APPENDIX C

Paste Pre-Feasibility Report

(Minefill Services, 2025)

MINEFILL SERVICES

FINNISS LITHIUM PROJECT

BP33 Underground Paste Fill
Pre-Feasibility Study

Prepared for: Core Lithium
Northern Territory, Australia

Document No.	Rev. No.	Issued Date	Status
25042-RPT-0002	A	October 3, 2025	Review
25042-RPT-0002	0	October 8, 2025	Final
25042-RPT-0002	1	October 11, 2025	Final

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MineFill Services

MINEFILL SERVICES

25042-RPT-0002_r0

October 11, 2025

Tom Joseph
Principal Mine Engineer
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Core Lithium
Level 9, 2 Mill Street
Perth, WA
6000

Re: Finniss Lithium Project
BP33 Underground Paste Fill Pre-Feasibility Study

Dear Tom,

We are pleased to attach our report on the BP33 Underground paste fill pre-feasibility for Core Lithium.

We enjoyed working with Core Lithium on this study and trust the enclosed document meets with your approval. Please revert with any comments or questions.

Sincerely,
MINEFILL SERVICES

Stephen McGrath
Senior Backfill Engineer

Mathew Revell
Principal Backfill Engineer

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EXECUTIVE SUMMARY

This report details the paste fill pre-feasibility study (PFS) to meet the monthly fill requirement of 35,000 m^3 at Core Lithium's (Core) Finniss Lithium Project - BP33 underground mine. To meet the backfill demand, a 75 m^3/h paste fill system is required based on a 24-hour operation.

Using the processing material streams available, paste fill can be manufactured using the ratio of 50% ultrafine rejects / 41% undersize rejects / 9% Slimes, with the Slimes portion being a critical factor in the design.

The Slimes are transferred at Grants from the thickener to a 1,000 m^3 agitated storage tank. The Slimes are pumped ~8.8 km to a 2,000 m^3 agitated storage tank at BP33. One of the main risks to the paste fill operation is usage and availability of Slimes, hence the large storage volumes decrease this risk and enable consistent Slimes supply. During paste filling, slightly more Slimes are used than instantaneously produced from the Grants processing plant. The large storage tanks assist with the mass balance required to meet the life of mine backfill demand.

The ultrafine rejects and undersize rejects are backhauled using ore trucks and stockpiled at BP33. Each stream is fed into individual hoppers where they are metered using belt feeders. The belt feeder discharges is fed over a screen to remove any large oversize material introduced vi the backhaul process before being conveyed along the central conveyor into the paste mixer. Slimes are pumped to the vortex mixer where they are combined with binder before being added to the paste mixer. A paste pump transfers the mixed paste to the stopes underground. The main duty of the pump is to assist with managing/limit free fall in the borehole; however, it also provides a robust solution to reach the upper stoping regions. There is the flexibility in the design to bypass the paste pump in the event of mechanical breakdown.

With the paste mix design being quite coarse, it does increase the risk of material build-up in the reticulation system over time due to settling. To mitigate this, a nominal pipeline velocity of >2 m/s is targeted. This reduces the risk of settling, yet the velocity is not too high to generate excessive friction losses. The reticulation system is designed with steel reinforced composite polyethylene (SRCP) pipe. SRCP is high-pressure poly pipe and provides significant safety and cost benefits through increased ease and speed of installation.

The capital cost for the proposed paste plant is AU$21.46 M ±25% with a further AU$1.38 M for the underground distribution system. This results in the total cost of AU$22.86 M ±25% for the full EPC turnkey solution. The capital costs comprise the paste plant facilities including tailings transport and ancillary equipment required to deliver paste to the underground stopes.

Surface and underground reticulation material and installation costs are also included for nominally the first year of filling.

The total OPEX cost is AU$42.06/m^3 ± 15% of paste. Binder accounts for 54% of the operating costs.

In the event Slimes were not available for a period of time, additives can be used as a replacement. Whilst this significantly increases the operating cost (~$35/m^3), it allows mining to continue uninterrupted and provides contingency for Core paste fill operations.

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1. INTRODUCTION AND BACKGROUND

MineFill Services (MineFill) has been engaged by Core Lithium (Core) to complete a paste fill pre-feasibility study (PFS) for the BP33 Underground at Core's Finniss Lithium Project. This study is to support the financial investment decision (FID) for BP33 and Grants deposits.

Core are investigating updating the current dense media separation (DMS) circuit and the updates are understood to produce four tailings size fractions available for backfill, which include:

1. Fine rejects: -10 mm to +3.35 mm; (high level consideration is given to top size -14 mm);
2. Ultrafine rejects: -3.35 mm to +0.64 mm;
3. Undersize rejects: -0.64 mm to +45 µm; and
4. Slimes: <45 µm.

The process plant tailings streams listed above are the only material source in sufficient quantities to meet the backfill demands. Therefore, this study has investigated what proportion of the four streams generates a technically feasible hydraulically placed backfill and ensures the required backfill volumes can be produced.

The technical feasibility of different backfill options was presented in (MineFill, 2025), and based on these results, paste fill was selected to complete PFS engineering. Paste fill is defined as a fill that is homogenous, non-segregating and results in limited bleed water when hydraulically transported at the desired solids content.

2. BACKFILL REQUIREMENTS

2.1 Backfill Schedule

Based on the proposed mining strategy (as presented in excel sheet supplied by Core '*BP33GrantsCombinedSchedule250408A*'), 2.7 Mm^3 of cemented fill (backfill) along with 0.57 Mm^3 of rockfill is required to meet the mining requirements at BP33.

The current processing schedule has ore being produced from Month 1, with cemented fill required from Month 23. The scheduled monthly cemented backfill requirement is presented in Figure 2.1.

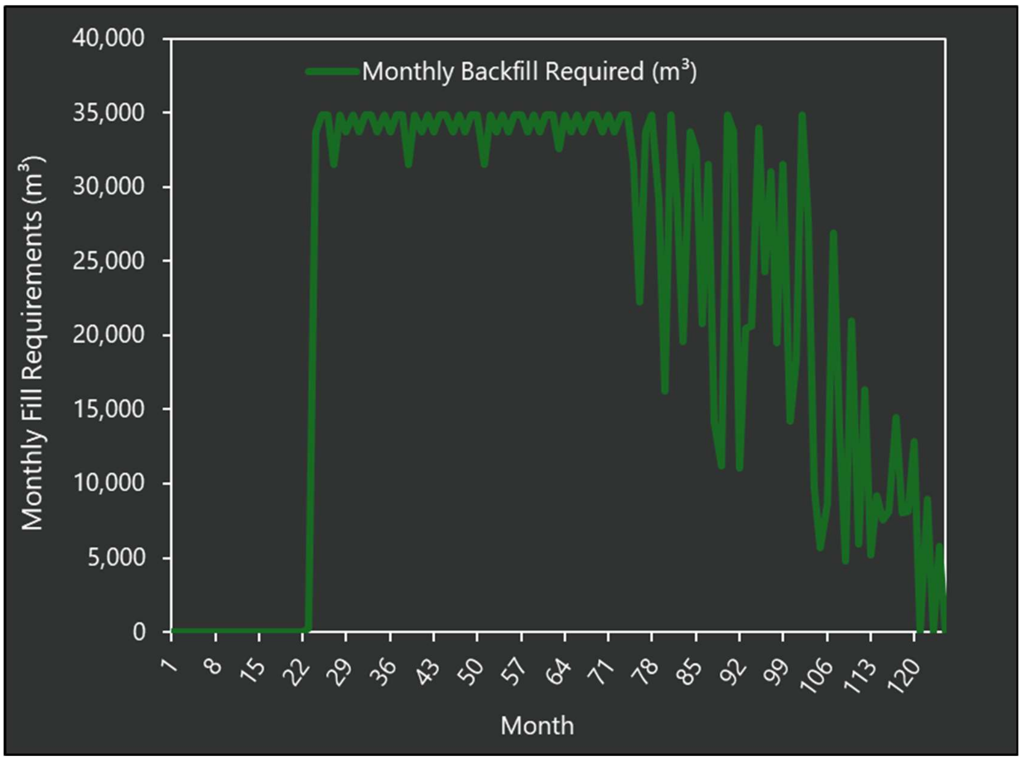


Figure 2.1: Monthly Backfill Requirement

Figure 2.1 shows that during the first four (4) years of fill operations, approximately 35,000 m^3 of fill is required per month. The fill requirement is sporadic beyond Month 72, due to the mining of some secondary stopes that do not require cemented fill. Therefore, the backfill system is designed to produce 35,000 m^3 per month.

