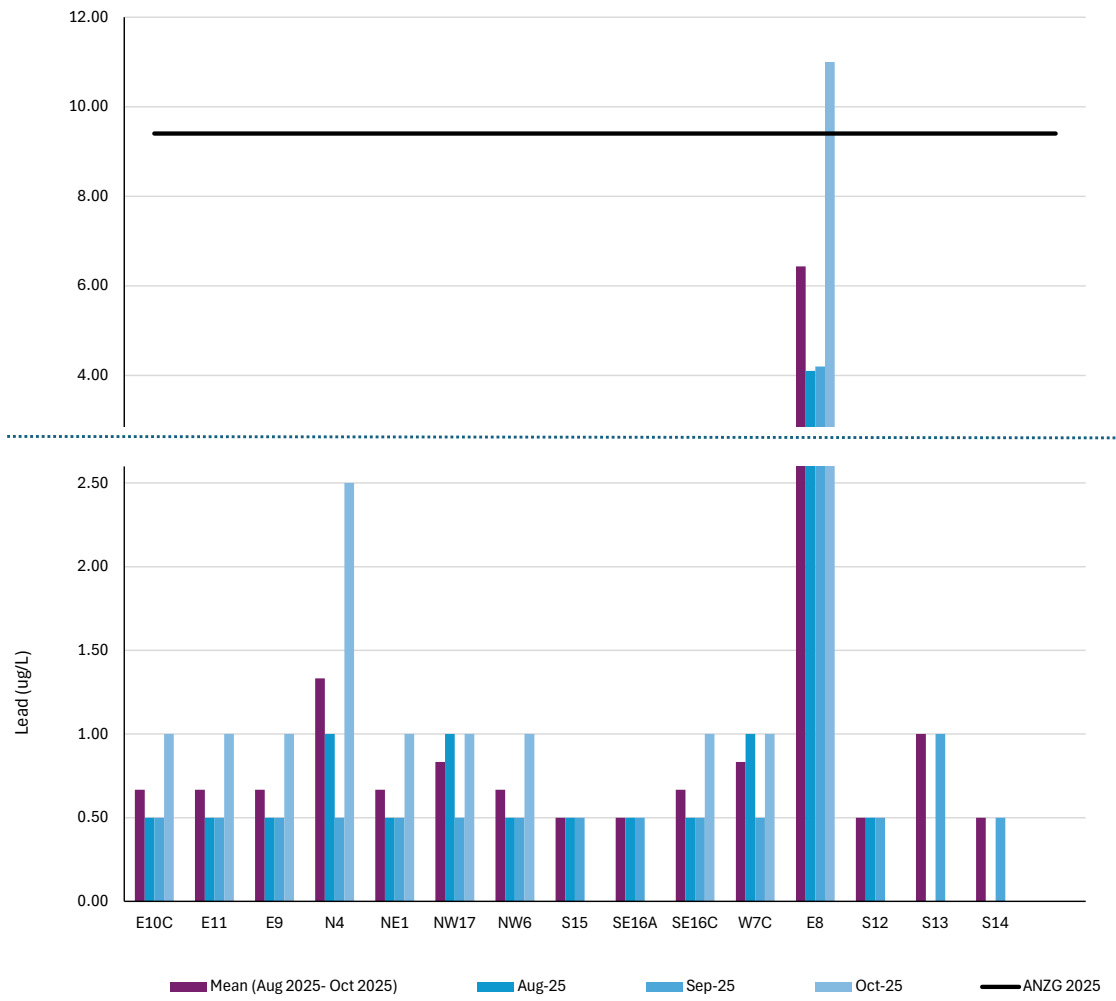


Figure 14 Lead (Pb) in the KGP drainage network (2025)

