



Application for Works Approval

Part V Division 3 of the *Environmental Protection Act 1986*

Works Approval Number	W6433/2020/1
Applicant	Northern Star (Kanowna) Pty Ltd
ACN	010 511 789
File Number	DER2018/001042-3~75
Premises	<p>Kanowna Belle Gold Mine Yarri Road KANOWNA WA 6431</p> <p>Part of Mining Tenements: M27/18, M27/22, M27/23, M27/37, M27/49, M27/57, M27/92, M27/103, M27/122, M27/123, M27/127, M27/159, M27/164, M27/232, M27/245, M27/287, M27/420 and L27/62, L27/83 and L27/87.</p> <p>As defined by the premises maps attached to the issued works approval.</p>
Date of Report	13 May 2021
Decision	Works approval granted

Alana Kidd

Manager, Resources

An officer delegated by the CEO under section 20 of the EP Act

Table of Contents

1. Decision summary	1
2. Scope of assessment	1
2.1 Regulatory framework	1
2.2 Application summary and overview of premises	1
2.3 Existing TSF2	1
2.4 Description of proposed activity	1
2.4.1 Construction	2
2.4.2 Time limited operations	3
2.5 Mining Proposal	3
2.6 Clearing Permit	3
2.7 Part IV of the EP Act	3
3. Risk assessment	3
3.1 Source-pathways and receptors	3
3.1.1 Emissions and controls	3
3.1.2 Receptors	7
3.2 Risk ratings	10
3.3 Detailed risk assessment – Seepage of contaminated water	14
3.3.1 Overview of risk event	14
3.3.2 Analysis of groundwater monitoring data	15
3.3.3 Justification for additional regulatory requirements	15
4. Consultation	17
5. Conclusion	18
References	18
Appendix 1: Summary of applicant’s comments on risk assessment and draft conditions	19
Appendix 2: TSF2 embankment raise design	23
Appendix 3: Groundwater monitoring well and seepage recovery bore arrangement	25
Appendix 4: TSF2 – SWL line graphs	27
Appendix 5: TSF2 – TDS line graphs	30
Appendix 6: Application validation summary	33
Table 1: Proposed applicant controls	4
Table 2: Sensitive human and environmental receptors and distance from prescribed activity	7
Table 3: Risk assessment of potential emissions and discharges from the premises during construction, time-limited operations and operations	11

Table 4: Consultation	17
Figure 1: General design of embankment raise (Stage 1)	23
Figure 2: TSF2 typical sections and details	24
Figure 3: Map demonstrating location of groundwater monitoring wells.....	25
Figure 4: Map demonstrating location of seepage recovery bores.....	26
Figure 5: SWL – TSF2 western monitoring wells.....	27
Figure 6: SWL – TSF2 northern monitoring wells	28
Figure 7: SWL – TSF2 eastern monitoring wells	29
Figure 8: TDS – TSF2 western monitoring wells	30
Figure 9: TDS – TSF2 northern monitoring wells.....	31
Figure 10: TDS – TSF2 eastern monitoring wells	32

1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction, time limited operations and operation of the premises. As a result of this assessment, works approval W6433/2020/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at <https://www.der.wa.gov.au>.

2.2 Application summary and overview of premises

Northern Star (Kanowna) Pty Ltd (applicant) currently holds licence L5029/1992/11 for categories 5, 6 and 44 under Part V of the *Environmental Protection Act 1986* (EP Act). The premises is approximately 18 km north-east of the City of Kalgoorlie-Boulder.

On 29 July 2020, the applicant submitted an application for a works approval to the department under section 54 of the EP Act.

The application is to undertake construction works and time limited operations relating to Category 5: Processing or beneficiation of metallic or non-metallic ore; for embankment raises (Stages 1-3) as per the original engineered design intent of the existing above ground Tailings Storage Facility (TSF), known as TSF2 at the premises.

The premises relates to the categories and assessed production capacities under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations); which are defined in works approval W6433/2020/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk assessments* (DWER 2017) are outlined in works approval W6433/2020/1.

2.3 Existing TSF2

TSF2 was constructed in late 2018, using upstream methods under works approval W6125/2018/1, which allowed construction of the starter embankments to a height of RL 355.0 m. TSF2 is located within tenement M27/92 with a total footprint area of approximately 100 ha.

An amendment to licence L5029/1992/11 was granted in June 2019 to allow for the operation of TSF2 following completion of works associated with works approval W6125/2018/1. TSF2 was commissioned in September 2019.

TSF2 comprises of two square cells (Cell 1 and Cell 2) located immediately north and hydrologically downgradient of an existing above-ground TSF (TSF1) that was commissioned in 1993 (AGE 2019). TSF1 has not been used for tailings disposal since December 2019 and all tailings are deposited into TSF2 (RPS 2020).

2.4 Description of proposed activity

The applicant is seeking authorisation to undertake the below TSF2 embankment raises using upstream methods (as per Figure 1 and Figure 2):

- Stage 1 – construction of TSF2 embankment raise from RL 355.0 m to RL 357.5 m;
- Stage 2 – construction of TSF2 embankment raise from RL 357.5 m to RL 360.0 m; and

- Stage 3 – construction of TSF2 embankment raise from RL 360.0 m to RL 362.5 m.

Regulatory requirements for the construction and time limited operations of the Stage 1 embankment raise (up to RL 357.5 m) will be managed via works approval W6433/2020/1.

An amendment to licence L5029/1992/11 is required following the time limited operations of the Stage 1 embankment raise. The below activities will be managed via the amendment to licence L5029/1992/11:

- Operation of Stage 1 embankment raise (up to RL 357.5 m); and
- Construction and operation of the Stage 2 (up to RL 360.0 m) and Stage 3 (up to RL 362.5 m) embankment raises.

2.4.1 Construction

Embankment raises (Stages 1-3)

The applicant proposes 2.5 m embankment raises for each stage, with design slopes of 1:2.75 (V:H) downstream and 1:2 (V:H) upstream. The dividing embankment accessway will have design slopes of 1:1.5 (V:H) downstream and 1:1.5 (V:H) upstream.

The general construction sequence of each embankment raise proposes the following key works:

- Remove gravel wearing course to a nominal depth of 150 mm and prepare perimeter embankment foundation area (clear, remove unsuitable material, scarify and moisture condition).
- Borrow, transport, place, moisture condition and compact tailings material to perimeter embankment.
- Place and compact fill in 300 mm layers to form the required embankment profile and continue construction to the required crest level.
- All raised embankment walls are to be rolled and compacted to a minimum 95% of SMDD (maximum dry density (standard compaction)) and placed within a moisture content tolerance of $\pm 2\%$ of its optimum moisture content.
- Trim batters, borrow, transport, place and traffic compact non-acid forming (NAF) mine waste capping (minimum of 500 mm thick) to downstream side of perimeter embankment to protect from erosion.
- All TSF2 embankment crests sloped inwards to shed water into TSF2.
- Stormwater runoff diverted away from TSF2.
- Settlement markers installed at no greater than 250 m spacings around the Cell 1 and Cell 2 perimeters to monitor freeboard.

Pipelines

The applicant notes that there will be no changes to the existing tailings delivery or return water systems. Tailings are deposited sub-aerially and at low velocity via the multi point spigots located at nominal 20 m intervals along the TSF2 perimeter. Decant water recovered from TSF2 is directed to the existing TSF2 decant return water pond, then transferred to the process dam and directed to the process plant for re-use. Licence L5029/1992/11 regulates these activities, therefore these aspects have not been duplicated within this decision report or works approval W6433/2020/1.

Seepage recovery bores

In September 2020, eight seepage recovery bores (airwell pumping system) were installed along the northern and eastern perimeters of TSF2 Cell 2 (Figure 3) to manage rising

groundwater levels around TSF2.

The applicant is proposing to install a further five new TSF2 seepage recovery bores along the northern and western perimeters of TSF2 Cell 1 in mid-late 2021.

2.4.2 Time limited operations

The applicant is seeking authorisation to undertake time limited operations for tailings (sourced from the site's mining operations) to be deposited into TSF2 following each TSF2 embankment raise.

2.5 Mining Proposal

The Mining Proposal (Registration ID: 71009) (MP 71009) for TSF2 was approved by the Department of Mines, Industry Regulation and Safety (DMIRS) on 20 March 2018. The MP 71009 approval covers the life of mine design for TSF2 from starter embankment (RL 355 m) to final Stage 6 embankment raise (RL 370 m).

2.6 Clearing Permit

A clearing permit, CPS 7808/1, to clear 300 hectares of native vegetation was granted in December 2017. The applicant has advised that no new surface disturbance or clearing is required or planned as part of the Stages 1-3 embankment raises work scope. The requirements of the clearing approval have not been duplicated within works approval W6433/2020/1.

2.7 Part IV of the EP Act

Ministerial Statement (MS331) was published on 7 December 1993 and provides regulatory requirements for the operation of the sulphide concentration oxidation plant (gold roster). MS331 does not regulate the Part V, Category 5 operations; therefore works approval W6433/2020/1 provides regulatory requirements for the construction and time limited operations of the Stage 1 TSF2 embankment raise.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guidance Statement: Risk Assessments* (DER 2017).