3. MATERIAL STREAMS

3.1 Material Availability

One of the main aspects investigated in this study was to identify the portions of the different tailings streams required to manufacture a suitable paste fill product. The first step was to understand the available quantity of each stream and then determine possible ratios of each stream to satisfy the underground fill quantities required. The quantity of each material stream is based on production at BP33 and Grants underground. The majority of data was taken from excel sheet '*BP33GrantsCombinedSchedule250408A*' and the ratios available of each stream are based on the 1.2 Mt processing scenario presented in '*Waste volume Balance*', both provided by Core.

The total mass for each stream for the life of mine (LOM) is presented in Table 3-1 for the two different processing scenarios, namely, the -10 mm scenario and the -14 mm scenario.

Table 3-1
Core Lithium Material Streams

Material Stream	-10 mm Scenario (t)	-14 mm Scenario (t)
Fine rejects (-Top size/+3.35 mm)	2,279,322	1,437,341
Ultrafine rejects (-3.35 mm/+0.64 mm)	3,074,850	5,019,319
Undersize rejects (-0.64 mm/+45 µm)	2,172,060	1,374,717
Slimes (-45 µm)	536,311	339,440

The -10 mm scenario produces the highest quantity of fines (undersize and Slimes). Due to the coarse nature of the tailings stream, this finer stream is expected to be more favourable for the paste backfill alternative. Based on the above ratios, and the subsequent testwork results (presented below), the -10 mm scenario can be used to manufacture a suitable paste fill product.

However, given the ratios presented in Table 3-1, the -14 mm scenario is likely to have insufficient undersize rejects, and (most importantly) Slimes to manufacture a suitable paste fill product.

3.2 Material Required to Meet Backfill Demand

3.2.1 Backfill Mass Requirements

Based on the backfill testwork results, paste fill is expected to settle to a dry density 1.53 t/m^3. At this in situ density, a LOM tailings mass of 4.13 Mt is required to satisfy the requirement of

2.7 Mm^3 for the paste solution. To meet the required fill requirements, a blend of different material streams is required.

Comparing the LOM mass requirements to the available quantities presented in Table 3-1, over 50% of the available tailings must be utilised to satisfy the backfill requirements.

3.3 Material Processing

Based on the processing information provided, the entire -0.64 mm stream is transferred to a cyclone. The cyclone separates this stream into a ±45 µm stream. The -45 µm material (Slimes) is transferred to a thickener and is subsequently pumped to the tailings storage facility (TSF) at nominally 35% solids. The +45 µm stream is further processed through a DMS circuit, for spodumene recovery, with the tailings from the DMS circuit wet screened and stacked. The stacked material is understood to be in a state suitable for trucking to BP33 for use as backfill if required. As cemented fill is not required during the initial two years of operation, an opportunity exists to stockpile this material, which can assist with the material stream blend ratios.

3.4 Material Streams Particle Size Distribution

Samples from each of the streams were provided by Core for testwork, and the particle size distribution (PSD) of each is shown in Figure 3.1. The solid lines are the material received and used in the testwork. The dotted lines represent the target PSD data for the respective streams based on Core analysis. Comparison of the data for like streams indicates the streams received provide a good representation of what is expected during operations.

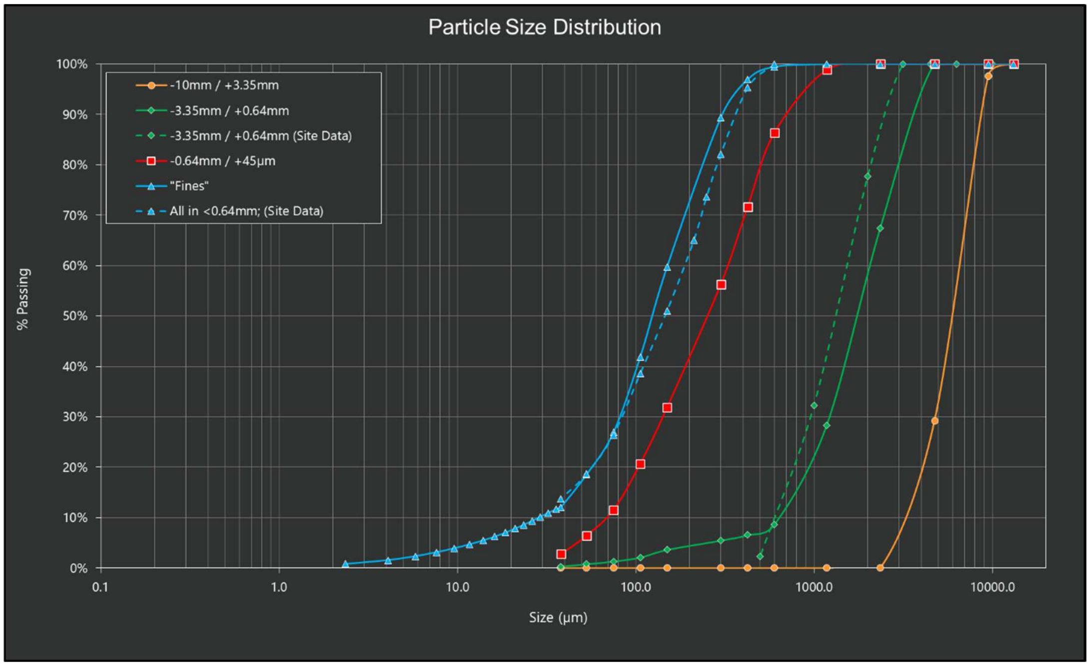


Figure 3.1: Particle Size Distribution

It is important to note that the cyclone circuit for the -0.64 mm material is not operational and therefore obtaining representative samples was not possible. Instead, the "Fines" has been used to represent the "All-In" scenario which is essentially the feed PSD to the cyclones. Core's processing mass balance ('*BP33GrantsCombinedSchedule250408A*') shows that for the -10 mm scenario, nominally 25,000 t of -0.64 mm material is produced monthly and when cycloned, this is split to circa 20,000 t of undersize rejects (-0.64 mm/+45 µm) and 5,000 t of Slimes (-45 µm) material.

4. PASTE FILL DESIGN

4.1 Paste Fill

As described in Section 1, paste fill is defined as a fill that is homogenous, non-segregating and results in limited bleed water when hydraulically transported at the desired solids content. Typically, this material has between 15-20% of material passing 20 µm. In quantities necessary to satisfy the mass balance requirements of BP33, the minimum PSD of Core tailings are significantly coarser than these criteria. However, the mineralogy of lithium tailings differs from tailings traditionally used for backfill purposes. Testing has shown the rheological behaviour required of the paste fill can be satisfied with a coarser grading. Regardless, the fines portion play a significant role in producing a fill that is non-segregating, and it is ideal to maximise the Slimes content.

