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**Private & confidential**

Director General  
Department administering the Environmental Protection Act 1986  
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22 April 2022

Our reference RTIO-HSE-0359263

To the Chief Executive Officer

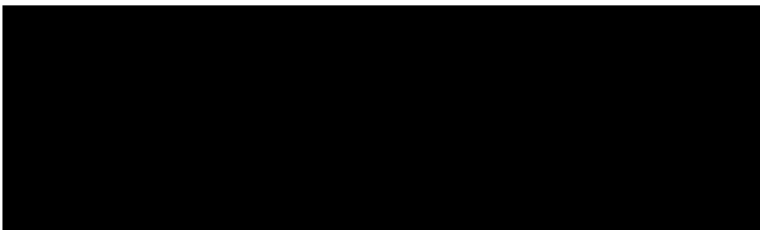
**Works Approval W6409/2020/1: Tom Price, South East Prongs Tailings Storage Facility – Environmental Commissioning Report**

Please find attached Stage 1a of the Environmental Commissioning Report for the Tom Price, South East Prongs Tailings Storage Facility to demonstrate compliance to **Conditions 8-12 and 19 of Works Approval W6409/2020/1**. The Report has been prepared for submission to the Chief Executive Office (CEO) of the Department of Water and Environmental Regulation to meet Condition 11 of the Works Approval.

Commissioning of the secondary and emergency droppers was unable to be completed within the authorised commissioning period of 14 calendar days (W6409/2020/1 Condition 9(b) Table 3). Planned commissioning works could not be completed due to unplanned staffing restraints and contracting partner work roster.

Under Condition 12 (d), Pilbara Iron Company (Services) Pty Ltd (the Proponent) proposes to commission the secondary and emergency droppers from 28 April to 5 May 2022 (8 days). The Proponent acknowledges this will increase the commissioning duration to 22 days. Commissioning is required to ensure no defects exist in the infrastructure relating to the Secondary and Emergency droppers.

Should you require any further information in regards to the above, please contact [REDACTED], Superintendent Environment – Studies & Projects, at [REDACTED] in the first instance.



22 April 2022

Rio Tinto Iron Ore  
Central Park  
152-158 St Georges Terrace  
Perth WA 6000

[REDACTED]  
**Project Lead**  
**Sustaining Capital**

Dear [REDACTED]

**SEP In-pit Waste Fines Storage Facility**  
**Environmental Commissioning Report: Part 1 – Storage Capacity and Tailings Delivery**  
**Rev 0 - Final**

Please see attached the Environmental Commissioning Report for the *Storage Capacity and Tailings Delivery* components of the South-East Prongs (SEP) in-pit Waste Fines Storage Facility (WFSF) at Tom Price. The report addresses the conditions under “Environmental Commissioning Phase” section (Conditions 8 to 12) and “Inspections” (Condition 19) of the Part V Works Approval (W6409/2020/1) as they relate to Storage Capacity and Tailings Delivery components.

Due to construction staging and operational / access constraints, the commissioning and compliance reporting is being undertaken in two Parts:

- **Part 1 (this report):** WFSF Pit Storage Capacity and Tailings Delivery Infrastructure
- Part 2 (future): Decant Recovery Infrastructure

This report has been prepared in accordance with the “Department of Water and Environment Regulation Guideline: Industry Regulation Guide to Licensing” (2019).

Yours truly,

**KCB AUSTRALIA PTY LTD.**

[REDACTED]  
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## EXECUTIVE SUMMARY

This is the Environmental Commissioning Report (ECR) for the *Storage Capacity and Tailings Delivery* components of the South-East Prongs (SEP) in-pit Waste Fines Storage Facility (WFSF) at Rio Tinto Iron Ore's Tom Price mine.

The purpose of this document is to demonstrate that the Storage and Tailings Deposition components of the SEP WFSF have been commissioned in accordance with the requirements of Conditions 8-12 and 19 of the Part V Works Approval (W6409/2020/1).

This is the first of three (3) ECRs for the infrastructure in Works Approval W6409/2020/1.

This report provides the evidence that Works Approval Conditions 8 to 12 and 19 have been met for the SEP WFSF, and tailings delivery pipeline and Primary droppers. The Secondary and Emergency droppers were unable to be commissioned at this time. The Secondary and Emergency droppers ECR and decant return pipeline infrastructure ECR will be submitted at a later date. With reference to each of these 6 conditions:

- Condition 8 – commissioning commenced on 10<sup>th</sup> April 2022, after submission of the Bore Construction Report (RTIO-HSE-035340) on 11<sup>th</sup> June 2021 and the Environmental Compliance Report (RTIO-HSE-0358768) on 29<sup>th</sup> March 2022.
- Condition 9 – commissioning was carried out for a period of 13 days (less than the allowable 14 days).
- Condition 10 – emissions were only discharged from the Primary droppers, as per Table 4 of the Works Approval.
- Condition 11 – this report is being submitted on 22<sup>nd</sup> April 2022, being less than 30 days after completion of commissioning on 20<sup>th</sup> April 2022.
- Condition 12 – this report provides a summary of the environmental commissioning activities undertaken, timeframes, tonnages, and performance.
- Condition 19 – this report provides a statement from the certifying engineer that daily visual inspections were undertaken during the commissioning period.

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## 1 INTRODUCTION

Klohn Crippen Berger Ltd (KCB) was engaged by Rio Tinto Iron Ore (RTIO) to design and commission the proposed tailings infill into the South-East Prongs (SEP) pit at the Tom Price Iron Ore Mine (Tom Price mine). At completion, the pit will be operated as a Waste Fines Storage Facility (WFSF), complementing the existing ex-pit facility.