To establish a risk event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during the construction, time limited operations and operation which have been considered for the Stage 1 embankment lift in this decision report are detailed in Table 1 below. Table 1 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed applicant controls
Construction			
Dust	Earthworks and light vehicle/mobile equipment movements	Air/Wind dispersion	<ul style="list-style-type: none"> • Construction materials transported at optimal moisture content to reduce potential for dust generation. • Water cart used (as required) for dust suppression. • Topsoil removal to cease on high wind days. • Topsoil stockpiles constructed to best practice design (e.g. 2.5 m in height). • Dust suppression on topsoil stockpiles (fresh water) used as required.
Time limited operations and operations			
Category 5: Processing or beneficiation of metallic or non-metallic ore			
Hypersaline water contaminated with elevated metals and metalloids (e.g. aluminium, arsenic, cadmium, chromium, copper, iron, lead, mercury and nickel)	TSF2	<ul style="list-style-type: none"> • Increased seepage of contaminated water through base and embankments of TSF2 to soil, groundwater and root zone of native vegetation • Increased seepage of contaminated water through base and embankments of TSF2 to toe drain (surface seepage interception trench) • Overland runoff of salts, metals and metalloids during significant rainfall events 	<ul style="list-style-type: none"> • Embankment lift specifications to reduce seepage and erosion: <ul style="list-style-type: none"> ○ Remove gravel wearing course to a nominal depth of 150 mm and prepare perimeter embankment foundation area (clear, remove unsuitable material, scarify and moisture condition). ○ Borrow, transport, place, moisture condition and compact tailings material to perimeter embankment. ○ Place and compact fill in 300 mm layers to form the required embankment profile and continue construction to the required crest level. ○ All raised embankment walls are to be rolled and compacted to a minimum 95% of SMDD and placed within a moisture content tolerance of +/- 2% of its

Emission	Sources	Potential pathways	Proposed applicant controls
			<p>optimum moisture content.</p> <ul style="list-style-type: none"> ○ Trim batters, borrow, transport, place and traffic compact non-acid forming (NAF) mine waste capping (minimum of 500 mm thick) to downstream side of perimeter embankment. ○ All TSF2 embankment crests sloped inwards to shed water into TSF2. ○ Stormwater runoff diverted away from TSF2. <ul style="list-style-type: none"> ● Operations: <ul style="list-style-type: none"> ○ Tailings will continue to have a solid content of >43%, which aligns with the TSF2 Design Report (Coffey 2017) ○ Tailings will continue to be deposited sub-aerially and at low velocity via the multi point spigots located at nominal 20 m intervals along the TSF2 perimeter. ○ Surface water that collects in the peripheral drains around the TSF will continue to be removed to reduce the volume that may seep into the ground. ● Seepage recovery: <ul style="list-style-type: none"> ○ Pumping at the seepage recovery bores located south of TSF1 (Figure 3) was resumed in July 2019, prior to the commissioning of TSF2. ○ In September 2020, eight seepage recovery bores (airwell pumping system) were installed along the northern and eastern perimeters of TSF2 Cell 2 (Figure 3) to manage rising groundwater levels around TSF2. ○ A further five seepage recovery bores are planned to be installed along the northern and western perimeters of TSF2 Cell 1 around mid-late 2021.

Emission	Sources	Potential pathways	Proposed applicant controls
			<ul style="list-style-type: none"> • Monitoring: <ul style="list-style-type: none"> ○ Visual inspections in accordance with licence L5029/1992/11. ○ Conduct bathymetric surveys regularly. ○ Maintain water balance. ○ In early 2019, an additional 15 new groundwater monitoring wells were installed around TSF2, with a couple of new groundwater monitoring wells installed around TSF1. Eight of the 15 new groundwater monitoring wells installed around the perimeter of TSF2 are clustered pairs of shallow and deep wells. ○ Monitoring of groundwater in accordance with licence L5029/1992/11. ○ Routine monitoring of vibrating wire piezometers (VWP).
Tailings and hypersaline water contaminated with elevated metals and metalloids (e.g. aluminium, arsenic, cadmium, chromium, copper, iron, lead, mercury and nickel)	TSF2	Overtopping of TSF2 and direct discharge to land	<ul style="list-style-type: none"> • Maintain minimum operating freeboard of 300 mm. • Crest sloped inwards to shed water into TSF2. Stormwater runoff diverted away from the facility and embankment downstream slopes covered with rock armour to protect from erosion. • Regular inspections every 12 hours and following significant rainfall events.
Dust (dry tailings)	TSF2	Air/Wind dispersion	<ul style="list-style-type: none"> • Tailings will continue to be deposited sub-aerially and at low velocity via the multi point spigots located at nominal 20 m intervals along the TSF2 perimeter. • Controlled placement of tailings via multi-spigots to ensure surface remains damp and aids development of a salt crust.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2017), the Delegated Officer has excluded employees, visitors and contractors of the applicant's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

Table 2 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guidance Statement: Environmental Siting* (DER 2016)).

Table 2: Sensitive human and environmental receptors and distance from prescribed activity

Sensitive receptors	Distance from prescribed activity
Human receptors	
<ul style="list-style-type: none"> Aboriginal Ninga Mia Community City of Kalgoorlie-Boulder 	<p>The nearest community and city include:</p> <ul style="list-style-type: none"> Aboriginal Ninga Mia Community located 18 km south-west of the premises; and City of Kalgoorlie-Boulder located 18 km to the south-west of the premises. <p>Distances of premises to closest sensitive land uses is sufficient to inform that project activity impacts as not foreseeable. Human receptors are not considered to be impacted during construction or operations and therefore not further considered in the risk assessment.</p>
Pastoral lease	The TSF2 footprint area lies partially on the privately-owned Mt Vettors pastoral lease.
Environmental receptors	
Groundwater	<p>Premises is located within the Goldfields Groundwater Area proclaimed under <i>Rights in Water and Irrigation Act 1914</i>.</p> <p>Groundwater is hypersaline with 14,000 to 35,000 total dissolved solids (TDS) (DWER Geocortex).</p> <p>TSF1 was commissioned in 1993. Seven groundwater monitoring wells (GWMB01-GWMB07) were installed along the TSF1 perimeter in 1994. At the start of monitoring in 1994, groundwater levels were approximately 12 to 14 metres below ground level (mbgl) (AGE 2020).</p> <p>Groundwater monitoring results provided by the applicant demonstrate that groundwater levels surrounding TSF2 were between 2.3 to 6.7 mbgl in January 2021.</p> <p>The regional water table generally reflects topography with an overall northwards gradient and flow direction (RPS 2020).</p> <p>2019-2020 groundwater monitoring results provided by the applicant indicate groundwater surrounding TSF2 to be:</p> <ul style="list-style-type: none"> Acidic to slightly alkaline at pH 2.05 - 8.48, with an average pH of 3.67; Hypersaline at 25,400 to 214,000 mg/L TDS; and

Sensitive receptors	Distance from prescribed activity
	<ul style="list-style-type: none"> • Enriched in a number of elements including aluminium, arsenic, cadmium, chromium, copper, iron, lead, mercury and nickel). <p>Groundwater is abstracted and used onsite for mineral processing and dust suppression. Groundwater abstraction is permitted under licence GWL 62498(6) to provide safe mining conditions below the water table (RPS 2020).</p> <p>As the groundwater is considered hypersaline and there are no known local users of groundwater in the area; groundwater is not considered a sensitive receptor and has therefore not been further assessed within the risk assessment.</p>
Surface waters	<ul style="list-style-type: none"> • Salt lakes system located between 4.6-6.5 km along the north-east to north-west perimeter of the Category 5 (TSF2) operations. • Ephemeral creek lines: <ul style="list-style-type: none"> ○ An ephemeral creek line located immediately south of TSF1; ○ An ephemeral creek line located 3 km east-north-east of TSF2; and ○ An ephemeral creek line located 3 km west of TSF2. <p>The ephemeral creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall.</p> <p>The ephemeral creek line located immediately south of TSF1 is upstream of the groundwater, which flows in a northerly direction. The location of the ephemeral creek combined with the operation of seepage recovery bores along the southern boundary of TSF1 are sufficient to inform that project activity impacts as not foreseeable. This receptor is not considered to be impacted during construction or operations and therefore not further considered in the risk assessment.</p>
Threatened and priority flora	<p>Priority flora located 3.8 km north-north-east of TSF2 (DWER Geocortex).</p> <p>There are no Threatened Ecological Communities or Priority Ecological Communities within 14 km of TSF2.</p>
Threatened and priority fauna	<p>The following conservation significant fauna species have been sighted (DWER Geocortex):</p> <ul style="list-style-type: none"> • Common greenshank, <i>Tringa nebularia</i> (MI) – sighting approximately 768 m north-east and 5.63 km east of TSF2. • Hooded plover, <i>Thinornis rubricollis</i> (P4) – sighting approximately 768 m north-east of TSF2. • Bilby, <i>Macrotis lagotis</i> (VU at both state and federal level) – sighting approximately 2.61 km east-south-east of TSF2. • Sharp-tailed sandpiper, <i>Calidris acuminata</i> (MI) – sighting approximately 5.63 km east TSF2. • Curlew sandpiper, <i>Calidris ferruginea</i> (CR) – sighting approximately 5.63 km east TSF2. <p>Distances of TSF2 operations to common greenshank, hooded plover, bilby, sharp-tailed piper and curlew piper sightings are sufficient to inform that project activity impacts are not foreseeable. These</p>

Sensitive receptors	Distance from prescribed activity
	<p>receptors are not considered to be impacted during proposed embankment raise construction and operation of TSF2 and therefore not further considered in the risk assessment.</p> <p>The issued clearing permit (7808/1) indicates that a Level 1 fauna reconnaissance survey was conducted within the vicinity of TSF2 during September 2017. No species of conservation significance were recorded during the on-site survey (DMIRS 2017).</p>
Native vegetation	<p>Situated adjacent to the western, northern and eastern perimeters of TSF2.</p> <p>The issued clearing permit (7808/1) (DMIRS 2017) indicates the following in relation to native vegetation within the vicinity of TSF2:</p> <ul style="list-style-type: none"> • broadly mapped as Beard vegetation association: 20: Low woodland; mulga mixed with <i>Allocasuarina cristata</i> and <i>Eucalyptus</i> sp. <p>Approximately 99% of the pre-European extent of this vegetation association remains uncleared (Government of Western Australia 2019).</p> <ul style="list-style-type: none"> • vegetative condition status of 'Good' on the Keighery scale, with parts of the clearing application area suffering disturbance from historical mining activities and grazing activities. • vegetation associations, fauna habitats and landform types are well represented in surrounding areas.

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk assessments* (DWER 2017) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional requirements will be documented and justified in Table 3.

Works approval W6433/2020/1 that accompanies this decision report authorises construction and time limited operations. The conditions in the issued works approval, as outlined in Table 3 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

An amendment to licence L5029/1992/11 is required following the time limited operations authorised under the works approval to authorise emissions associated with the ongoing operation of the premises i.e. use of TSF2. A risk assessment for the operations has been included in this decision report, however licence conditions will not be finalised until the department assesses the licence amendment application.