Based on the PSDs of the different material streams, it is considered necessary to maximise the use of the Slimes and the undersize rejects material. This is confirmed with testwork (as presented in Section 4.3), which identified that without the Slimes, the material does not demonstrate the required paste characteristics, and rather notable segregation of water is identified

4.2 Paste Fill Mass Balance

To meet the 2.7 Mm^3 backfill demand using a suitable quantity of Slimes, the mass and ratio of the material streams required are presented in Table 4-1. Also presented in this table is the naming reference for testwork data throughout this report (to match the as received materials). The required tonnes to meet the backfill demand are less than that presented in the LOM (Table 3-1).

Table 4-1
Material Streams Required for Paste Fill

Naming for Paste	Material Stream	-10 mm Scenario (t)	Ratio
-3.35 mm	Ultrafine rejects (-3.35 mm/+0.64 mm)	2,065,547	50%
Fines	Undersize rejects (-0.64 mm/+45 µm)	1,693,748	41%
	Slimes (-45 µm)	371,798	9%

Table 4-2 presents the total mass of each stream produced if stockpiling only commences from April 2028 and the percentage of each stream required/used to meet the LOM backfill demand.

Table 4-2
Material Streams Used in Paste Fill

Naming for Paste	Material Stream	-10 mm Scenario Available (t)	Tailings Used in Paste Fill – No Stockpiling (%)
-3.35 mm	Ultrafine rejects (-3.35 mm/+0.64 mm)	2,558,544	81%
Fines	Undersize rejects (-0.64 mm/+45 µm)	1,807,344	94%
	Slimes (-45 µm)	446,258	83%

4.3 Paste Fill Recipe

Based on the mass balance of material streams above, rheology and strength testing were undertaken using 50% fines (undersize reject + Slimes) and 50% ultrafine rejects (-3.35 mm/ +0.64 mm). Designing the system to utilise 100% Slimes will prove operationally challenging, and therefore this ratio allows some flexibility during operation. Future investigations should consider the minimum ratio of Slimes required to manufacture a suitable paste fill product.

Rheology testing was undertaken on this blend using the conical slump test, and the mix solids content versus slump relationship is presented in Figure 4.1. Superimposed over this figure are some conical slump photographs, illustrating the material behaviour.

Figure 4.1 shows that the material is sensitive to changes in solids content in the typical paste fill operating range of 175-240 mm slump. Less than a 1.0% change in solids concentration causes the material slump to change from 175 to 240 mm which is expected to have a significant impact on the pipe friction loss. A 1.0% variation in solids content is likely to occur regularly due to fluctuations in feed tailings moisture contents, as well as variations in blend grading. Such sensitivity is considered unviable to design a robust reticulation system that is not prone to regular blockages.

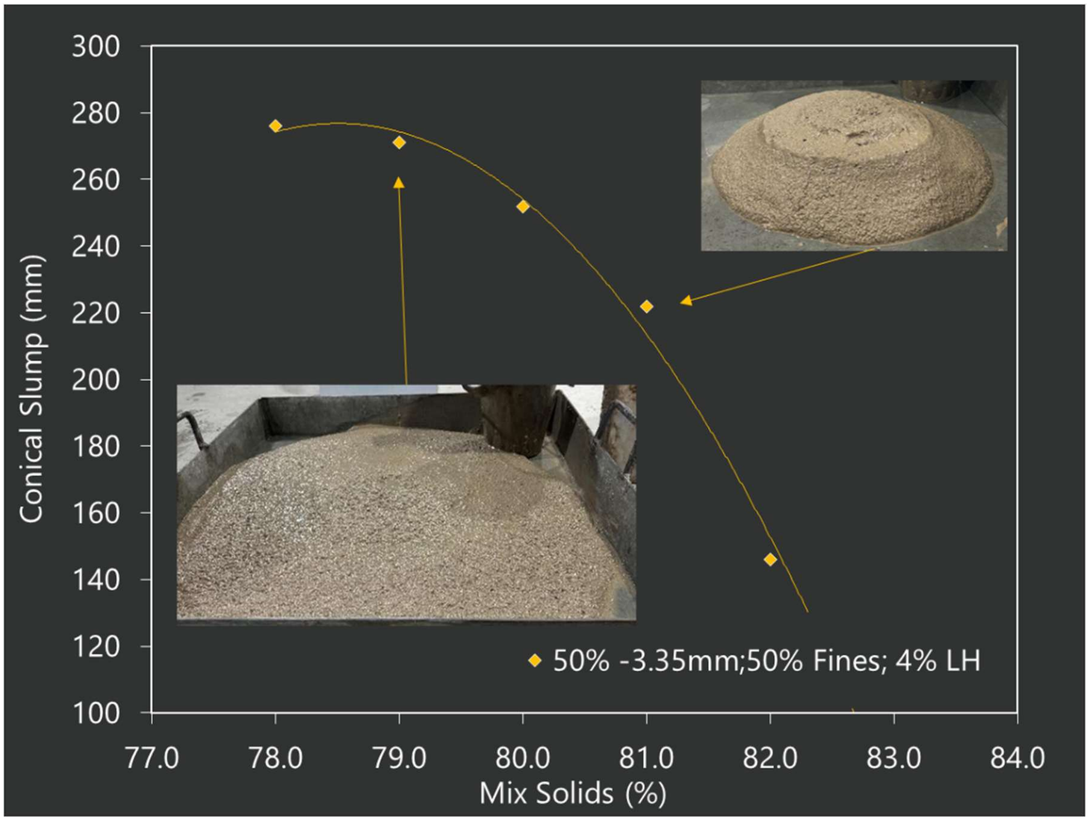


Figure 4.1: Paste Fill - Conical Slump Versus Mix Solids Content

To ensure sustainable reticulation operations, it is likely the system must operate with a paste mix solids content of 79-80% (i.e. the flatter section of the rheology curve). A conical slump showing the recommended blend for paste fill at 80% solids is presented in Figure 4.2. This photograph shows that there is negligible bleed water, and the material is homogeneous which confirms that this ratio is a suitable design for paste fill.

Figure 4.2: Paste Fill - Conical Slump at 80.0% Solids

Based on the results of rheological testing, the 50/50 blend ratio is considered suitable. However, the sensitivity of the rheological behaviour to changes in solids content suggests that any further reduction in fines may not be acceptable and future testing should investigate the impact this may have on the paste.

While the material appears homogeneous in Figure 4.2, it is important to note that the material is still quite coarse and this along with the fact that the system is operated at high slumps (i.e. low yield stress) makes the system susceptible to settlement and solids buildup in the reticulation system. To mitigate this risk, the reticulation system is designed with a relatively high transport velocity >2.0 m/s and provision is allowed for regular flushing (as discussed in Section 8.

4.4 Slimes Storage

4.4.1 Dedicated Slimes Addition System

Based on the sensitivity of the rheological properties to both moisture and fines content (as discussed above), it is recommended that each stream is carefully blended at the paste plant. This means three dedicated stream additions. Failure to manage the material ratios could potentially have serious downstream impacts to BP33 operations. For example, if the operator has been receiving coarse material it is likely that they will increase the paste solids content, to maintain the slump/friction loss in the target operating range. However, if, as a result of inadequate pre-blending the material becomes finer, for the same solids content, the slump/friction loss will increase significantly, blocking the reticulation system.

The sensitivity to fines content is illustrated in the conical slump photographs presented in Figure 4.3 and Figure 4.4, which show two mixes both mixed to 82% solids. Figure 4.3 has a low fines content (no Slimes), while the mix presented in Figure 4.4 has a high fines content. This shift in slump would likely lead to blockage of the reticulation system.

In addition, variability in fines content also modifies the input material moisture contents, which change the paste mix solids content. Considering the sensitivity of the paste material, these shifts in solids content also make it more difficult to control the reticulation system. As described further within the report inclusion of paste pump mitigates this risk and provides a robust solution for filling BP33.