The purpose of this Environmental Commissioning Report (ECR) is to demonstrate that the Storage and Tailings Deposition components of the SEP WFSF have been commissioned in accordance with Conditions 8 to 12 and 19 of the Works Approval (W6409/2020/1), dated 26 November 2020. Post submission of this ECR, the new tailings deposition components will be operated in accordance with the Time Limited Operations conditions as described in the Works Approval.

This is the first of three (3) ECRs being prepared by KCB for the facility. The split between the three reports is:

- **Part 1a (this report): WFSF Pit Storage Capacity and Tailings Delivery Infrastructure**
- Part 1b (future): Secondary and Emergency Droppers
- Part 2 (future): Decant Recovery Infrastructure

Part 1b will be provided in May 2022. Part 2 will be provided in Q3/Q4 2022, as approximately 6 months of tailings deposition will be required before the tailings and water levels in the pit area high enough to be able to safely extract supernatant using the new decant recovery infrastructure.

### Background and Project Context

The Tom Price mine is owned and operated by Hamersley Iron Pty Limited (Hamersley Iron), which is a subsidiary of Rio Tinto. The Processing Plant at Tom Price was constructed in the mid-1970s, to beneficiate low grade ore and achieve saleable ore product.

Tom Price mine operates under Prescribed Premises Category 5: “Processing or beneficiation of metallic or non-metallic ore” at an assessed production capacity of 620,000 tonnes per annual period.

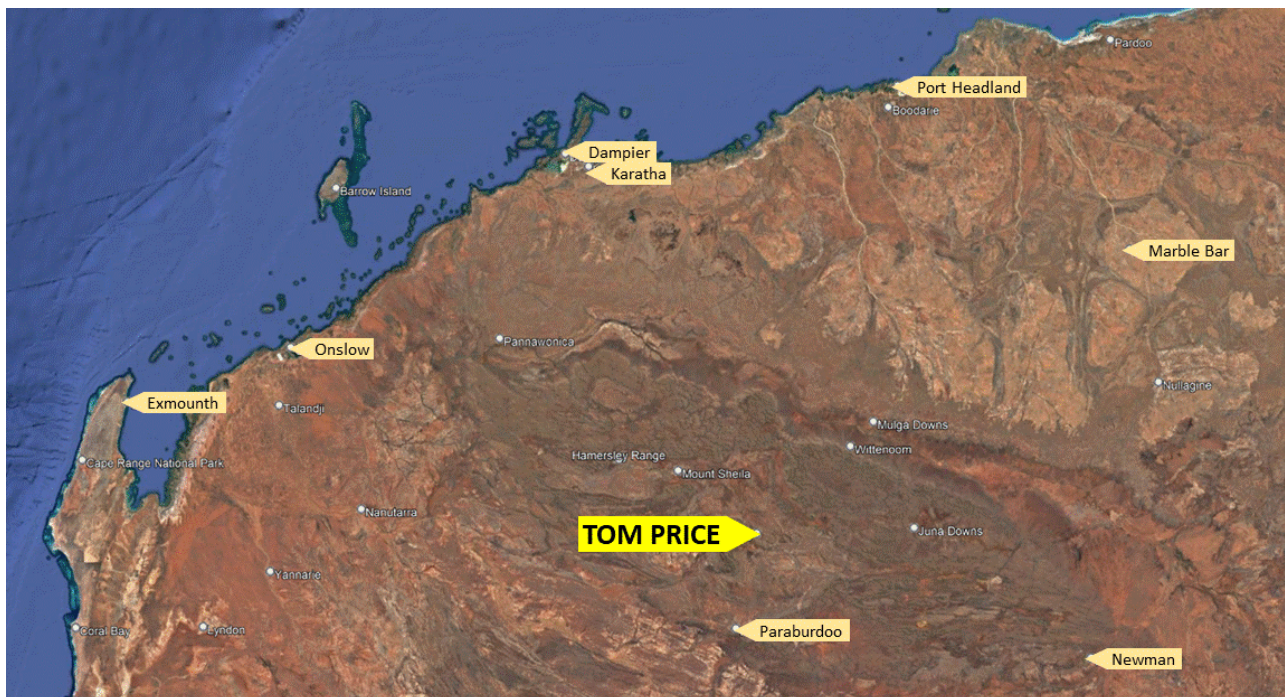
Premise details, as per the Works Approval are:

*Greater Tom Price Iron Ore Mine.*

*Mining tenement AMD70/04 sections 1-7, 10, 13, 232-235, 258, L47/136, L47/209, L47/210, L47/342, L47/645, AG70/3, G47/1258 and L47/668.*

*MOUNT SHEILA WA 6751*

Figure 1-1 describes the location of Tom Price, in the Pilbara region of Western Australia.



**Figure 1-1 Location of Tom Price (Google Earth)**

### Project context

At present, runoff from the pit walls, including acid runoff from the reactive Mount McRae Shales (MCS), reports to sumps in the SEP pit. Excess water in the sumps is recycled to the Tom Price tailings plant via an Acid Water Treatment Plant (AWTP), which neutralises the water through addition of a lime slurry. The AWTP is located at the tailings plant.

The ore beneficiation process at Tom Price involves crushing, wet screening and separation of fines in cyclones and spirals. The separated fines are then thickened. The neutralised water and treatment by-product from the AWTP are added to the thickener. The thickener overflow water is recycled back to the plant (or other site uses), while the underflow (tailings plus water) is currently pumped to Tailings Storage Facility (TSF) 2A for permanent storage.