Table 3: Risk assessment of potential emissions and discharges from the premises during construction, time-limited operations and operations

Risk Event						Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient ?	Conditions ² of works approval	Justification for additional regulatory requirements
Source/Activities	Potential emission	Potential pathways	Potential adverse impacts	Receptors	Applicant controls				
Construction									
Source: <ul style="list-style-type: none"> Earthworks and light vehicle/mobile equipment movements Activities: <ul style="list-style-type: none"> Transport of materials (waste rock and topsoil) and construction of TSF2 	Dust	Air/Wind dispersion	Reduced native vegetation health or native vegetation death	Native vegetation	Refer to Table 1, section 3.1.1	C = Minor L = Rare Low Risk	Yes	N/A	N/A
Time limited operations and operations									
Category 5: Processing or beneficiation of metallic or non-metallic ore									
Source: <ul style="list-style-type: none"> TSF2 Activities: <ul style="list-style-type: none"> Tailings and contaminated water disposal to TSF2 	Hypersaline water contaminated with elevated metals and metalloids (e.g. aluminium, arsenic, cadmium, chromium, copper, iron,	<ul style="list-style-type: none"> Increased seepage of contaminated water through base and embankments of TSF2 to soil, groundwater and root zone of native vegetation Increased seepage of contaminated water through base and 	Reduced quality or contamination of soil, sediment and/or surface waters Groundwater mounding Reduced priority flora/native vegetation	Soil/Sediment Priority flora/Native vegetation Surface waters (salt lake system)	Refer to Table 1, section 3.1.1	C = Moderate L = Likely High Risk	No	<u>Conditions 1 and 2</u> <u>Condition 3</u> <u>Conditions 4, 5 and 6</u> <u>Conditions 7, 8, 9 and 10</u> <u>Condition 11</u> <u>Condition 12</u>	Refer to section 3.3 for the detailed risk assessment for seepage of contaminated water and the justification for additional regulatory requirements applied. Some additional regulatory requirements apply to reporting, time limited operations commencement

Risk Event						Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient ?	Conditions ² of works approval	Justification for additional regulatory requirements
Source/Activities	Potential emission	Potential pathways	Potential adverse impacts	Receptors	Applicant controls				
	lead, mercury and nickel)	embankments of TSF2 to toe drain (surface seepage interception trench) • Overland runoff of salts, metals and metalloids during significant rainfall events	health or priority flora/native vegetation death					<u>Condition 13</u> <u>Condition 14</u> <u>Conditions 15 and 16</u> <u>Condition 17</u> <u>Conditions 18, 19 and 20</u>	and duration.
Source: • TSF2 Activities: • Tailings and contaminated water disposal to TSF2	Tailings and hypersaline water contaminated with elevated metals and metalloids (e.g. aluminium, arsenic, cadmium, chromium, copper, iron, lead, mercury and nickel)	Overtopping of TSF2 Overland runoff of salts, metals and metalloids during significant rainfall events	Reduced quality or contamination of soil, and/or sediment Reduced native vegetation health or native vegetation death	Soil/Sediment Native vegetation	Refer to Table 1, section 3.1.1	C = Moderate L = Unlikely Medium Risk	Yes	<u>Condition 2</u> <u>Condition 14</u> <u>Conditions 15 and 16</u>	Regulatory requirements applied to: • ensure that non-acid forming (NAF) mine waste is used for capping; • install and maintain settlement markers around the Cell 2 and Cell 1 TSF2 perimeters to monitor operating freeboard; and • undertake monitoring of the TSF2 water balance each monthly period. Some additional regulatory requirements apply to reporting, time limited operations commencement and duration.
Source: • TSF2	Dust (dry tailings)	Air/Wind dispersion	Reduced native vegetation health or native vegetation death	Native vegetation	Refer to Table 1, section 3.1.1	C = Minor L = Rare	Yes	N/A	N/A

Risk Event						Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient ?	Conditions ² of works approval	Justification for additional regulatory requirements
Source/Activities	Potential emission	Potential pathways	Potential adverse impacts	Receptors	Applicant controls				
Activities: <ul style="list-style-type: none"> Tailings stored in TSF2 						Low Risk			

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments* (DWER 2017).

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

3.3 Detailed risk assessment – Seepage of contaminated water

3.3.1 Overview of risk event

The following provides a list of key aspects in relation to the operation of TSF2:

- TSF2 was commissioned in September 2019, which coincides with a rise in standing water levels (SWL) of groundwater in the groundwater monitoring wells surrounding TSF2 (Figure 5, Figure 6 and Figure 7).
- The applicant is proposing to raise the embankment walls of TSF2 to allow for an increased volume of tailings sourced from the site's mining operations to be deposited into TSF2.
- The predicted seepage from TSF2 has been estimated as approximately 120 m³/d in the initial period, rising to 405 m³/d after the final lift (Coffey 2017).
- Although the predicted seepage rates for TSF2 are significantly lower than the calculated seepage from TSF1 in 2001 of ~ 1,000 - 2,000 m³/d, the notably shallower water table implies that a more rapid approach to seepage management will be required for TSF2 (AGE 2019).
- Laboratory analysis of the tailings and pore water demonstrates elevated metals and metalloids (e.g. aluminium, arsenic, cadmium, chromium, copper, iron, lead, mercury and nickel).
- Dieback of vegetation has been observed historically when TSF1 SWL were close to the surface (AGE 2020). The shallow groundwater levels around TSF2 observed during the second half of 2020 and January 2021 (namely in groundwater monitoring wells GWMB13D, GWMB15S and GWM16S), are putting native vegetation in the area at severe risk of impact; with no allowance for further groundwater level rises during significant rainfall events.
- In September 2020, eight seepage recovery bores (airwell pumping system) were installed along the northern and eastern perimeters of TSF2 Cell 2 (Figure 3) to manage rising groundwater levels around TSF2.
- The applicant has advised that five new TSF2 seepage recovery bores are planned to be installed along the northern and western perimeters of TSF2 Cell 1 in mid-late 2021.

Seepage of contaminated water through the base and embankments of TSF2 is likely to result in the following emissions:

- further groundwater mounding around TSF2;
- near surface seepage collecting within the toe drain surrounding the TSF2 perimeter, which will contribute to groundwater mounding if the water is not continually removed;
- overland runoff of salts, metals and metalloids during significant rainfall events; and
- elevated TDS, metal and metalloid levels in shallow groundwater surrounding TSF2.

The above emissions relating to increased seepage from TSF2 have potential to adversely impact soil/sediment, priority flora, native vegetation and surface waters (salt lake system). The key environmental risks with rising SWL include:

- dieback of priority flora or native vegetation due to hypersaline water migrating into root zones;
- dieback of native vegetation can result in subsequent loss of transpiration drawdown, with potential to extend duration of high-water table conditions during which surface

evaporation and accumulation of salts can occur over an extended period of time leading to surface scalding;

- salinisation of shallow subsurfaces resulting in poor soil and sediment quality that can lead to complications with future mine rehabilitation works; and
- overland runoff from scalded areas risks transport of salts, metals and metalloids to downstream environments (priority flora, native vegetation and aquatic ecosystems in the clay pans and salt lakes located to the north-west, north and north-east of TSF2).

3.3.2 Analysis of groundwater monitoring data

Analysis of the monitoring data (including SWL and quality) within the TSF2 groundwater monitoring wells was undertaken to assess the potential environmental impacts associated with the proposed TSF2 embankment lifts and increased volume of tailings to be deposited in TSF2. Figure 3 (Appendix 3) demonstrates the location of groundwater monitoring wells adjacent to TSF2.

As demonstrated in Figure 5, Figure 6 and Figure 7 (Appendix 4), the groundwater levels within monitoring wells located to the west, north and east of TSF2 have risen since August 2019 in response to the commissioning and deposition of tailings into TSF2.

The shallowest groundwater level of 2.3 mbgl was observed in groundwater monitoring well GWMB13D (located immediately west of TSF2) in January 2021 (Figure 5). As of January 2021, groundwater levels in several groundwater monitoring wells located immediately west and north of TSF2 are within 4 mbgl (Figure 5 and Figure 6).

For comparison purposes, the SWL for monitoring well GWMB26, situated south of TSF1 and upstream of the groundwater directional flow, ranged between 7 to 8.9 mbgl from August 2020 to January 2021. Groundwater mounding to the south of TSF1 is likely mitigated by the northwards gradient and flow direction of groundwater combined with historical operation of seepage recovery bores along the southern perimeter of TSF1.

According to DWER Geocortex, groundwater at the premises is hypersaline with 14,000 to 35,000 TDS. Soon after tailings deposition commenced into TSF1 in 1993, the TDS in the surrounding monitoring wells started to rise (AGE 2019). Figure 8, Figure 9 and Figure 10 (Appendix 5) demonstrate that the majority of TDS levels within the groundwater monitoring wells surrounding TSF2 are approximately 1-4 times higher in comparison to TDS levels within the deep monitoring well (GWMB26), which is situated south of TSF1 and upstream of the groundwater directional flow.

Since the commencement of tailings deposition into TSF2, the highest TDS levels have been observed in GWMB19S (located immediately east of TSF2) with 160,000 TDS in September 2019 and 159,000 TDS in June 2020 (Figure 10).

Elevated concentrations of cadmium, chromium, copper, iron, lead, mercury and nickel have been observed in the 2019-2020 monitoring data for groundwater monitoring wells surrounding TSF2 when compared against the Australian and New Zealand Guidelines for Fresh & Marine Water Quality (ANZ 2018) for marine water.

3.3.3 Justification for additional regulatory requirements

Considering the groundwater responses to rising tailings elevation within TSF2, the department provides the below justification for the key additional regulatory requirements that have been applied to manage and monitor seepage during time limited operations:

- requirement to install and have operational, the five new TSF2 seepage recovery bores at least 90 calendar days from the commencement of time limited operations for Cell 2. The condition includes seepage recovery bore design and construction/installation requirements. These requirements have been imposed to ensure the seepage recovery bores demonstrate

sufficient recovery yields and that a more rapid approach is actioned to manage seepage due to the notably shallower SWL in groundwater monitoring wells surrounding TSF2 (Condition 3).

- requirement to undertake a health assessment of native vegetation surrounding TSF2 due to the rising SWL issue. Supporting documents submitted with the works approval application state that water levels around TSF1 are already within the rooting zone or potential rooting zone with no observable impacts reported (NSRL 2020); however the applicant has not provided any evidence of native vegetation monitoring or health assessment to support this claim nor provided any evidence of the native vegetation health surrounding TSF1 or TSF2 (Conditions 4, 5 and 6).
- requirement to provide a quality assurance/quality control certificate to demonstrate that the compacted fill material on the embankment walls meets the requirements specified in Condition 2 (Condition 8).
- requirement to ensure third party tailings are not deposited into TSF2 as disposal of tailings from a different source has potential to alter seepage risks (Condition 11).
- the addition of 'Mercury' to the existing TSF2 groundwater sampling and analysis suite. Tailings and pore water composition and groundwater monitoring analysis results supplied with the works approval application demonstrated elevated levels of Mercury within the tailings pore water and groundwater surrounding TSF2 in January 2020 (Condition 13).
- Undertake monitoring of the water balance each monthly period and include a summary of the monitoring results within the report for the time limited operations (Conditions 14 and 16).
- requirement to submit an updated *Kanowna Belle Seepage Management Plan – TSF1 & TSF2* (AGE 2019) within 30 calendar days of the completion date of each time limited operations for Cell 2 and Cell 1 (Condition 17).

The department will re-assess regulatory requirements as required during the amendment to licence L5029/1992/11 and following review of the monitoring data obtained during time limited operations.

4. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website (2/11/2020)	None received	N/A
Local Government Authority advised of proposal (2/11/2020)	None received	N/A
Mt Veters Pastoral Co (1966) PTY LTD advised of proposal (2/11/2020)	None received	N/A
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal (2/11/2020)	DMIRS has no objections or further comments on works approval W6433/2020/1.	N/A
Applicant was provided with draft documents on (21/04/2021)	The applicant provided comments on 4/05/2021. The summarised applicant comments are provided in Appendix 1.	DWER responses to applicant comments are provided in Appendix 1.

5. Conclusion

Based on the assessment in this decision report, the Delegated Officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. AGE 2019, AGE *Kanowna Belle Seepage Management Plan – TSF1 & TSF2*, 26 April 2019, Bowen Hills, Queensland.
2. AGE 2020, Australasian Groundwater and Environmental Consultants Pty Ltd (AGE) *Memorandum, Kanowna Belle TSF2 Request for Information*, 22 October 2020, Bowen Hills, Queensland.
3. Coffey 2017, Coffey *Kanowna Belle Gold Mine, Tailings Storage Facility No. 2 – Design Report*, 8 September 2017, Burswood, Western Australia.
4. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
5. Department of Water and Environmental Regulation (DWER) 2016, *Guideline: Environmental siting*, Joondalup, Western Australia.
6. DWER 2017, *Guideline: Risk assessments*, Joondalup, Western Australia.
7. DMIRS 2017, Department of Mines, Industry Regulation and Safety (DMIRS) *Clearing Permit Decision Report (7808/1)*, 14 December 2017, East Perth, Western Australia.
8. Government of Western Australia 2019, *2018 Statewide Vegetation Statistics* incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth.
<https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
9. NSRL 2020, Northern Star Resources Limited (NSRL) *Works Approval Supporting Document*, July 2020, Kalgoorlie, Western Australia.
10. RPS 2020, RPS Group *Groundwater Operating Strategy, Kanowna Belle Gold Mine, Northern Star Resources Limited*, 26 February 2020, West Perth, Western Australia.

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of applicant's comment	Department's response
DRAFT Works Approval (W6433/2020/1)		
1	Table 1 should refer to Stage 1 (Cell 1 and Cell 2). Each cell will be constructed separately, with Cell 2 construction due to commence in July 2021, and Cell 1 construction planned for June 2022, ultimately with both cells reaching the Stage 1 height of up to RL 357.5 m and having a total tailings deposition of up to 6,762,376 tonnes.	Table 1 has been updated to specify that Stage 1 includes the embankment raises for both Cell 2 and Cell 1 up to RL 357.5 m. Table 2 has been updated to reflect the staged construction approach for Cell 2 and Cell 1 embankment raises.
2	<u>Amend "All raised embankment walls are to achieve a demonstrated hydraulic conductivity of X m/s or less" to "All raised embankment walls are to be rolled and compacted to a minimum 95% of SMDD and placed within a moisture content tolerance of +/- 2% of its optimum moisture content."</u> <u>Justification:</u> <ul style="list-style-type: none"> The permeability specification of m/s is not applicable to the perimeter embankments. Note - this was also covered in Works Approval W6125, with the same comments made and subsequently amended. 	DWER is satisfied with the embankment compaction specifications provided by the applicant and Condition 2 has been updated as requested. A definition for 'SMDD' has been added to the definitions in Table 5.
3	Update to 'five' new TSF2 seepage recovery bores. Refer to maps and list of seepage recovery & monitoring bore coordinates attached to email.	Condition 3 has been updated to reflect that five new TSF2 seepage recovery bores will be installed. DWER has added the new maps provided by the applicant (groundwater monitoring well map and the seepage recovery bore map) to this decision report and works approval W6433/2020/1.
3	Table 3:	
	<ul style="list-style-type: none"> Update to state the five new TSF2 seepage recovery bore identification numbers (SM9, SM10, SM11, SM12 and SM13). 	Table 3 has been updated to include the identification numbers for the five new TSF2 seepage recovery bores.
	<ul style="list-style-type: none"> Update to state 'five' new TSF2 seepage recovery bores. 	Table 3 has been updated to reflect that five new TSF2 seepage recovery bores will be installed.

Condition	Summary of applicant's comment	Department's response
	<ul style="list-style-type: none"> Amend "A record of geology and initial water strike encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS1726" to "Drilling and construction of the seepage recovery bores will be in accordance with the <i>Minimum Construction Requirements for Water Bores in Australia</i>". <p><u>Justification:</u></p> <ul style="list-style-type: none"> Reference to AS1726 is irrelevant. The hydrogeologists we engage only use sections 6.1 and 6.2 of AS1726 as a guideline for logging of geological materials as there is no Australian Standard for hydrogeological logging. Drilling samples are logged in sufficient details to capture all information needed for a hydrogeological assessment of the subsurface but are not logged to the same level of detail as a geotechnical engineer (because they are not qualified geotechnical engineers). Furthermore, a detailed geotechnical investigation has already been completed for this site. 	<p>DWER is satisfied with the applicant's proposed seepage recovery bore design and construction/installation methods and Table 3 has been updated accordingly.</p> <p>A definition for '<i>Minimum Construction Requirements for Water Bores in Australia</i>' has been added to the definitions in Table 5.</p>
	<ul style="list-style-type: none"> Amend "Must be constructed and determined to be operational by no later than 30 calendar days prior to the commencement of time limited operations" to "Must be constructed and determined to be operational by no later than 120 calendar days from the commencement of time limited operations". <p><u>Justification:</u></p> <ul style="list-style-type: none"> NSR may not be in a position to have the new seepage recovery bores installed prior to commencement of time limited operations. Stage 1 raise of Cell 2 is scheduled for early July 2021, with deposition likely to occur late 2021/early 2022. The bore specifications/scope of works is currently being prepared with our hydrogeologists and proposals urgently being sought by drilling contractors. We are limited to the timing and availability of contractors to do this work. NSR is aiming to have the new bores installed and operational within the next 6-9months. 	<p>DWER has reviewed the applicant's request to extend the operational due date for the five new seepage recovery bores due to contractor resourcing issues.</p> <p>DWER has determined that an extension on the due date can be granted, however it will be for 90 days and not the requested 120 days, with a provision that the new seepage recovery bores are determined to be operational no later than 90 calendar days from the commencement of time limited operations for Cell 2.</p> <p>This requirement has been imposed due to the shallow SWL in groundwater monitoring wells surrounding TSF2, which requires a rapid approach to seepage management.</p> <p>DWER has taken the following key aspects into consideration in its determination:</p> <ul style="list-style-type: none"> in September 2020, eight seepage recovery bores (airwell pumping system) were installed to the north and north-east of TSF2 Cell 2 to manage rising groundwater levels around TSF2; Cell 2 embankment raise construction is due to commence in July 2021 and Cell 1 embankment raise construction is planned for June 2022; and

Condition	Summary of applicant's comment	Department's response
		<ul style="list-style-type: none"> time limited operations will commence in Cell 2 following the Cell 2 embankment raise and time limited operations will commence in Cell 1 following the Cell 1 embankment raise.
4	<p><u>Amend "Within 30 calendar days of construction works commencing for Condition 2" to - "Within 90 calendar days of construction works commencing for Condition 2".</u></p> <p><u>Justification:</u></p> <ul style="list-style-type: none"> As noted above on page 4. Stage 1 raise of Cell 2 is scheduled for early July 2021, meaning the vegetation health assessment would need to occur in August (late Winter) to comply with the 30 calendar days. Based on advice from our Botanists, and to align this monitoring with our existing annual in-pit TSF vegetation health assessments, our preference would be to conduct this during Spring (Sept-Nov). 	<p>DWER is satisfied with the applicant's request to undertake the native vegetation health assessment during Spring (September-November) and Condition 4 has been updated as requested.</p>
4	<p>Delete Condition 4(c), reference to clearing permit CPS7808/1.</p> <p><u>Justification:</u></p> <ul style="list-style-type: none"> The zone of rising groundwater influence, and downstream drainage/hydraulic gradient is towards the north of TSF2 and is <i>within</i> the clearing permit boundary. What is the relevance of referencing CPS7808/1 and locating the vegetation monitoring plots outside of the approved clearing footprint boundary? 	<p>CPS 7808/1 allows the clearing of native vegetation within the clearing permit footprint, therefore permitting an impact to native vegetation within this area.</p> <p>The aim of the native vegetation health assessment is to determine any impacts to native vegetation located within the zone of rising groundwater influence, that the licence holder does not have approval to impact; which encompasses native vegetation located outside of the approved clearing permit footprint.</p>
6	<p><u>Delete Condition 6(a) or amend "depth to groundwater" to "depth to groundwater (standing water level) of closest monitoring bore".</u></p> <p><u>Justification:</u></p> <ul style="list-style-type: none"> We would not know the exact depth to groundwater at each vegetation monitoring plots as the plots have not been setup yet, and we may not be in a position to setup the three plots where existing bores are located. We do not suggest drilling additional monitoring bores to the 25+ we already have around TSF2. Details on the SWL measurements of the of the closest monitoring bore/s to the vegetation plot should suffice. 	<p>DWER has amended Condition 6 (a) to include a SWL measurements of the closest groundwater monitoring well.</p>
13	<p>FYI only - An analysis for Dissolved Mercury has been part of our quarterly sampling program for some time now (even though the analyte is not listed in Table 3.5.1 of our Licence L5029).</p>	<p>DWER is aware that Mercury has been included as a parameter within the monitoring data provided for the works approval application. DWER has</p>

Condition	Summary of applicant's comment	Department's response
		included Condition 13 to ensure this aspect is carried across as part of the amendment to licence L5029/1992/11.
17	Update 17 (l) to state the five new TSF2 seepage recovery bore identification numbers (SM9, SM10, SM11, SM12 and SM13).	Condition 17 (l) has been updated to include the identification numbers for the five new TSF2 seepage recovery bores.
N/A	Definitions in Table 5:	
	<ul style="list-style-type: none"> Delete "AS1726 – means the Australian Standard AS1726 Geotechnical Site Investigations" 	This definition has been deleted.
	<ul style="list-style-type: none"> Delete "Critical Containment Infrastructure Report – means a report to satisfy the CEO that works of critical containment infrastructure have been constructed in accordance with the works approval" 	The 'Critical Containment Infrastructure Report' definition has been replaced with the 'Environmental Compliance Report' definition.
	<ul style="list-style-type: none"> Amend "(a) holds a Bachelor of Geology (Geo-Science)" to "is a suitably experienced hydrologist/hydrogeologist with a relevant tertiary qualification". <p><u>Justification:</u></p> <ul style="list-style-type: none"> Not all qualified hydrogeologists have a Bachelor of Geology (Geo-Science) degree. Many complete a Bachelor of Hydrology, or a Bachelor of Science with a major in, or a graduate diploma in hydrogeology. 	DWER has updated the definition for a 'suitably qualified hydrogeologist'.