Figure 4.3: 82.0% Solids – Coarse Fill (No Slimes)

Figure 4.4: 82.0% Solids – Paste Fill

4.4.2 Slimes Storage Capacity

Based on producing approximately 5,000 t/mo and considering the mill utilisation (92%), it is calculated that the mill produces ~7.4 t/h of Slimes at 35.0% solids, which results in a total flow of 17 m^3/h. When paste filling, 23 m^3/h of Slimes is used. Therefore, during filling the storage tank level reduces. When not operating the storage tank fills back up.

A critical consideration is the volume of Slimes required to meet the LOM quantities. Based on the proposed ratios presented above in Table 4-1 and Table 4-2, 371,798 t of Slimes is required to meet the backfill demand. Once paste filling occurs in Month 23, a total of 446,258 t of Slimes is manufactured over the LOM, which results in 83% usage of the Slimes tailings stream.

Every 1% reduction in the ratio of Slimes results in 9% reduction in overall Slimes used in paste over the LOM. Given the paste plant utilisation is ~62%, significant storage of the Slimes is required to meet this demand. To investigate the storage tank size that is required to assist with this design, several different volumes were considered. Assuming regular paste filling occurs each month and achieves the required paste demand of 35,000 m^3 (considering fill times, cleaning and rest periods), Figure 4.5 presents the 3-month fill schedule and tailings storage tank level. Given the majority of fill placed is placed in the larger stopes (>20 m across strike) as shown below in Table 5-1, this has been used for the below fill scenario.

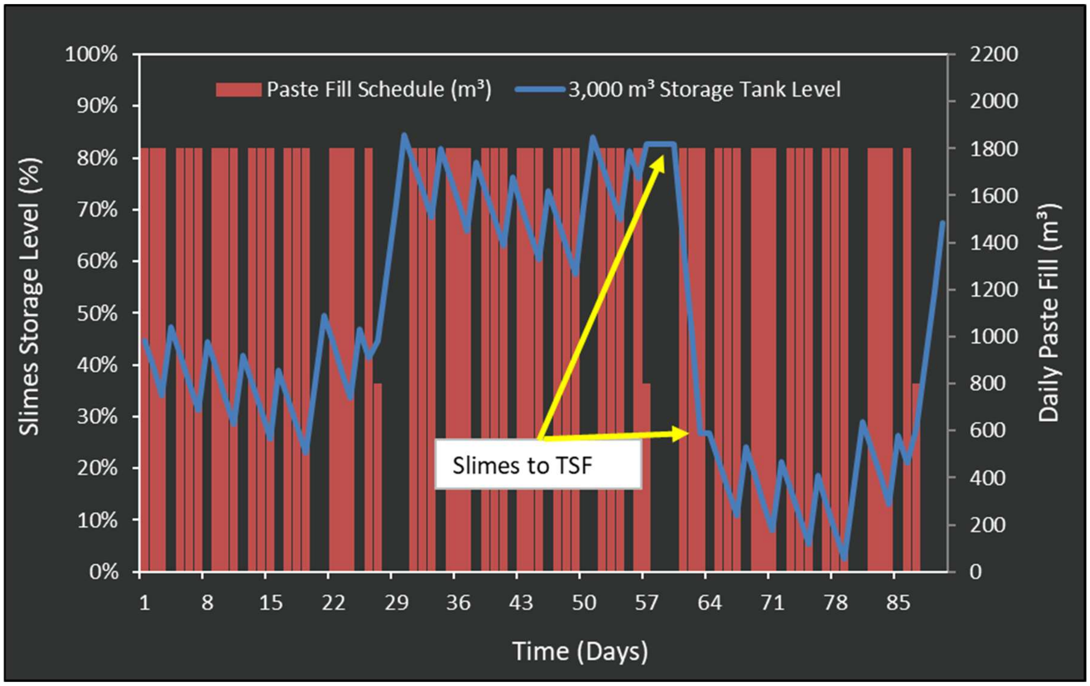


Figure 4.5: 3-Month Paste Fill Schedule and Tailings Storage Tank Level (3,000 m^3)

Figure 4.5 shows when paste filling occurs, the tank level slowly decreases, and during times when paste filling does not occur, the tank level increases. At times, Slimes need to be pumped to TSF as highlighted from days 59 to 64.

Opportunity exists to utilise the entire Slimes stream in the paste mix rather than pump Slimes to the TSF. However, for the purpose of keeping the paste mix design consistent throughout this report, this is not presented.

Figure 4.6 presents the tank level for 3,000 m^3 over a 12-month period. It is expected that Slimes transport to the TSF pumps will occur approximately once every 2 months for 5-6 days at a time. This scenario matches the design of using approximately 83% Slimes and therefore 3,000 m^3 storage is recommended.

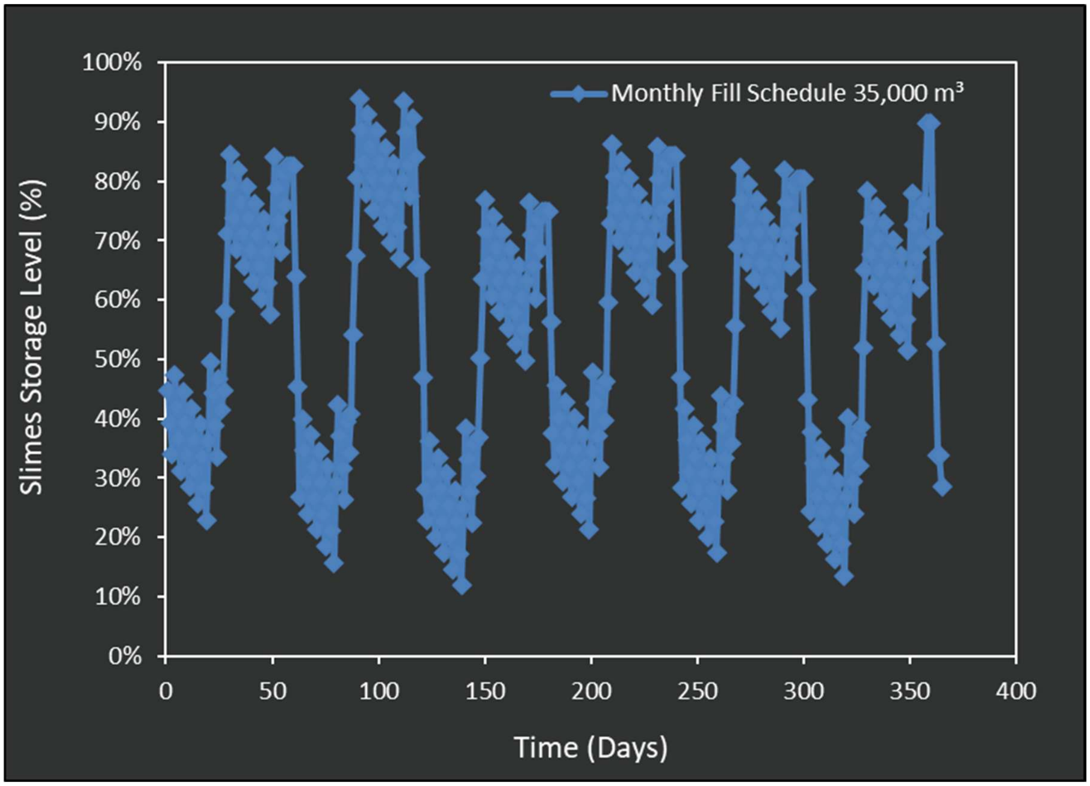
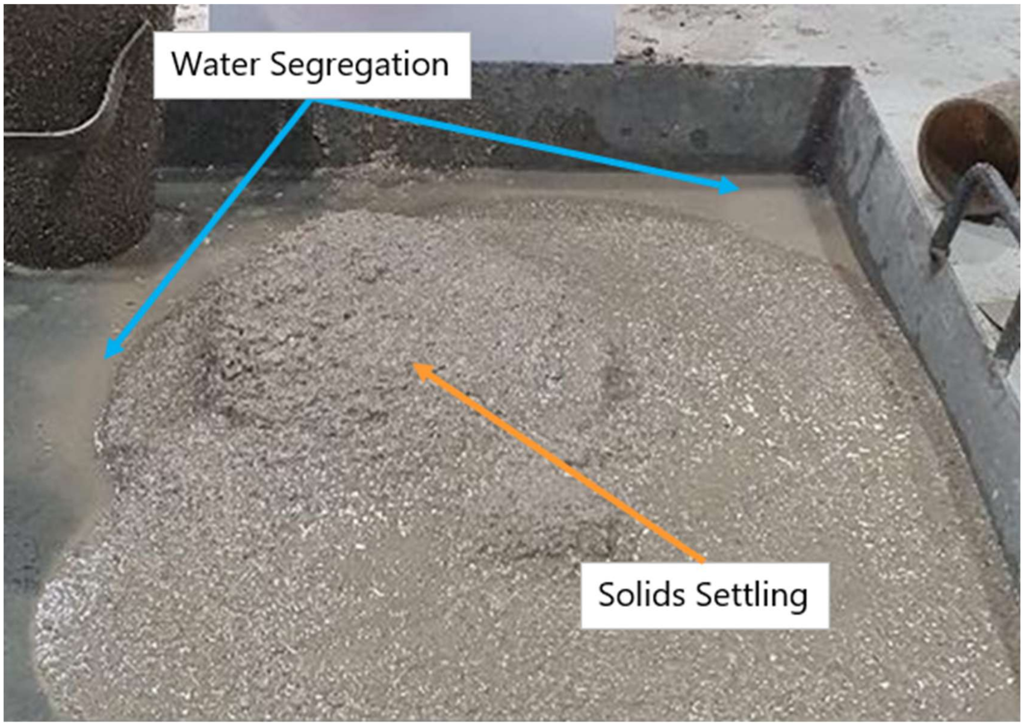