The exhaustion of SEP pit ore body presents an opportunity to utilise the pit as permanent tailings storage. Benefits of using SEP as a WFSF (as approved in W6409/2020/1) include:

- Reducing ex-pit storage requirements;
- Preventing additional footprint being impacted by further ex-pit storage;
- Working towards closure of the pit by reducing the pit void volume and adding material to the pit void to improve the geotechnical stability of the pit wall; and,
- Improving the quality of water captured and contained temporarily in the pit through:
  - ◆ Controlling the source of acid runoff by covering the pit walls (including a substantial portion of the reactive MCS) with tailings; and,
  - ◆ Improving SEP water quality by using excess acid buffering capacity in the tailings water to offset low pH SEP pit wall runoff.

## 2 SYSTEM OVERVIEW

Figure 2-1 provides an overview of the systems relevant to the current and future operation of SEP WFSF. Figure 2-2 and Figure 2-3 give an overview of the tailings and decant piping, transfer and treatment arrangements. Note that whilst the focus of this report is the storage and tailings deposition infrastructure, the decant infrastructure is also illustrated in these figures for context.

The proposal to convert the SEP pit to a WFSF involves modifications to the following systems:

- *SEP Pit* – mining of the SEP has ceased and is being maintained / monitored as a pit until the proposed conversion to a WFSF.
- *Dewatering of SEP* – currently acidic sump water from SEP is delivered to the AWTP, where it is treated, and added to the tailings thickener. The modifications to this system are to provide delivery and treatment of decanted water from the future SEP tailings. Decant return is expected to be unavailable for a period in the order of 6 months (subject to operation and climate variables), as the intake cannot practically/safely be installed to the lowest level in the pit.
- *Tailings delivery* – currently tailings (and treated water from SEP) is being delivered to TSF2A. The conversion of SEP means that tailings will instead be delivered to SEP, although there will be an interim period where tailings can be delivered to either facility via a tee off the existing line.

Associated work includes an upgrade of the existing AWTP to improve its operation and extend its life in accordance with the forecast Life of Facility (LOF). The AWTP upgrade is scheduled to occur during the aforementioned period when decant is offline.