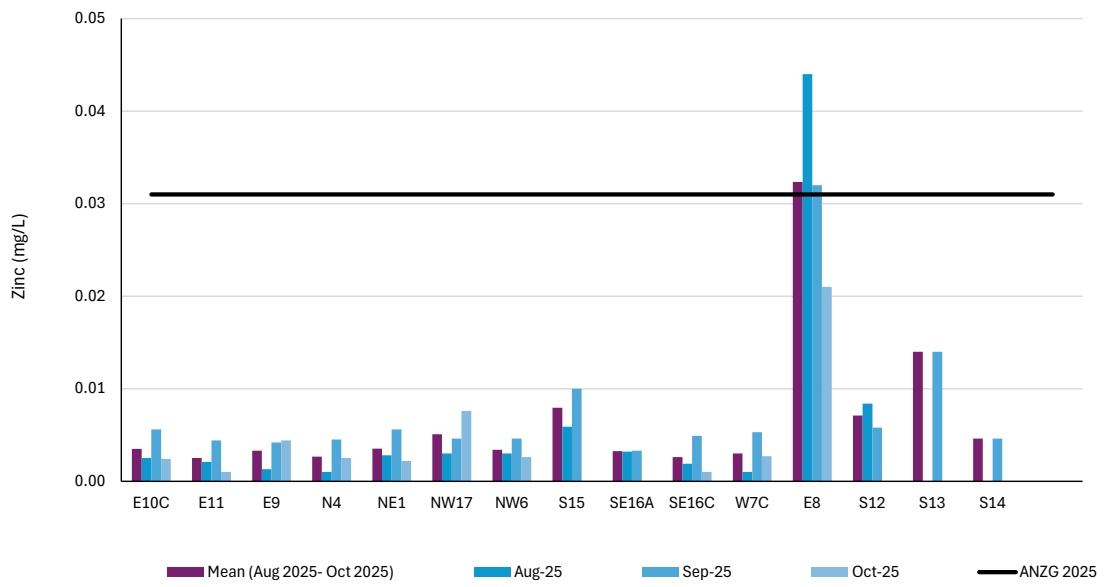


Figure 15 Zinc (Zn) in the KGP drainage network (2025)