Figure 4.6: Tailings Storage Tank Level (3,000 m^3)

4.5 Coarse Tailings + Additives = Paste Fill

In the event no Slimes are available for paste production, an alternate, and possible backup option to manufacture a suitable, non-segregating paste fill is the use of additives in conjunction with the coarser tailings streams.

A limited number of additives were considered for the testing, and they showed promising results. This is illustrated in the photograph below using the 50% ultrafine rejects / 50% undersize rejects with 4% LH. Figure 4.7(a) shows the material to be clearly segregating with fines and water escaping the fill matrix. By adding 500 mL/100 kg MF362 admixture, Figure 4.7(b) shows the paste is more cohesive.



(a) 80.0% Solids; 50/50 Blend; 4% LH; No Additive

(b) 80.0% Solids; 50/50 Blend; 500 mL/100 kg Additive

Figure 4.7: Conical Slump Photographs; 50/50 Blend Before and After Additive

The disadvantage of using admixture is that is adds nominally \$35/m^3 of operating cost to the fill. As a result, the use of admixture has not been considered further for this pre-feasibility study. It is recommended that the use of admixtures be considered as a contingency only, for periods where slimes might become unavailable. Future investigations should investigate alternate additives to assess if the dosage can be reduced and thus be more cost effective.

5. MINING METHOD AND FILL STRATEGY

5.1 Mining Method

The BP33 orebody is extracted using long hole open stoping (LHOS) using a combination of longitudinal retreat and transverse stoping. A long section showing the proposed stopes is shown in Figure 5.1. The longitudinal retreat stoping area is presented in shades of pink (stopes nominally on the left) and the transverse stoping section is shown in shades of blue (central and right). Transverse stoping is undertaken in a primary/secondary mining sequence.

Mining of the BP33 orebody will be extracted top-down overall, but is mined in panels, with each panel being mined bottom-up.

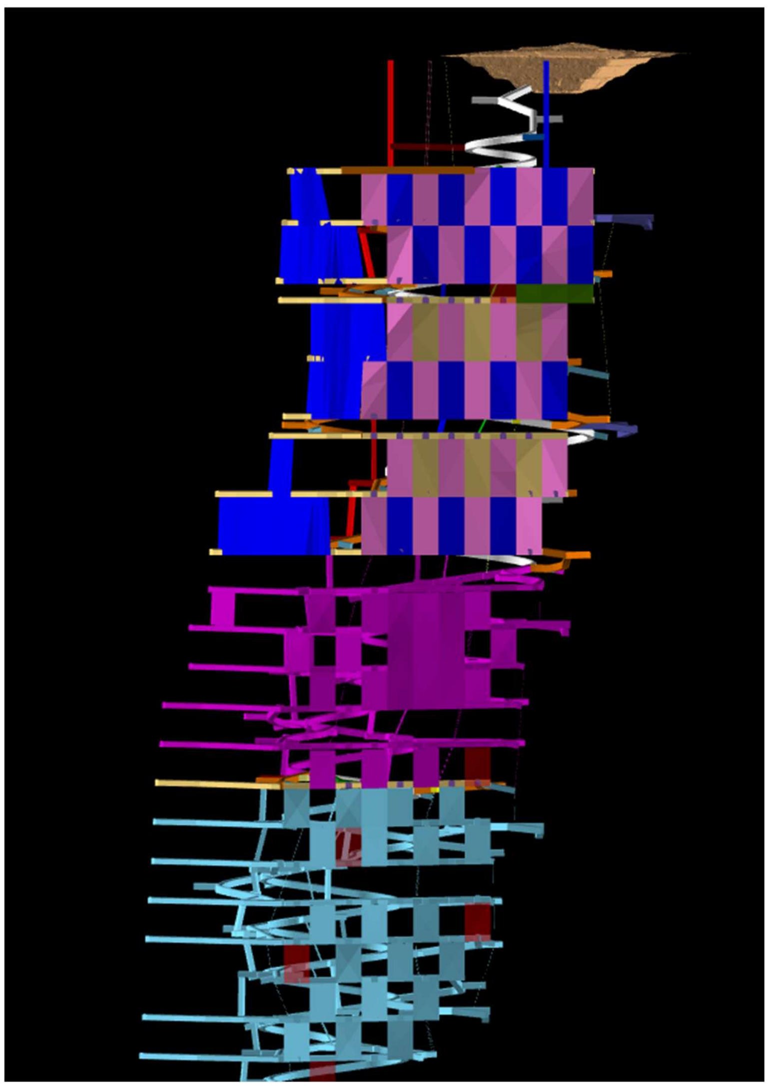


Figure 5.1: BP33 Mining Sequence

This creates several mining fronts to accelerate ore extraction and results in most stopes only having a vertical exposure. However, the sill stopes, are undercut when extracting the stope from the top level in the panel below.

5.2 Stope Dimensions

The stope dimensions for BP33 were provided by Core and the along strike length for each stope is 20 m. Stopes were separated into fill heights (45, 30 and 15 m) and then a range of different exposure widths. The volumes of fill required for each fill height and exposure width are presented in Table 5-1.

Table 5-1
BP33 – Volume of Fill Placed For Different Heights and Across Strike Length

Across Strike Stope Exposure Range (m)	Volume of Fill for Stope Exposure Range and Fill Height		
	45 m High	30 m High	15 m High
0 - 10	12%	8%	32%
10 - 15	7%	15%	11%
15 - 20	13%	9%	0%
20 - 25	10%	7%	9%
25 - 30	26%	11%	35%
30 - 35	31%	30%	13%
35 - 40	0%	19%	0%

5.3 Scheduled Fill Rate

BP33 stopes range from 15 to 45 m tall, 20 m along strike and range in dimension from 5 - 40 m in across strike direction. Assuming that stopes are filled in 2 fill runs, with a 24-h rest, the expected fill schedule is as follows:

- 12 h - bund construction and bulkhead preparation;
- 12 h – bulkhead frame construction;
- 12 h – bulkhead spray;
- 24 h – bulkhead cure;
- Base pour duration - base volume/instantaneous fill rate to nominally 3 m above brow of the bulkhead;
- 24 h rest period; and

- Body pour duration - top volume/instantaneous fill rate. For taller stopes, paste filling occurs for several weeks, stopping every 2-3 days to clean for nominally 6-12 hours.