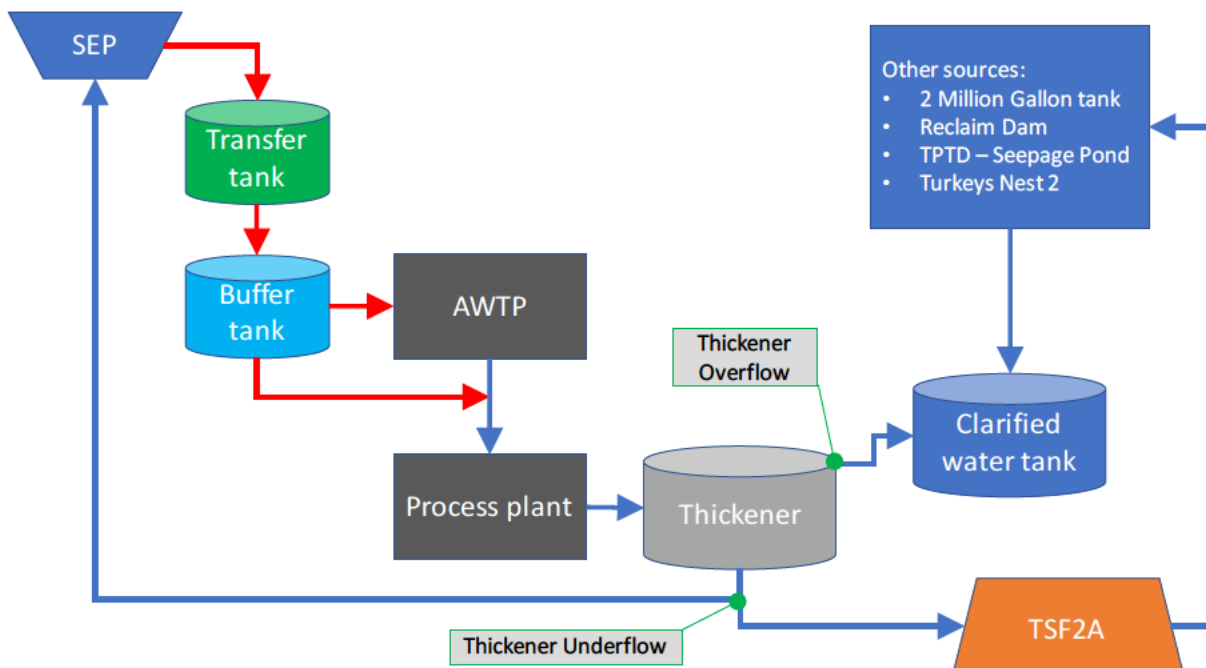


Figure 2-1 Simplified Water and Tailings Circuit

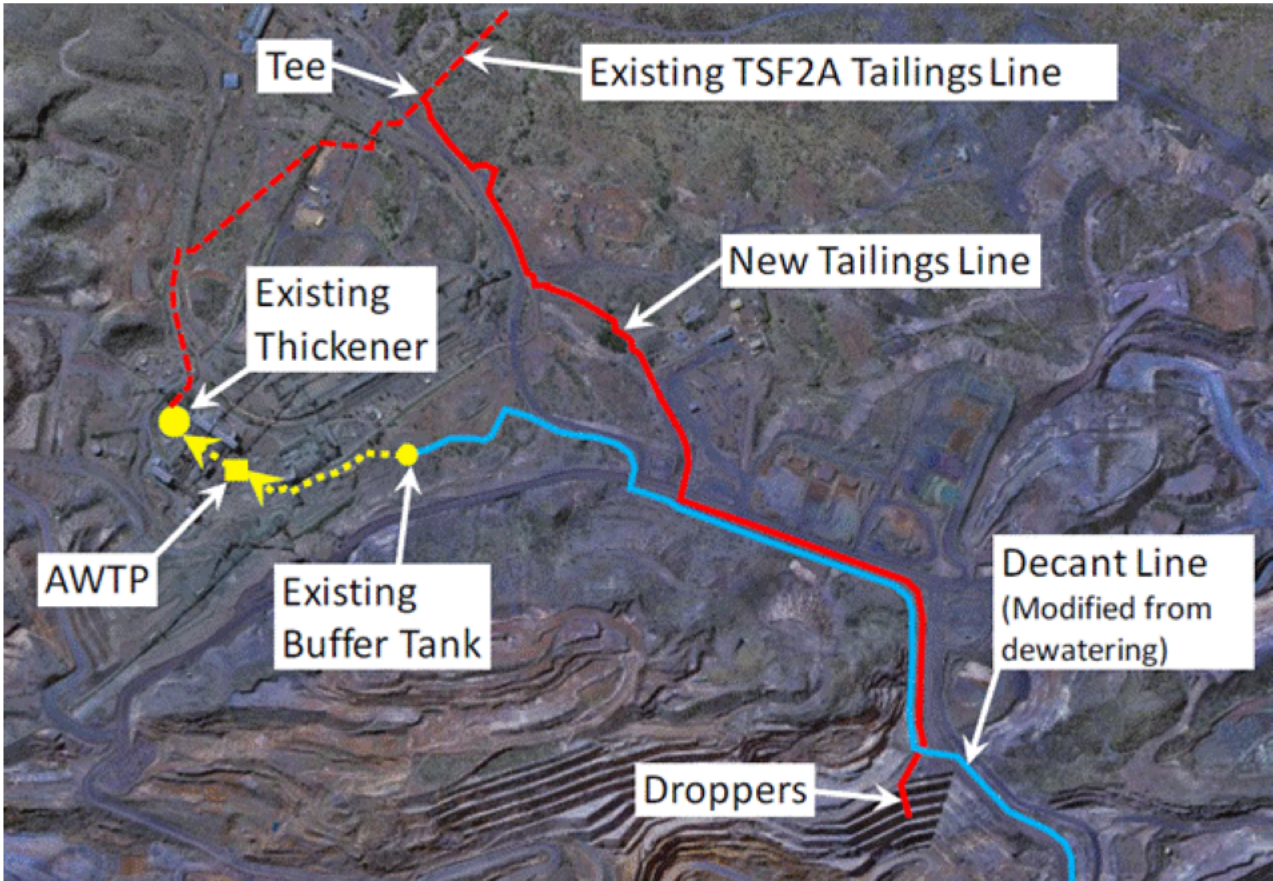


Figure 2-2 General Arrangement of Tailings Delivery and Decant Recovery/Treatment



Figure 2-3 General Arrangement at SEP Pit



### 3 COMMISSIONING

The environmental commissioning period was undertaken over a 13-day period from:

- 6:00 AM on April 10, 2022, to
- 9:30 AM on April 22, 2022.

During this period, Citect recorded the following flows and tonnages entering the pit:

- Dry Solids: 22,000 t
- Water Volume: 80,400 m<sup>3</sup>
- Solids Content (Average): 21.5 % (w/w)
- Solids Content (99%ile): 34.1 % (w/w)
- Total Flow: 86,400 m<sup>3</sup>

*Note: The above measurements were extracted from Citect, which has recorded readings from existing instrumentation located near the thickener (on the common line shared between the existing facility (TSF2A) and SEP).*

Table 3-1 summarises the key commissioning activities and environmental performance for the tailings deposition infrastructure.

**Table 3-1 Commissioning compliance and environmental performance of installed items**

Infrastructure	Commissioning activity undertaken	Environmental performance summary
SEP WFSF	SEP WFSF embankment freeboard was checked on a daily basis.	Available freeboard remained in excess of the 1:100 year AEP, 72-hour event for the duration of commissioning.
SEP tailings delivery pipeline	Pumping of tailings through the new tailings line and into the pit.  Tailings delivery pipeline was checked for integrity and loss of containment on a daily basis.	All testing of the tailings line was completed successfully with no leaks detected. Refer to image Appendix I (Figure I-1).  Tailings were successfully delivered to the pit, via the intended outfall location on the RL 720 m bench. Refer to images and Citect screenshots in Appendix I (Figures I-7 to I-10).  Integrity was upheld and there was no leakage or loss of containment.
Droppers	Testing of Primary Droppers with tailings.	All valves operated as intended.  When tailings was passed through the Primary Droppers, the outfall appeared evenly distributed between the three droppers, and the slotted outlets helped to distribute the flow as intended. Tailings was then visible on the pit floor. Refer to Figures I-2 to I-6 in Appendix I.

### 3.1 Additional Testing

Whilst the tailings header and Primary Droppers were fully tested, it was not possible to pass tailings through the Secondary Droppers and Emergency Dropper during the 14 day commissioning period.

Under Condition 12(d) of the Works Approval, the following measures are proposed to complete the commissioning requirements of the Secondary and Emergency droppers

- Timeframe: 28<sup>th</sup> April 2022 to 6<sup>th</sup> May 2022, inclusive.
- Activities: Secondary droppers: Testing with tailings.  
Emergency dropper: Testing with tailings (manual component only<sup>1</sup>).

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<sup>1</sup> Testing of the Emergency Dropper will comprise the manual (non burst-disk) only.