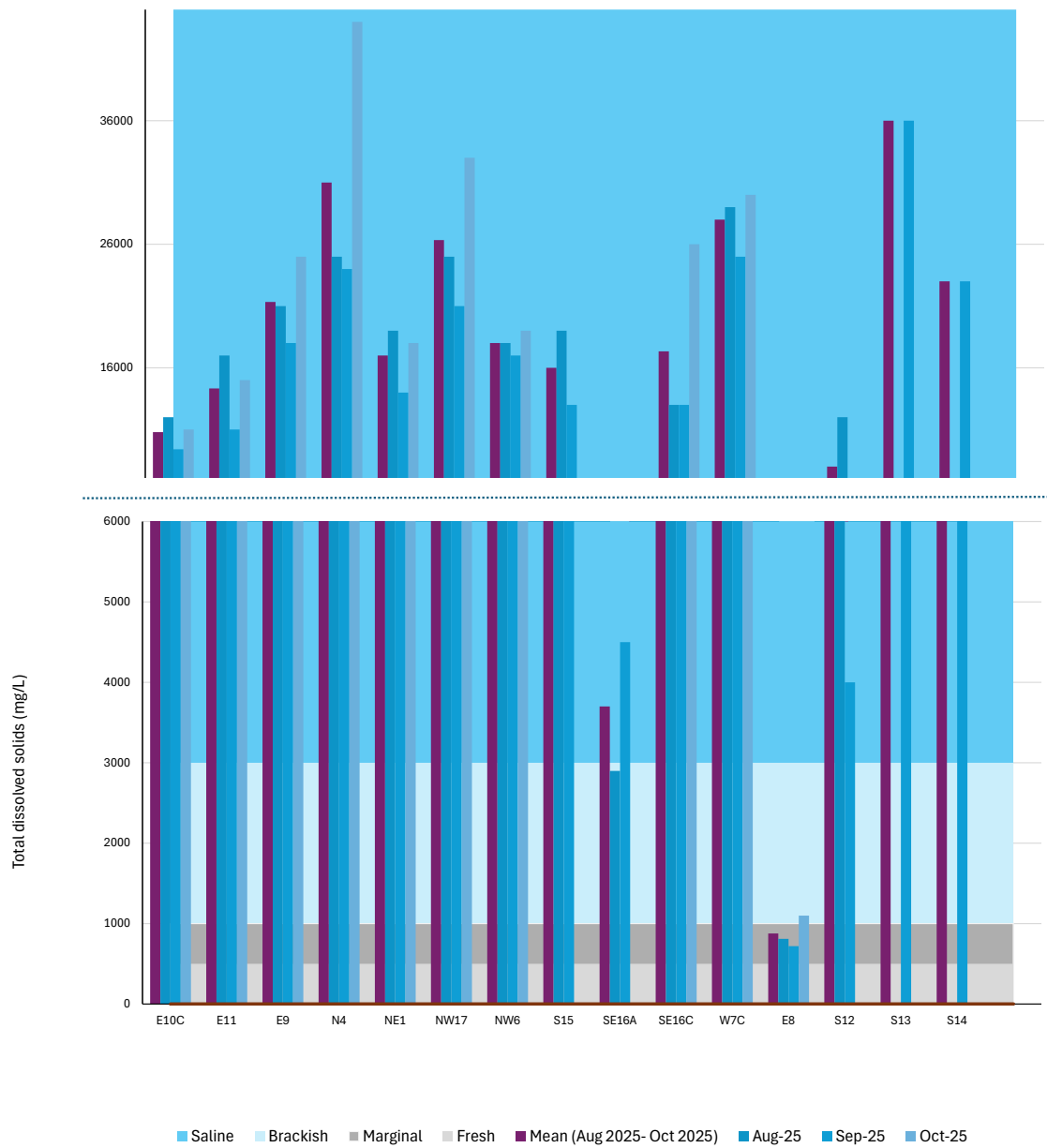


Figure 16 Total Dissolved Solids (TDS) in the KGP drainage network (2025)

# 7. REFERENCES

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# APPENDIX A. FIELD OBSERVATION FORM



**Ausgold Waterways Management Plan Field Observation Form (FoF)**

**Katanning Gold Project**

Sample No: \_\_\_\_\_ Site Name: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Easting: \_\_\_\_\_ Northing: \_\_\_\_\_ Sampler(s) initials: \_\_\_\_\_

Sample containers	Field filtered	Preservation	Collected (✓)	Flow Status*	Temp (°C)	pH	EC (uS/cm)				
1.											
2.											
3.											
4.											
5.											
6.											
Photos Taken:				Notes:							
1. At sampling location											
2. Looking upstream:											
3. Looking downstream:											
Field observations/notes (e.g. weather conditions, water colour, clarity, odours, presence of litter, flora/fauna):											

\* Flow status (F - flowing, S - stagnant, D - dry)

Sample No: \_\_\_\_\_ Site Name: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Easting: \_\_\_\_\_ Northing: \_\_\_\_\_ Sampler(s) initials: \_\_\_\_\_

Sample containers	Field filtered	Preservation	Collected (✓)	Flow Status*	Temp (°C)	pH	EC (uS/cm)				
1.											
2.											
3.											
4.											
5.											
6.											
Photos Taken:				Notes:							
1. At sampling location											
2. Looking upstream:											
3. Looking downstream:											
Field observations/notes (e.g. weather conditions, water colour, clarity, odours, presence of litter, flora/fauna):											

\* Flow status (F - flowing, S - stagnant, D - dry)

# APPENDIX B. SUGGESTED FIELD WORK CHECKLIST



## Field Work Checklist

### Premobilisation

- Install Solocator app (or equivalent for geotagged photos)
- Calibrate water quality meter; retain calibration record
- Organise required site access
- Order sample bottles, eskies, ice bricks
- Order filters and syringes
- Freeze ice bricks
- Organise bottles by site (recommended)
- Arrange transport to laboratory or pre-book courier if required
- Confirm lab acceptance times and any sample drop-off requirements
- 
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- 

### Field Equipment Checklist

- Water quality meter
- Sample bottles (with any required preservatives)
- Laboratory-grade DI water (for field blanks)
- Filters (0.45 µm)
- Syringes (disposable, sterile)
- Extendable pole with collection vessel
- Permanent marker/pens for labelling
- Field maps and Field Observation Forms (FoF)
- Chain of Custody (CoC) forms
- PPE (e.g., nitrile gloves)
- GPS or smartphone for location verification
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### Demobilisation

- Complete Chain of Custody (CoC) form
- Transport or courier samples to lab (maintain cold chain)
- Confirm lab receipt of samples
- Data entry and upload to shared drive/database
- File geotagged photos and field forms
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# APPENDIX C. RAW MONITORING RESULTS (2025)







STREET

1/71 Troy Terrace  
Jolimont 6014  
WESTERN AUSTRALIA



POSTAL

PO Box 1034  
West Leederville 6901  
WESTERN AUSTRALIA



CONTACT

+61 (0)8 6218 0900 P  
infowa@hydrobiology.com

ABN 68 120 964 650

[www.hydrobiology.com](http://www.hydrobiology.com)