5.4 Filling Strategy

Primary stopes are developed back through to access the secondary stopes and given the retreating nature of the longitudinal stopes, for the majority of stopes there is access from the upper level for paste filling purposes. A typical stope arrangement when filling from the upper level is shown in Figure 5.2.

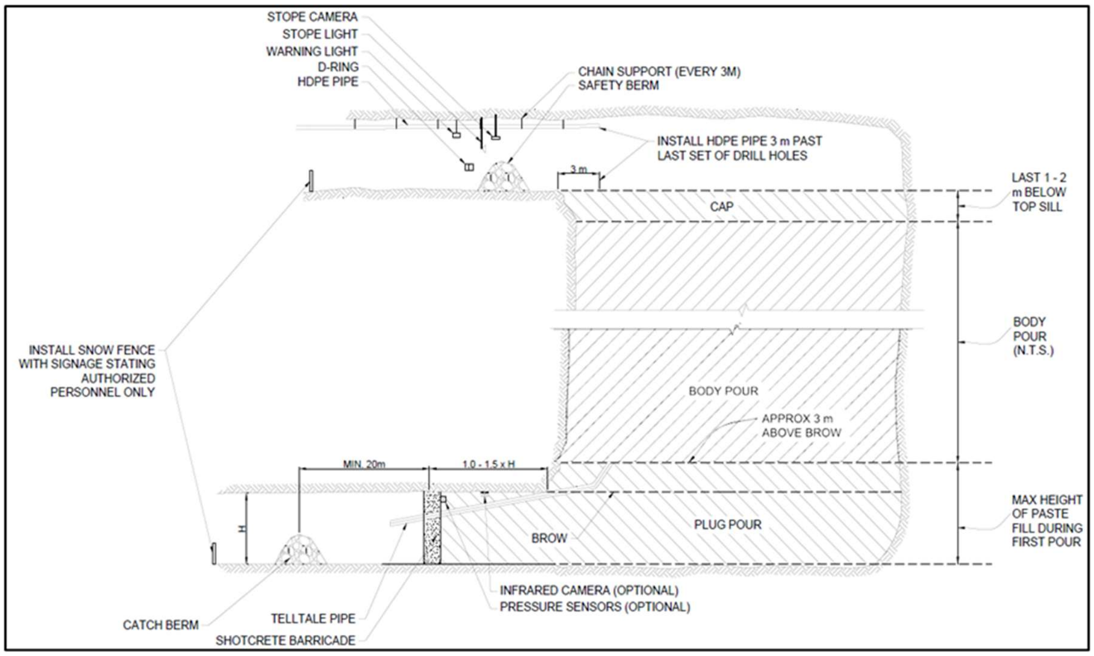


Figure 5.2: Typical Stope Arrangement with Top and Bottom Access

However, for the stopes that are filled at the top of the panel, there is no top access and therefore, there are two options available for filling: (1) the drive on the bogging horizon or adjacent drive, and (2) developing back through paste on the level above the stope crown. For both alternatives, filling must be undertaken through a fill and breather hole arrangement, although the filling strategy differs depending on the access point.

For the first alternative, blind up-holes are drilled from the bogging drive. The fill and breather holes each breakthrough as high as possible in the attempt to fill most of the void, as shown in Figure 5.3. However, given the challenges involved in effective placement of a blind up-hole and overbreak, it is almost certain that these stopes will not be tight filled.

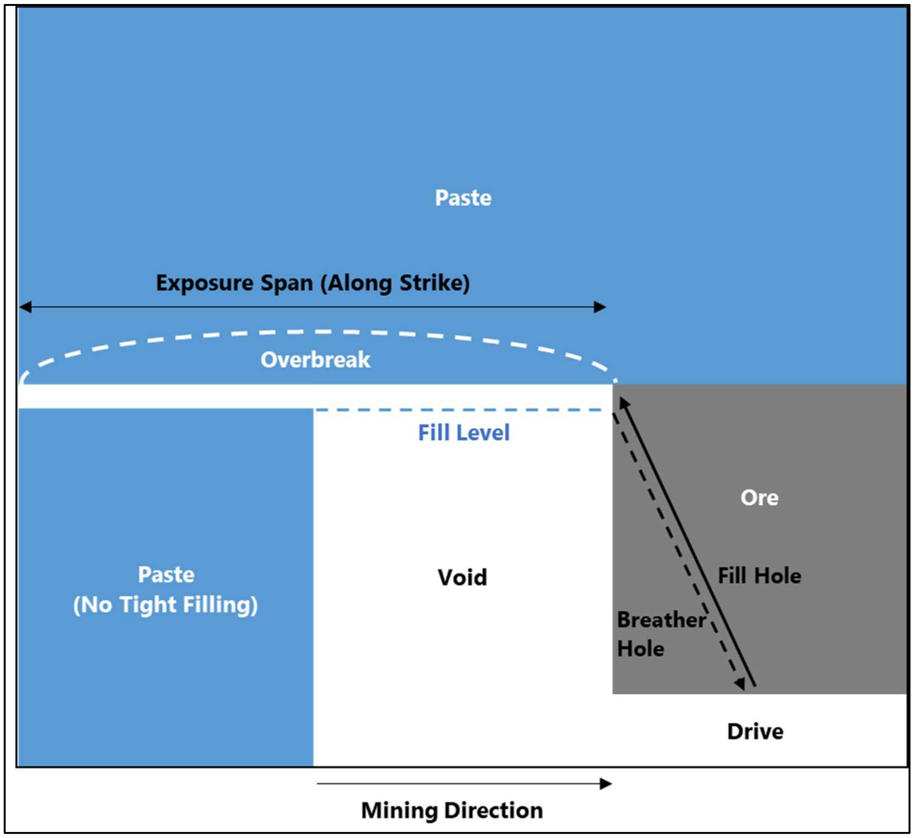


Figure 5.3: Blind Up-Hole Filling Arrangement

6. FILL STRENGTH REQUIREMENTS

6.1 Strength/Binder Introduction

A significant component of the operating cost for the BP33 backfill is the binder required to maintain fill stability. Core advised that the paste fill strength requirements were determined by independent geotechnical consultants and review of these strengths was not within the MineFill scope.

Using the measured binder versus strength relationships, the binder required to achieve the design strength for each fill type was determined.

6.2 Backfill Strengths

The paste fill strength relationship for paste fill developed from testwork at 7 and 28 days is presented in Figure 6.1 as in situ binder versus unconfined compressive strength (UCS). The strength relationships have been used to determine the binder required to achieve the required paste strength.