## 4 CERTIFICATION

Klohn Crippen Berger certifies that the tailings deposition and storage infrastructure, described herein, has been commissioned in accordance with the civil and mechanical designs described in the reports “*Detailed Design Report (P-0503664-2570-C-REP-00001)*”, Rev 0, dated 27 January 2021, and “*Design Report – Mechanical (P-0503664-2570-D-REP-00001)*”, Rev 0, dated 30 June 2001.

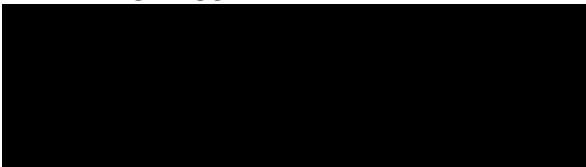
As described in the Environmental Compliance Report (KCB, 2022), some modifications were made to the design to suit differing site conditions, improved information (e.g., services) and/or construction logistics, however these changes were made in consultation with the designer and are in keeping with the design intent.

All items of infrastructure required by Condition 1 have been located and constructed in accordance with the design and construction / installation requirements in Table 1 of the Works Approval.

As described in Section 3.1 of this report, commissioning of the secondary and emergency droppers have not been completed, due to unplanned staffing constraints and contracting work roster. This work, along with an update to this report and certification, is planned to be undertaken between 28<sup>th</sup> April 2022 and 6<sup>th</sup> May 2022.

Yours truly,

**KCB AUSTRALIA PTY LTD.**



Senior Civil Engineer, RPEng (**#883946**)

## 5 CLOSING

This report is an instrument of service of Klohn Crippen Berger (KCB). The report has been prepared for the exclusive use of Rio Tinto Iron Ore (Client) for the specific application to the SEP In Pit WFSF, and it may not be relied upon by any other party without KCB's written consent.

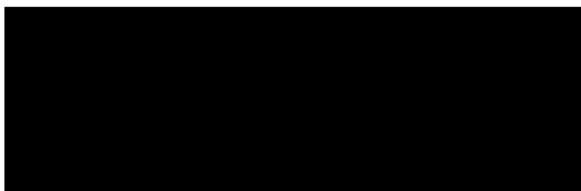
KCB has prepared this report in a manner consistent with the level of care, skill and diligence ordinarily provided by members of the same profession for projects of a similar nature at the time and place the services were rendered. KCB makes no warranty, express or implied.

Use of or reliance upon this instrument of service by the Client is subject to the following conditions:

1. The report is to be read in full, with sections or parts of the report relied upon in the context of the whole report.
2. The Executive Summary is a selection of key elements of the report. It does not include details needed for the proper application of the findings and recommendations in the report.
3. The observations, findings and conclusions in this report are based on observed factual data and conditions that existed at the time of the work and should not be relied upon to precisely represent conditions at any other time.
4. The report is based on information provided to KCB by the Client or by other parties on behalf of the client (Client-supplied information). KCB has not verified the correctness or accuracy of such information and makes no representations regarding its correctness or accuracy. KCB shall not be responsible to the Client for the consequences of any error or omission contained in Client-supplied information.
5. KCB should be consulted regarding the interpretation or application of the findings and recommendations in the report.
6. This report is electronically signed and sealed and its electronic form is considered the original. A printed version of the original can be relied upon as a true copy when supplied by the author or when printed from its original electronic file.

Yours truly,

**KCB AUSTRALIA PTY LTD.**



Senior Civil Engineer, RPEng (#883946)



Senior Mechanical Engineer

## REFERENCES

DWER. 2020. Works Approval W6409/2020/1, DWER file number DER2020/000195, Issued 26/11/2020 to Pilbara Iron Company (Services) Pty Ltd.

DWER. 2019. Industry Regulation Guide to Licensing” (2019)

KCB. 2020a. “Tom Price SEP in-pit TSF Part V Support Document”. Rev 4.

KCB. 2020b. “Tom Price SEP TSF – Water Simulation Modelling Report”. Rev C.

KCB. 2020c. “RTIO Tom Price SEP TSF – Operations, Monitoring and Maintenance Manual”. Rev B.

KCB. 2020b. “RTIO Tom Price SEP TSF Detailed Design Report”. Rev F (Final Prior to Alignment Change).

KCB. 2021. “RTIO Tom Price SEP TSF Detailed Design Report”. Rev 0 (Incorporate Alignment Change). Report #P-0503664-2570-C-REP-00001.

KCB. 2022. “SEP Input Waste Fines Storage Facility. Environmental Compliance Report: Part 1 – Storage Capacity and Tailings Delivery.

# APPENDIX I

## Photographic Evidence of Commissioning Activities

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Figure I-1 Header Arrangement During Operation (No Leaks)