Appendix 2: TSF2 embankment raise design

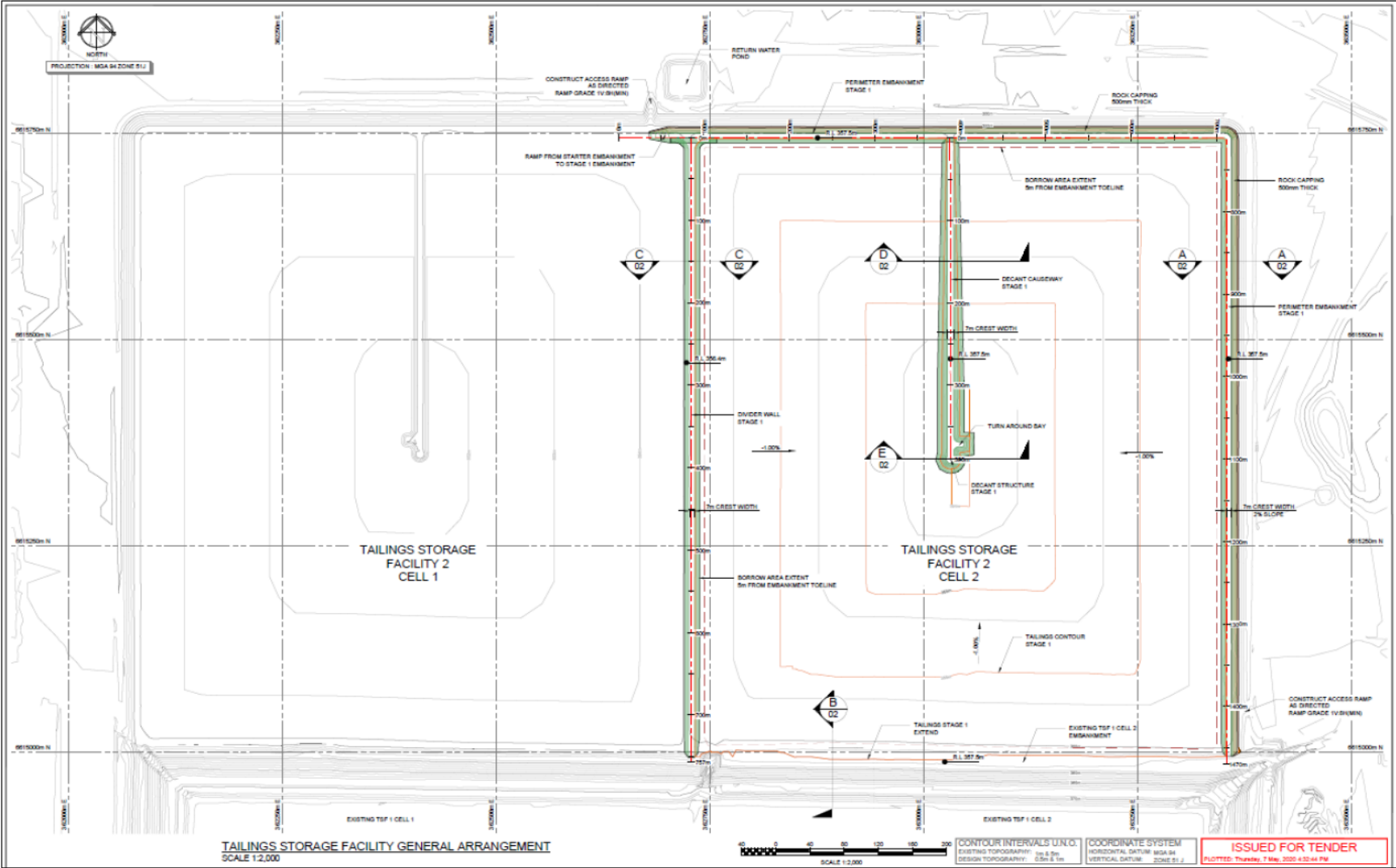


Figure 1: General design of embankment raise (Stage 1)

Works Approval: W6433/2020/1

IR-T13 Decision Report Template (short) v1.0 (May 2020)