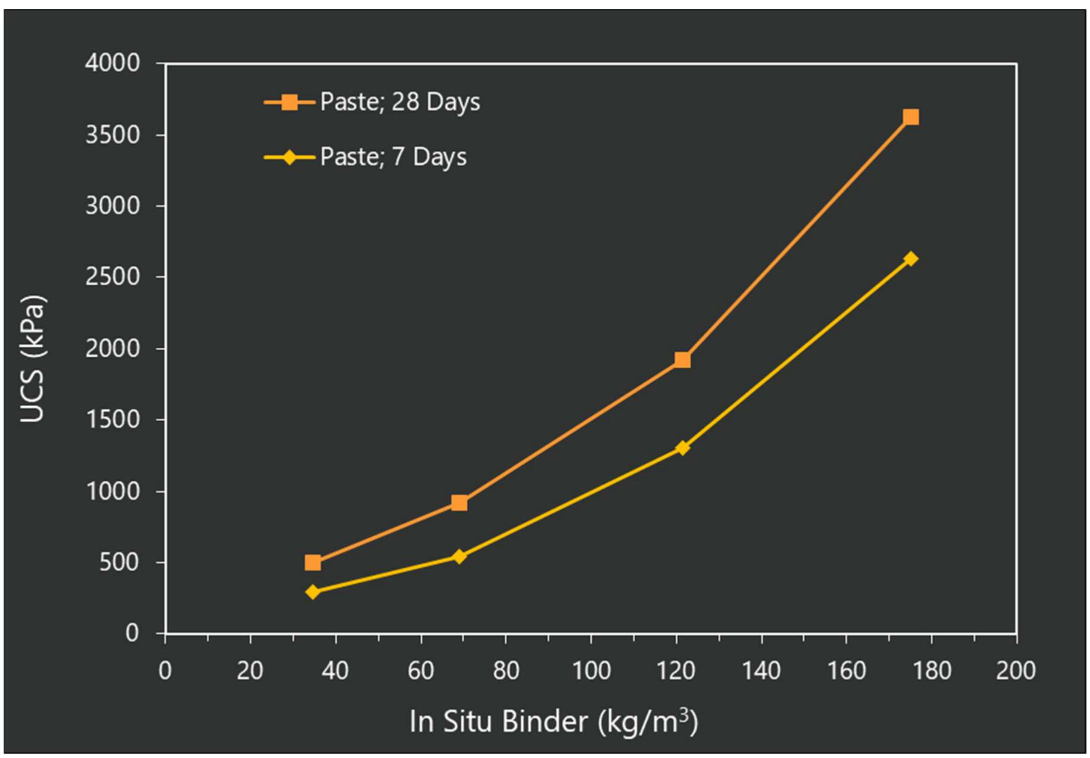


Figure 6.1: UCS Versus In Situ Binder – 7 and 28 Days Hydration

6.3 Backfill Strength Targets

Core provided two backfill strength targets based on geotechnical analysis completed by independent geotechnical consultants. The lower strength target is 800 kPa and accounts for 74% of cemented paste requirements and the upper strength target is 1,500 kPa which is required for 26% of the stope void. Using the 28-day paste strength relationship presented in Figure 6.1 results in a low heat binder requirement of 59 kg/m^3 (3.7% by dry weight) and 99 kg/m^3 (6.1% by dry weight) to meet these strength targets.

The average binder requirement is 69 kg/m^3 (4.3% by dry weight), which results in an average LOM binder cost of $22.99/m^3.

Whilst the LOM fill requirement results in 26% high strength and 74% low strength, the annual ratio of high and low strength varies. Table 6-1 shows that in the initial 2-8 years of filling, more than 26% of high strength fill is required. However, beyond 8 years lower volumes of high strength fill is required. This results in slightly higher binder cost ($/m^3) compared to years 9-12.

Table 6-1
Annual Paste Strength Summary

Year	2	3	4	5	6	7	8	9	10	11	12
% High strength	33%	48%	37%	37%	23%	40%	30%	11%	0%	25%	4%
% Low strength	67%	52%	63%	63%	77%	60%	70%	89%	100%	75%	96%
Binder cost ($/m^3)	$23.9	$25.9	$24.4	$24.4	$22.5	$24.9	$23.5	$20.9	$19.5	$22.9	$20.1

7. PLANT DESIGN

7.1 Mass Balance and Design Criteria

The paste fill design criteria and mass balance are attached in Appendix A and Appendix B, providing the design basis for the backfill plant design.

7.2 Process Flowsheet

The process flowsheet is attached in Appendix C.

7.3 Plant Location

The proposed location for the backfill plant (delineated by the red box) is shown in Figure 7.1. The backfill plant is positioned immediately adjacent to the old BP33 open pit. This location sits vertically above the orebody was selected by Core with input from MineFill, based on considerations regarding the feasibility of pumping paste overland. The total paste plant area including the storage pad area is shown by the yellow box. This includes a dedicated stockpile for each of the ultrafine rejects and the undersize rejects.

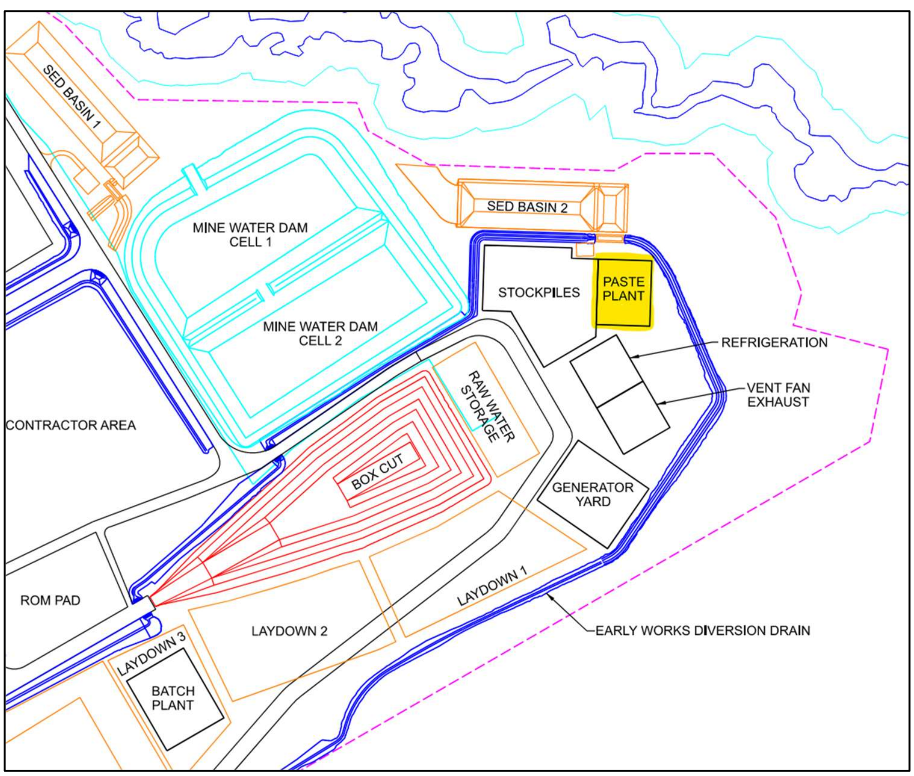


Figure 7.1: Backfill Plant Location

7.4 Paste Fill Process

As described in Section 4, paste fill is manufactured at BP33 using three material streams: undersize rejects (50%), ultrafine rejects (41%) and Slimes (9%). The material streams are blended with binder to manufacture 75 m^3/h paste. All paste is transported underground using a paste pump.

Figure 7.2 shows an isometric of the paste plant with full general arrangement drawings included in Appendix D. The mechanical equipment list is included in Appendix E.