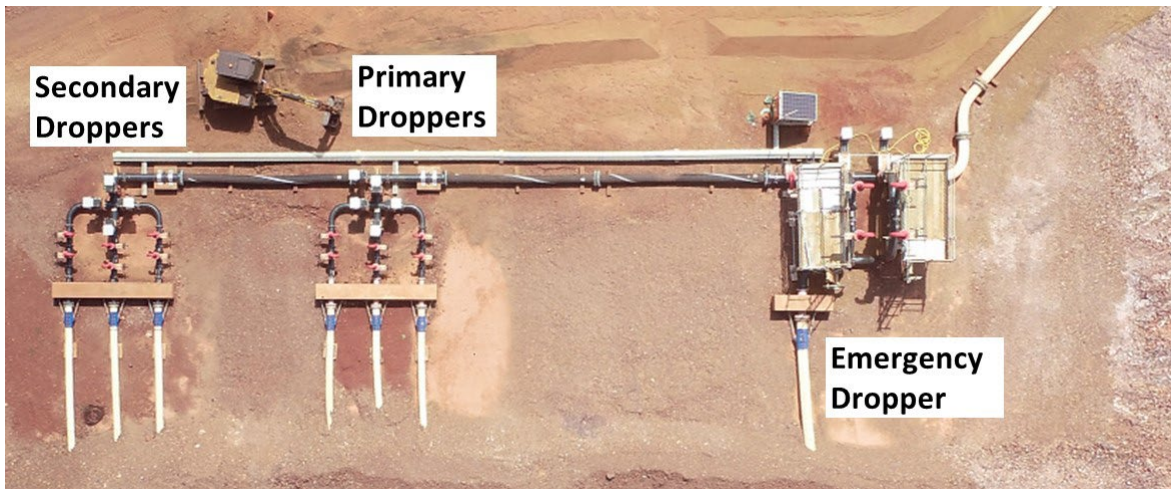


Figure I-2 Dropper Arrangement (Aerial View, Taken Before Commissioning)



Figure I-3 View of Droppers from Near Manifold



Figure I-4 View of Droppers from Near Manifold (3No. Primary Droppers Operating)