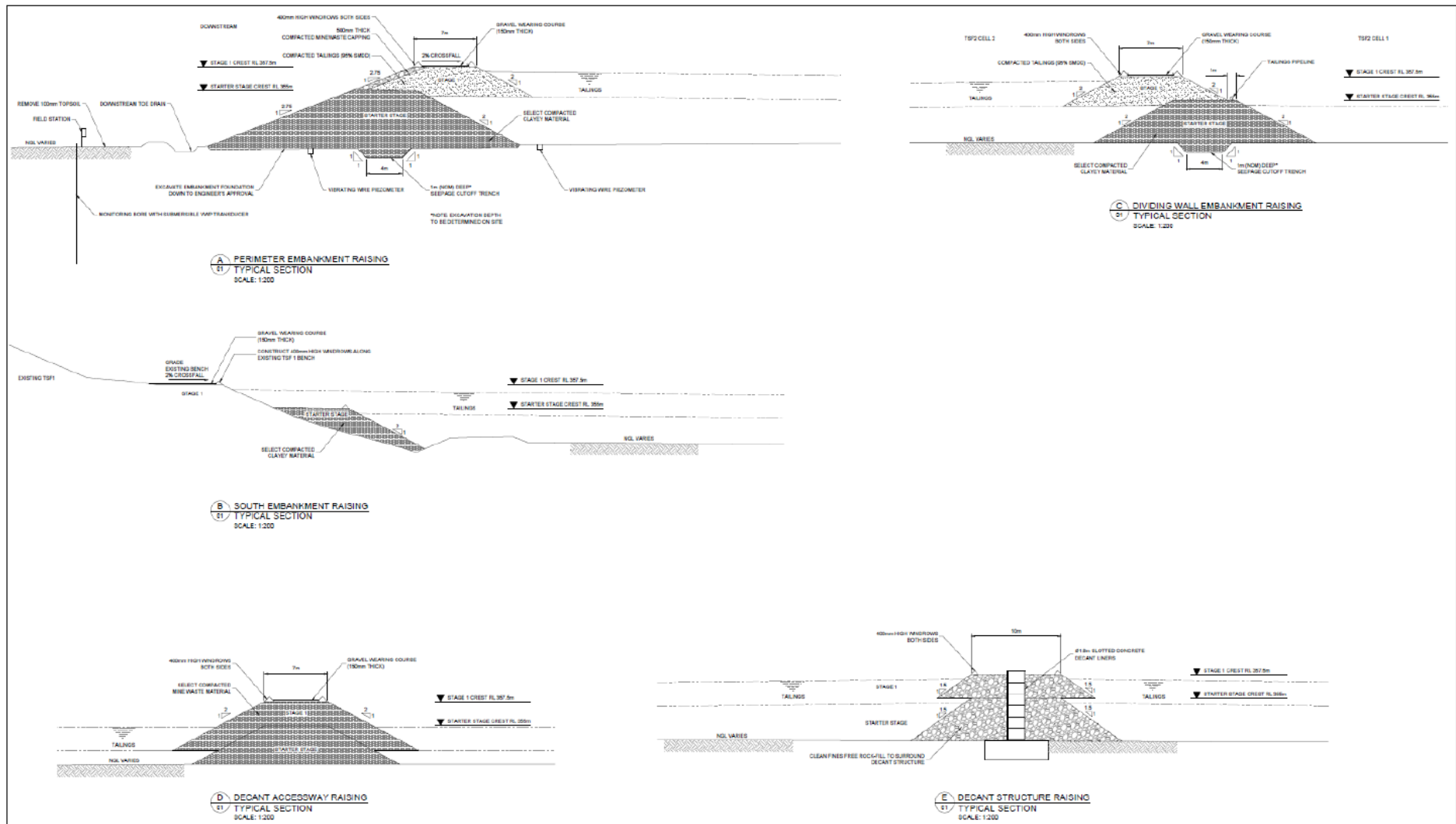


Figure 2: TSF2 typical sections and details

Appendix 3: Groundwater monitoring well and seepage recovery bore arrangement

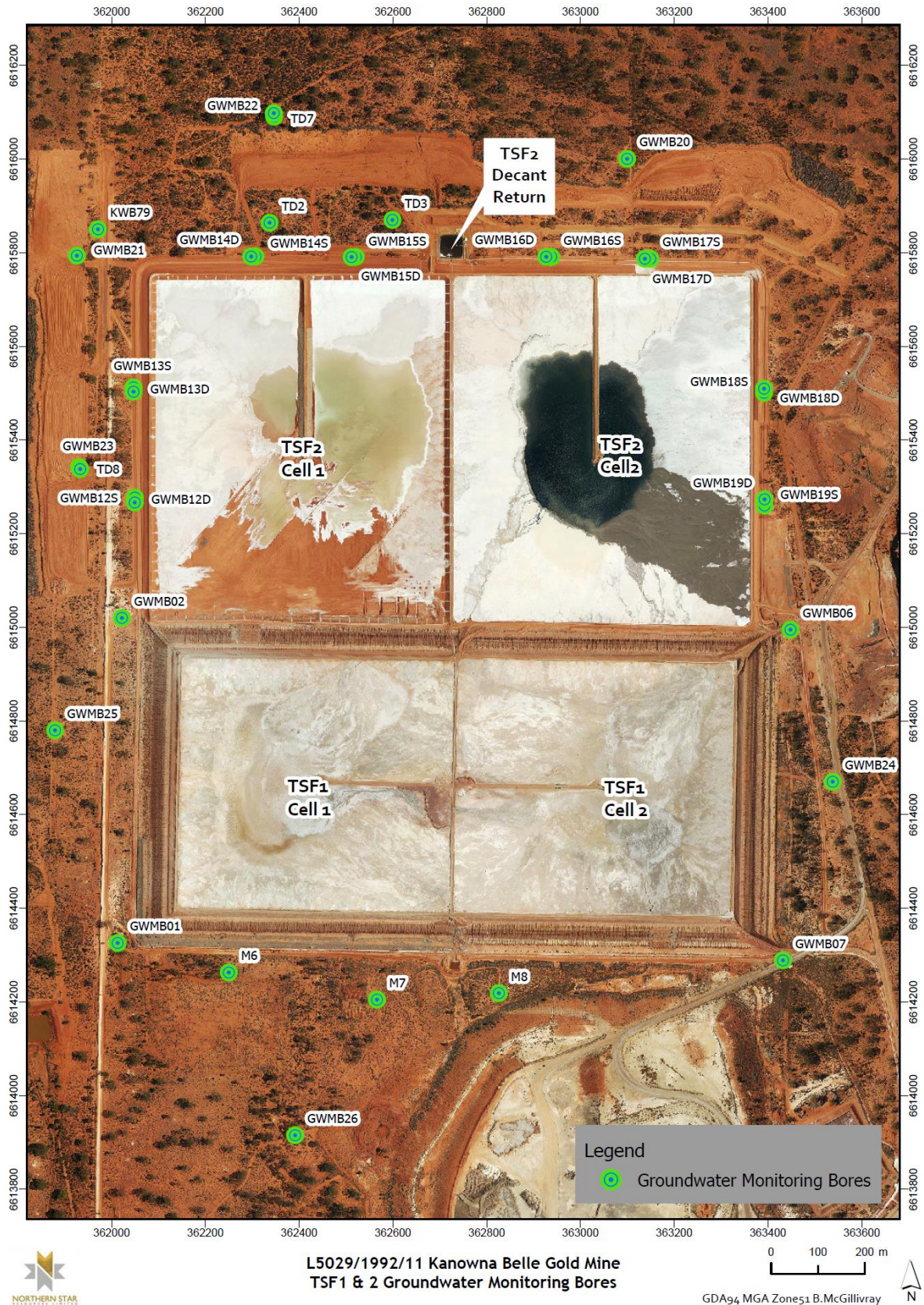
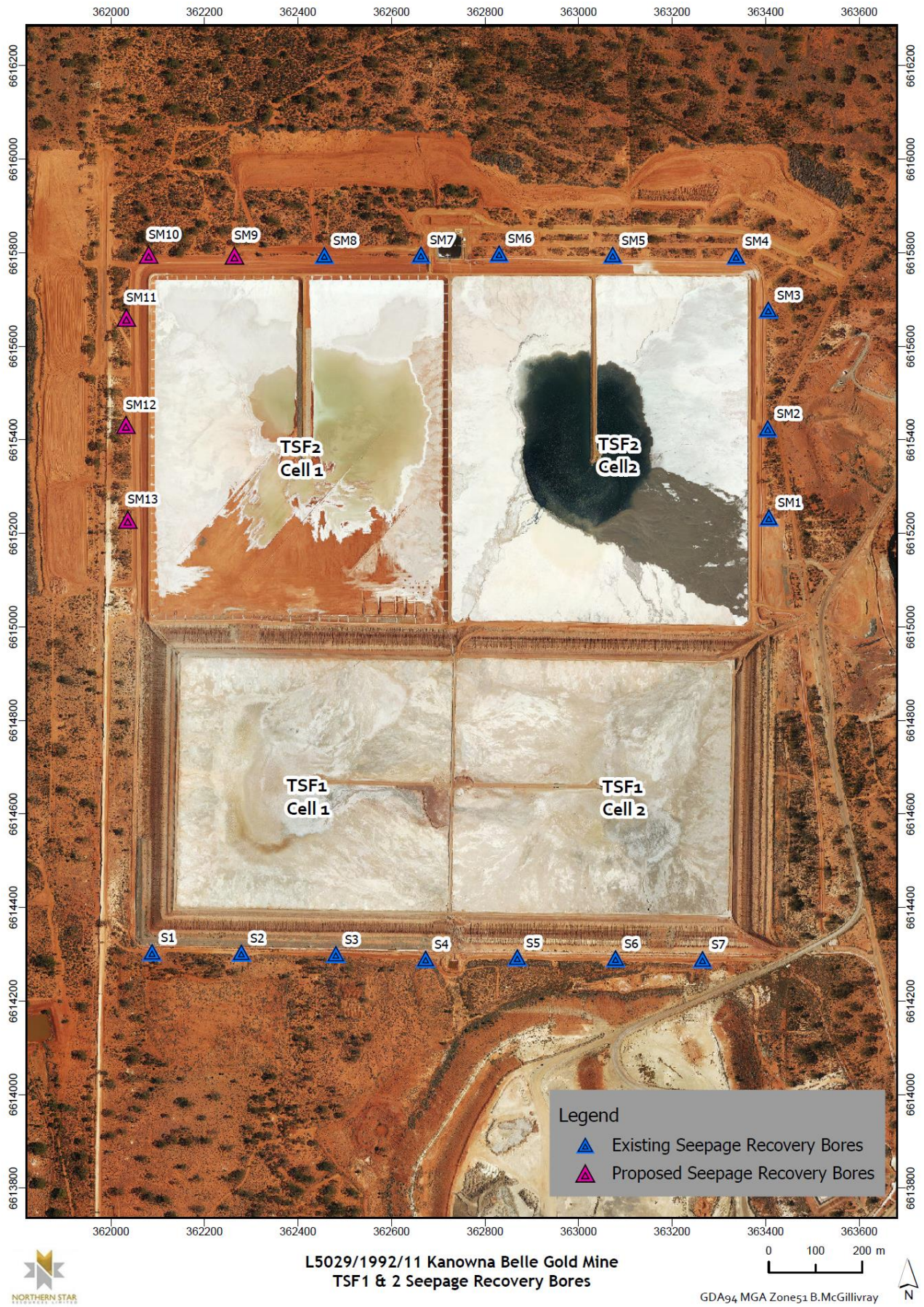


Figure 3: Map demonstrating location of groundwater monitoring wells

Works Approval: W6433/2020/1

IR-T13 Decision Report Template (short) v1.0 (May 2020)



L5029/1992/11 Kanowna Belle Gold Mine
TSF1 & 2 Seepage Recovery Bores

0 100 200 m
GDA94 MGA Zone51 B.McGillivray

Figure 4: Map demonstrating location of seepage recovery bores

Works Approval: W6433/2020/1

IR-T13 Decision Report Template (short) v1.0 (May 2020)