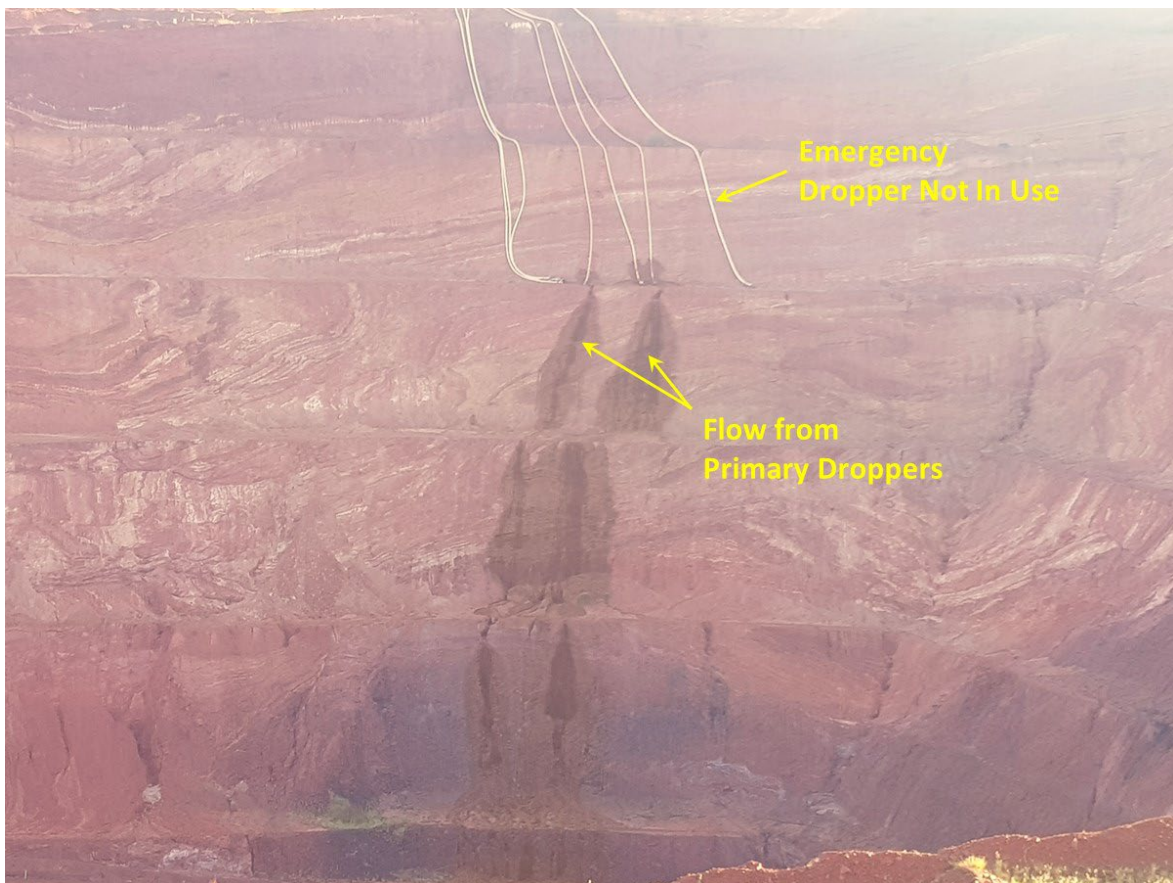


Figure I-5 View of Droppers from South Side of Pit





Figure I-6 Tailings Flowing Towards the Pit Floor

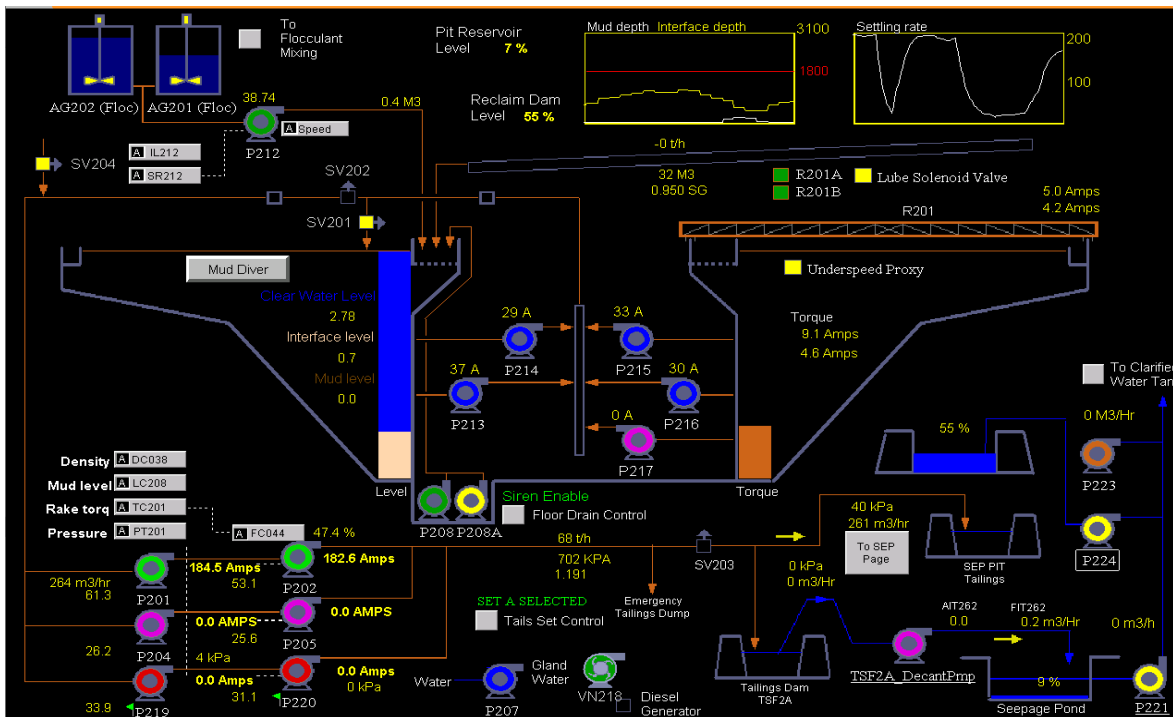


Figure I-7 Citect Screenshot 21 April 2022 – Overview of Thickener, Pumps, TSF2A, SEP

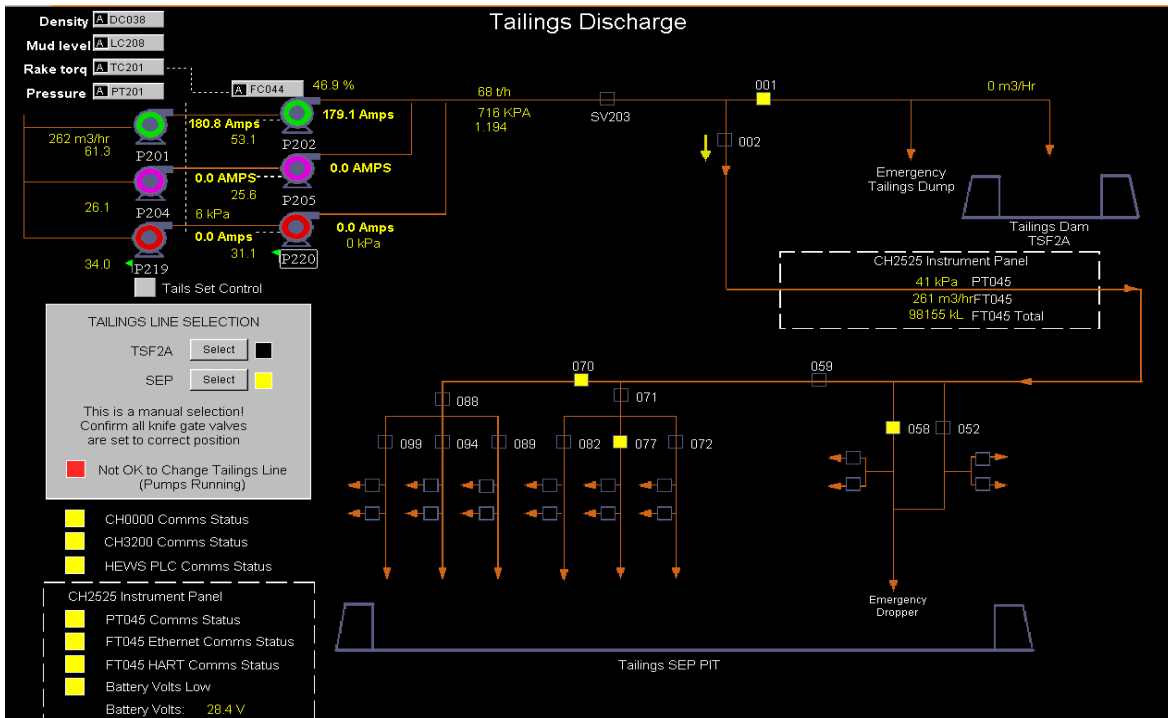


Figure I-8 Citect Screenshot 21 April 2022 – SEP WFSF Page (Depicting Pumps, Density, Flow Rate, Pressure, and Valve Positions)