Appendix 4: TSF2 – SWL line graphs

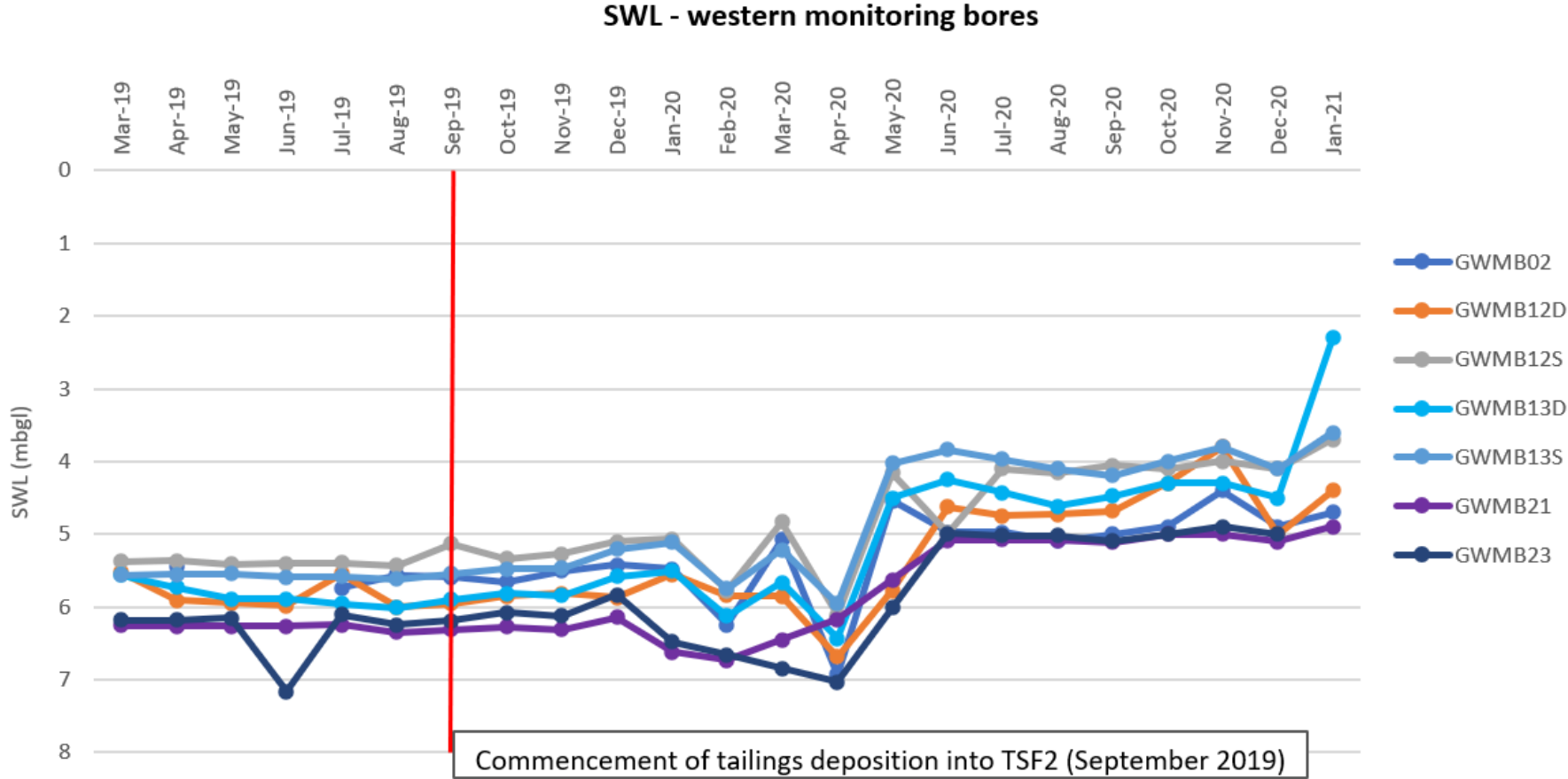


Figure 5: SWL – TSF2 western monitoring wells

SWL - northern monitoring bores

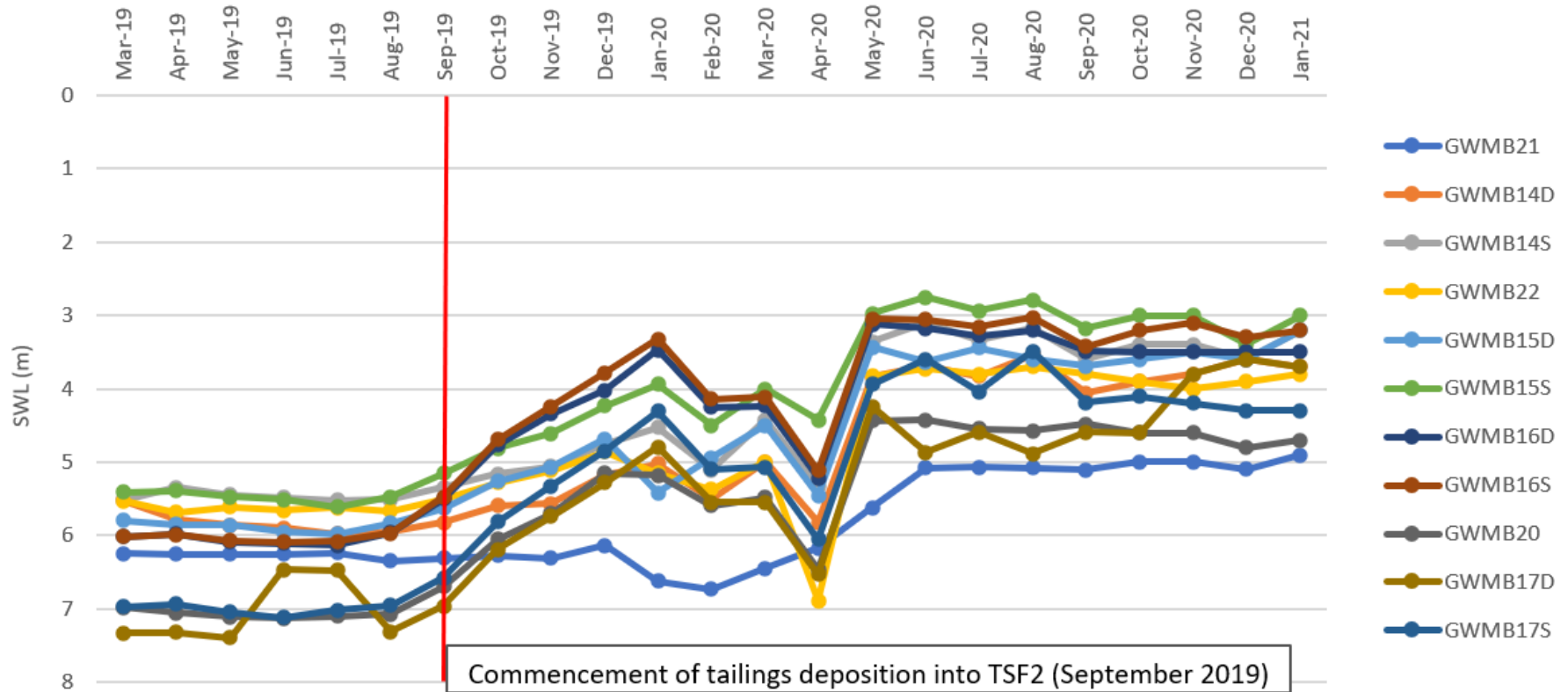


Figure 6: SWL – TSF2 northern monitoring wells

SWL - eastern monitoring bores

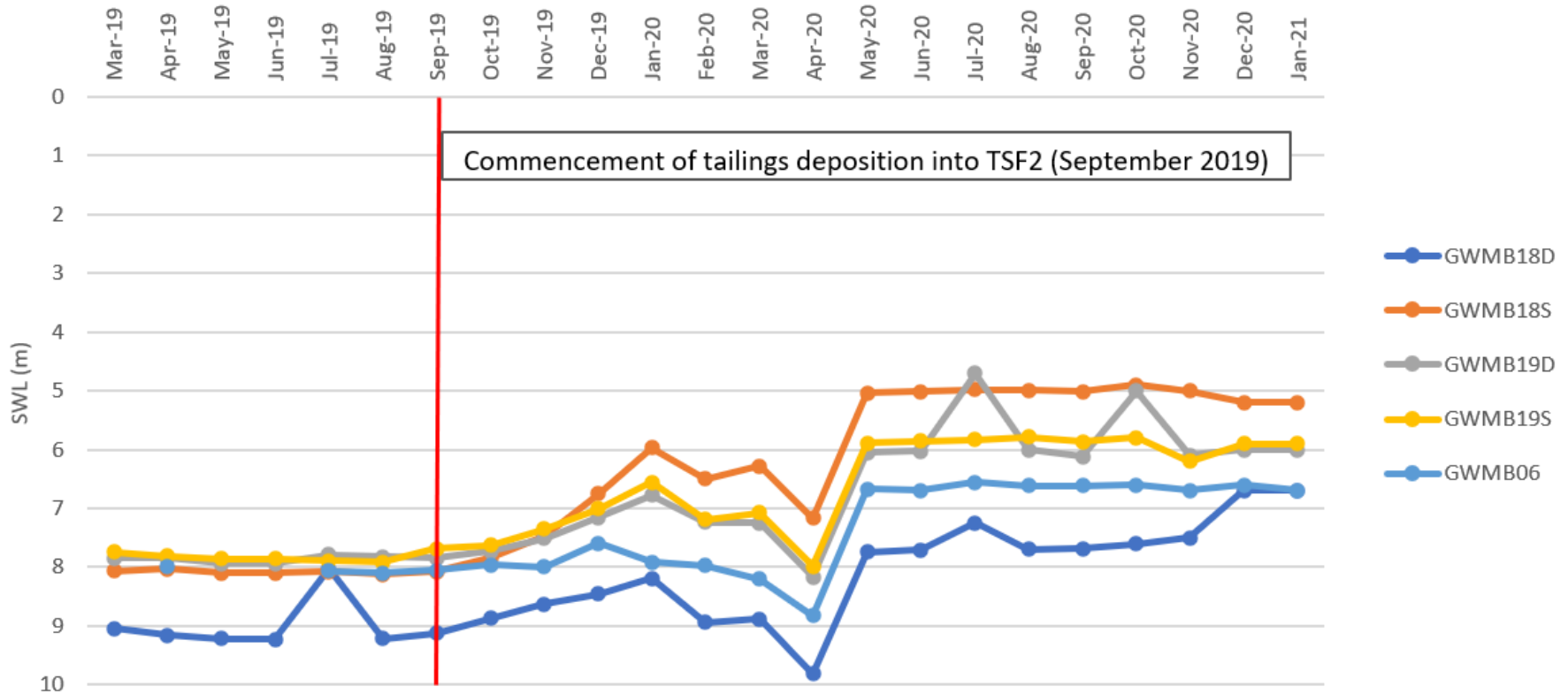


Figure 7: SWL – TSF2 eastern monitoring wells

Appendix 5: TSF2 – TDS line graphs

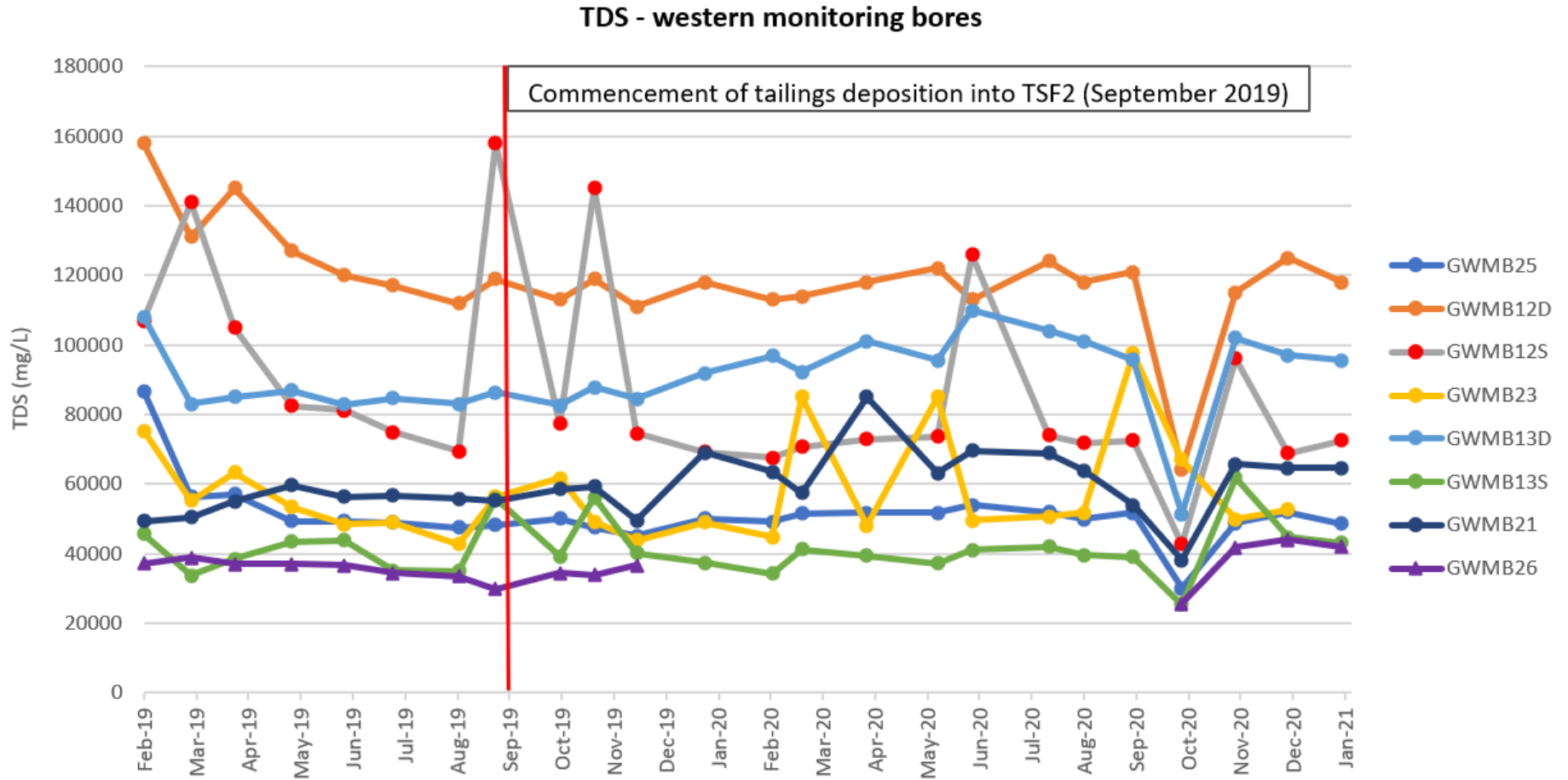


Figure 8: TDS – TSF2 western monitoring wells

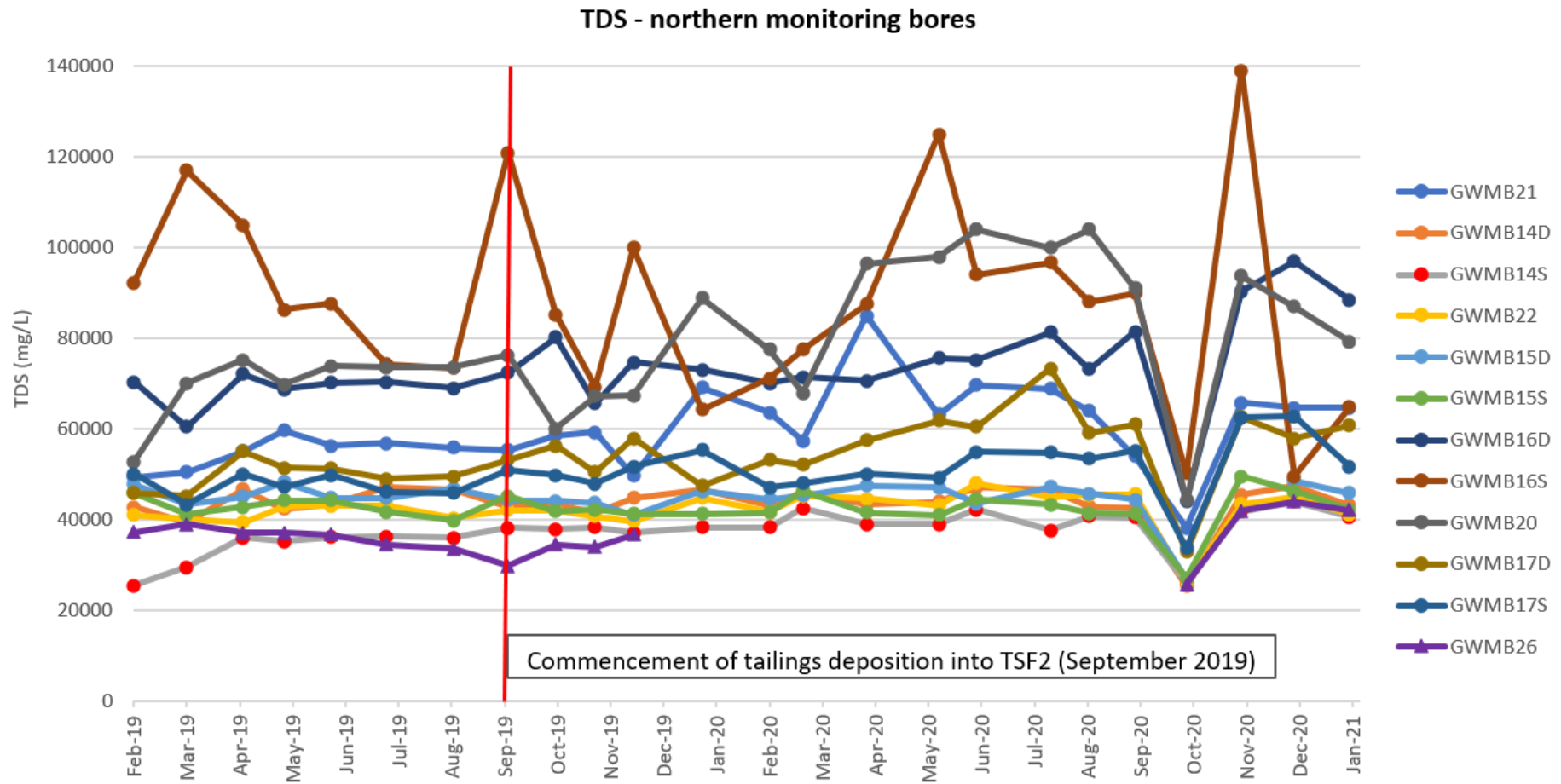


Figure 9: TDS – TSF2 northern monitoring wells

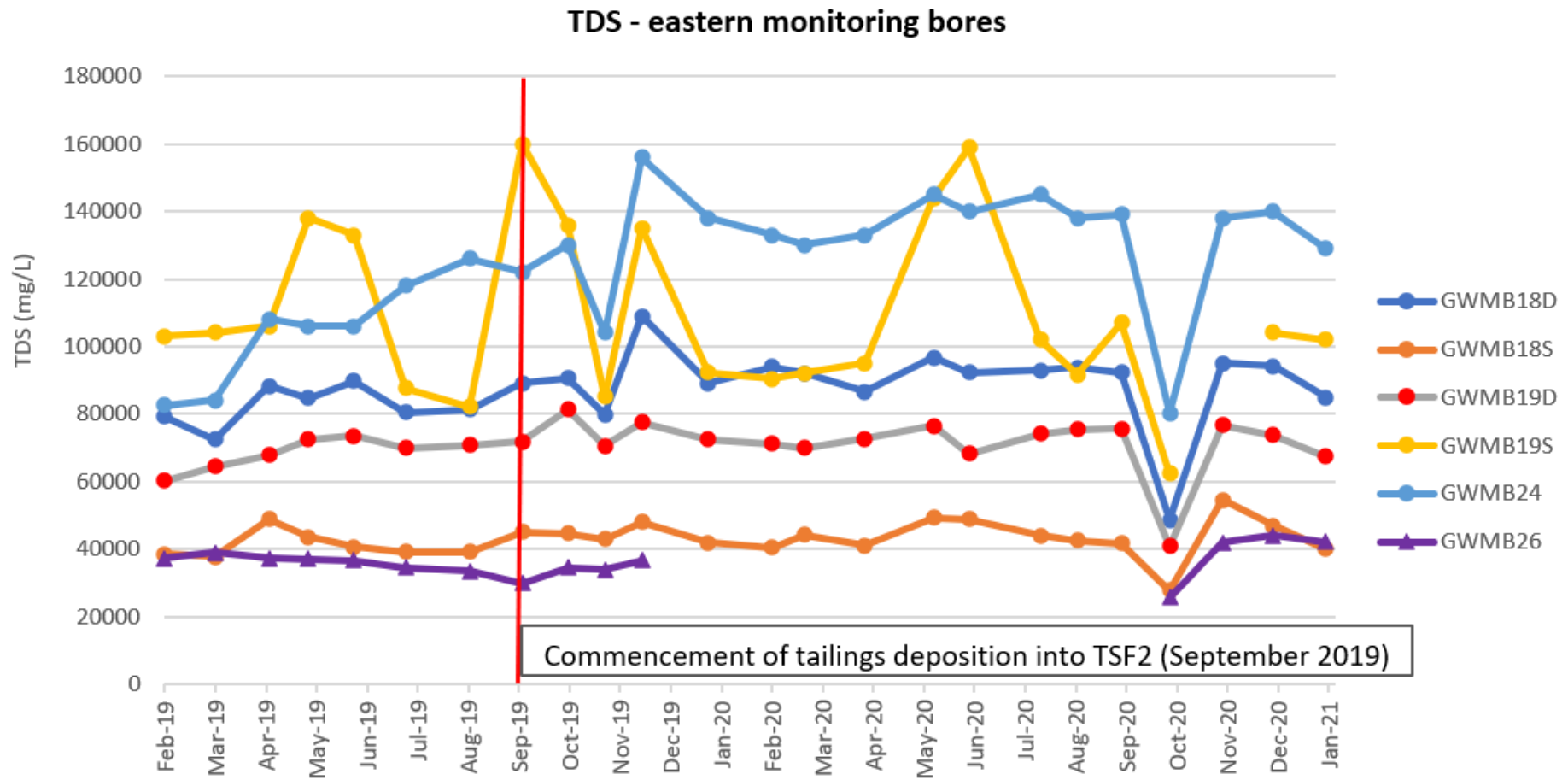


Figure 10: TDS – TSF2 eastern monitoring wells

Appendix 6: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)				
Application type				
Works approval	<input checked="" type="checkbox"/>			
Licence	<input type="checkbox"/>	Relevant works approval number:		None <input type="checkbox"/>
		Has the works approval been complied with?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Has time-limited operations under the works approval demonstrated acceptable operations?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Date Report received:		
Renewal	<input type="checkbox"/>	Current licence number:		
Amendment to works approval	<input type="checkbox"/>	Current works approval number:		
Amendment to licence	<input type="checkbox"/>	Current licence number:		
		Relevant works approval number:	N/A	<input type="checkbox"/>
Registration	<input type="checkbox"/>	Current works approval number:	None	<input type="checkbox"/>
Date application received	29 July 2020			
Applicant and Premises details				
Applicant name/s (full legal name/s)	Northern Star (Kanowna) Pty Ltd			
Premises name	Kanowna Belle Gold Mine			
Premises location	<ul style="list-style-type: none"> • Yarri Road, Kalgoorlie WA • Tenements: M27/18,22,23,37,49,57,92,103,122,123,127,159,164,232,245,287,420 and L27/87,83,62 • TSF (M27/92) 			
Local Government Authority	City of Kalgoorlie-Boulder			
Application documents				
HPCM file reference number:	DER2018/001042-3~75			
Key application documents (additional to application form):	<ul style="list-style-type: none"> • Attachment 2 – Site Water Balance • Attachment 3 – SWL and Groundwater Monitoring Data • Attachment 4 – Memorandum (22 October 2020) • Applicant's response to request for further information (23 October 2020) • Kanowna Belle TSF2 Embankment Raises – Stage 1 to Stage 3 (July 2020) • Tailings Storage Facility 2, Cell2 Stage 1 Raise Scope of Works and Technical Specification (7 May 2020) 			

	<ul style="list-style-type: none"> Tailings Storage Facility No. 2 – Design Report (8 September 2017) 	
Scope of application/assessment		