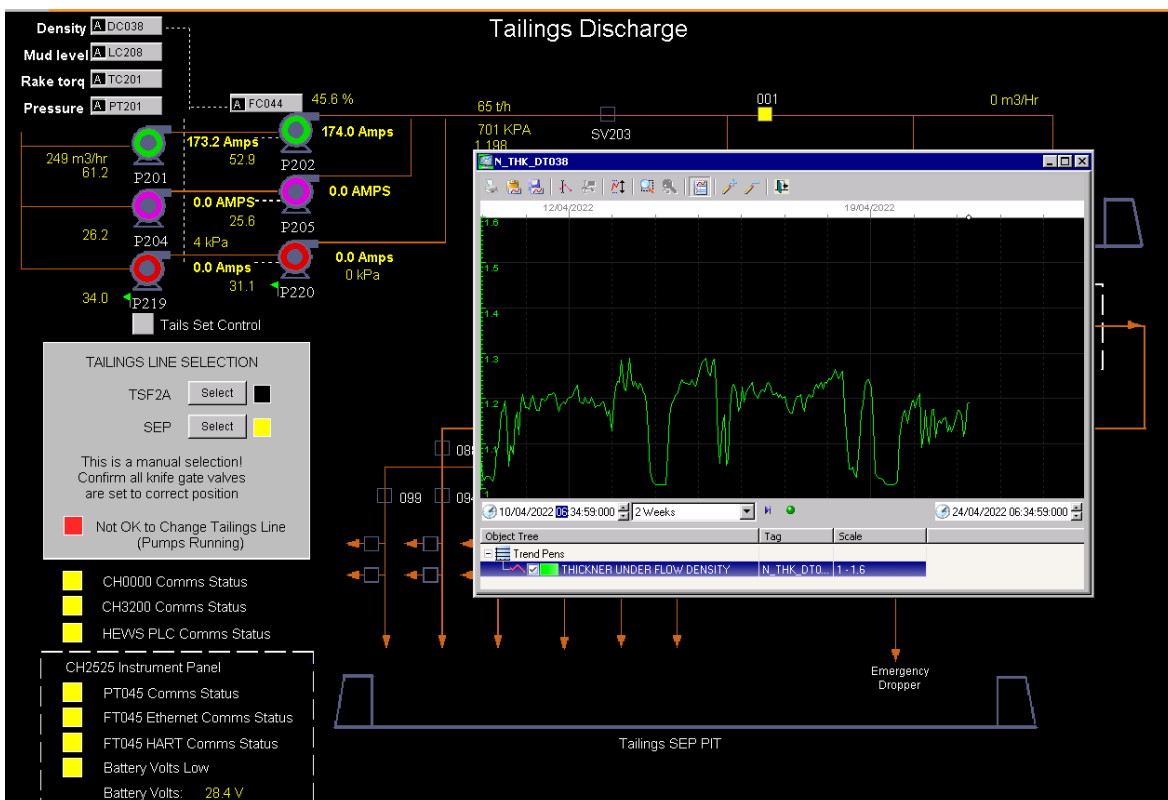
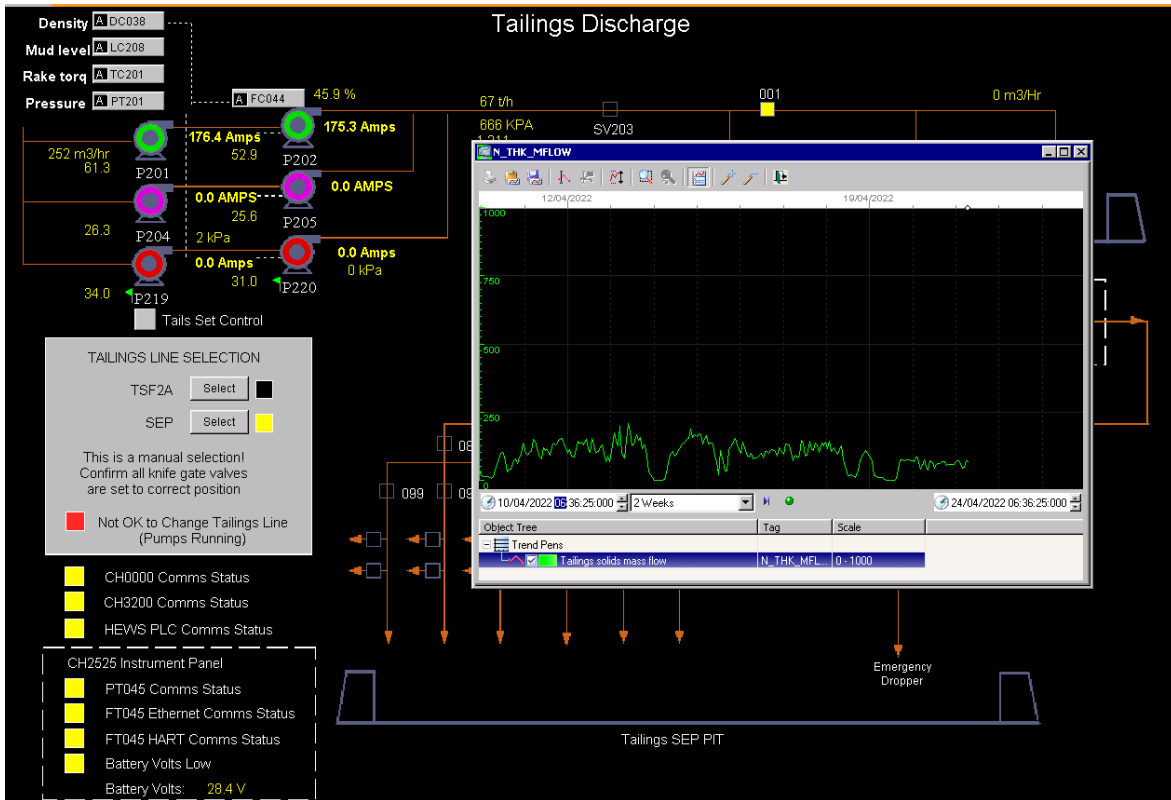


Figure I-9 Citect Screenshot 21 April 2022 – with Overlaid Thickener Underflow Density (History)



**Figure I-10 Citect Screenshot 21 April 2022 – with Overlaid Thickener Underflow Mass Flow (History)**