Summary of proposed activities or changes to existing operations.	<p>Works approval:</p> <p>Proposal to construct staged 2.5 m embankment raises on the existing above ground Tailings Storage Facility (TSF), known as TSF2.</p> <p><i>Note:</i></p> <ul style="list-style-type: none"> TSF2 was constructed in late 2018, using upstream methods, and commissioned in September 2019 under Works Approval W6125/2018/1. The Works Approval only allowed construction of the starter embankments to a height of RL 355 m. <p><u>Construction:</u></p> <p>Requesting approval to construct Stages 1-3 (up to RL 362.5 m) embankment raises.</p> <p><u>Time limited operations:</u></p> <p>Requesting approval to deposit tailings into TSF2 following the embankment raises (Stages 1-3).</p>	
Category number/s (activities that cause the premises to become prescribed premises)		
Table 1: Prescribed premises categories		
Prescribed premises category and description	Proposed production	Proposed changes to the production or design capacity (amendments only)
Category 5: Processing or beneficiation of metallic or non-metallic ore	Up to 2.5 Mtpa	<i>Is there a proposed change to the previously assessed production or design capacity?</i>
Legislative context and other approvals		
Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input checked="" type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Ministerial statement No: 331 EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Certificate of title <input type="checkbox"/> General lease <input type="checkbox"/> Expiry: Mining lease / tenement <input checked="" type="checkbox"/> Expiry: all leases expiring from 2023 onwards <ul style="list-style-type: none">M27/92, expiry = 13 March

		2030 (TSF footprint) Other evidence <input type="checkbox"/> Expiry:
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	Approval: Expiry date: If N/A explain why? Premises is located on Mining Tenement
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CPS No: 7808/1
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Application reference No: N/A Licence/permit No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Licence/permit No: GWL 62498(6)
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: Goldfields Groundwater Area Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Regional office: N/A
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to <u>WQPN 25</u>)? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxx</i>)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Dangerous Goods Site Licence Number DGS012576.
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A

Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Classification: N/A Date of classification: N/A