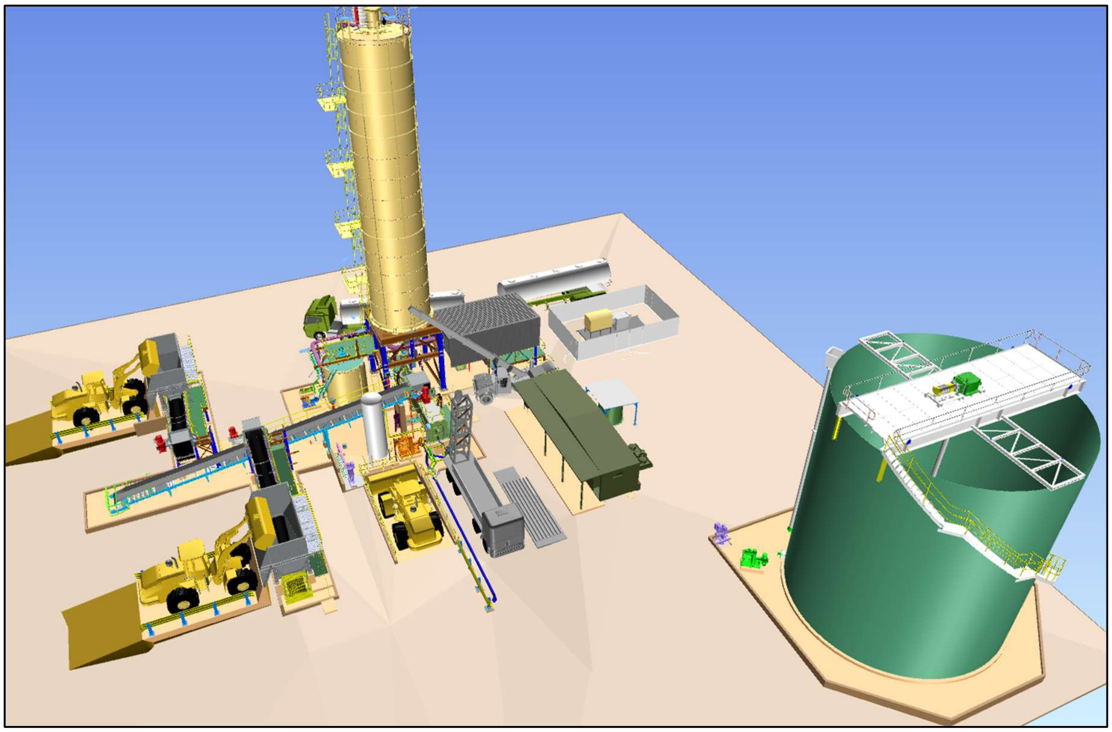


Figure 7.2: Paste Plant

7.5 Paste Plant Footprint

The paste plant has a footprint of nominally 65 m x 65 m. As presented in Table 7-1, the paste plant is designed to the underside of concrete. It is recommended that the pad is prepared using structural fill to a nominal bearing capacity 250 kPa.

7.6 Process Description

7.6.1 Slimes Tailings Slurry

The Slimes (-45 μm) material is placed into a thickener and is transported at 35% solids to a 1,000 m^3 storage tank at the Grants processing area. The Slimes tailings (at 7.4 dry tph and 35% solids) is transported from the Grants process plant approximately 8.8 km to the BP33 paste plant where there is a 2,000 m^3 storage tank. The combined 3,000 m^3 storage enables two weeks' storage assuming paste fill is occurring, and Slimes are being manufactured. Section 4.4 highlighted the importance of storing Slimes for paste manufacture.

It is highlighted that containment is usually required for 110% of the largest tank volume. Typically, for such large tanks this would be achieved using a dam. The design and location of such a catchment facility requires further assessment in future stages. For clarity, this has not been included in any costing in this report.

From the tailings storage tank, the Slimes are transported to the vortex mixer using a duty only pump.

7.6.2 Rejects Handling System

Reject Tailings Screening and Feeding

Ultrafine rejects and undersize rejects are backhauled from Grants to BP33 using ore trucks where they are stored in individual stockpiles. The risk with using ore trucks to backhaul tailings is that the stockpiles will get contaminated with large aggregates/rock. These large rocks are likely to cause significant damage to the paste mixer.

An in-line screen is required for each stockpile to remove any large or foreign objects. The screen removes all material that is greater than 10-20 mm.

Due to the rheological sensitivity of the paste to the addition of different material streams (as presented in Section 4), it is recommended each stream has a dedicated stockpile, screen and hopper. Each screen feeds directly into the relevant hopper.

Reject Tailings Conveying

From the tailings hopper(s), tailings are metered via a variable speed belt feeder onto the vibrating screen(s) to a single central conveyor feeding the paste mixer. Each belt feeder is fitted with a weightometer and the feeder variable speed drive regulates the belt speed to achieve the tonnage setpoint.

7.6.3 Binder Addition

The binder system consists of a single 455 m^3 (525 tonne at a bulk density of 1.15) storage silo which is suitable for 3 full days of operation at the expected maximum binder dosage rate.

The storage silo receives binder from the delivery trucks that are fitted with on-board pneumatic blowers. From the storage silo, the binder deposits into a variable speed rotary valve which is controlled by the mass flow meter.

Binder is transferred from the mass flow meter to the vortex mixer, as shown in Figure 7.3, where the binder is pre-mixed with Slimes tailings slurry and water which is added for paste rheology control.

Figure 7.3: Vortex Mixer Slurry Action

7.6.4 Mixing and Paste Delivery

The reject streams and the Slimes tailings slurry blended with binder are fed into a single shaft paste mixer as shown in Figure 7.4. The mixer is sized for nominally 3 minutes residence time. Paste fill is discharged from the mixer to a centrifugal pump and discharged to the BP33 underground. The main duty of the pump is to assist with managing/limit free fall in the borehole. However, it also provides a robust solution to reach the uppermost stopes in BP33.

In the event the pump is offline, there is the option to bypass the pump and fill under gravity. This is discussed in more detail in Section 8.

A dedicated high-pressure wash pump is used to clean out the mixer during plant shutdowns. This pump is manually controlled by the operator.

Figure 7.4: Cylindrical Paste Mixer

7.6.5 Ancillary Systems

Water

Process water is supplied to the paste plant and is used for hose up and paste reticulation system flushing. Gland quality water is required at circa 6-10 m^3/h and potable water is required for control room and safety showers (~5 m^3/h).

Compressed Air

A dedicated air compressor with integral drier is provided in the plant. Two air receivers are used; an instrument air receiver services all valving and, a flush air receiver is utilised for air flush of the underground reticulation at the completion of fill runs and in the event of a pipeline blockage.

Spillage Management

The paste plant is founded on a concrete apron to contain any spillage within the plant and for ease of cleanup. All spillage reports to a drive-in clean-out pit and sump within the paste plant area. The clean-out pit is sized for a skid steer loader which is only required after major issues within the plant. Typically, general spillage is hosed up and returned to the tailings storage tank via a vertical shaft sump pump.

Electrification

The paste plant is installed with a permanent electrical supply. A dedicated transformer is included for step-down of the high voltage supply power for use in the 415 V plant equipment. An electrical switchroom is used to house all the electrical starters, variable speed drives and instrumentation marshalling in a centralised, climate-controlled room.

Field mounted start/stop switches are provided for local control during maintenance activities. The plant is normally operated from the plant control room via the control system computer. A back-up diesel generator (nominally 660 kVA) is used to power critical equipment drives, maintain uninterrupted communications with the underground distribution equipment, and maintain plant lighting.

Control Room

A control room is housed in a prefabricated modular building. The control room contains a desktop computer system running the plant automation software, several control screens, and additional monitors with output from CCTV cameras located in the plant and underground, along with a live display of underground pipe pressure and flow monitoring instrument data. A 2-way radio is used for communication with the underground paste crew.

The control room is air conditioned and incorporates a kitchenette and ablution facilities for the plant operators.

Fire Suppression and Safety Systems

The paste plant is furnished with all statutory mandated safety systems. Fire suppression is included in the switchroom and fire extinguishers are included throughout the plant.

7.7 Project Battery Limits

Table 7-1 is provided to clarify the battery limits for the Core Lithium backfill system. The civils is defined as the top of bulk earthworks, including both plant and Slimes overland pipeline trenching. No provision for road crossings and culverts.

Table 7-1
Core Lithium Backfill System Battery Limits

Description	Incoming Limit	Outgoing Limit
Civils	Top of bulk earthworks, including both plant and overland paste pipeline trenching. No provision for road crossings and culverts.	
Tailings (Slimes)	Incoming pipe to agitated storage tanks at Grants.	
Electricity (Surface)	Low voltage incomer terminals of the main breaker to the paste plant.	Motor and instrument terminal boxes.
Control System	Surface: Fibre connection point in paste plant switchroom and control room network switches. Underground: Fibre terminal in UG panels.	MCC control cabinets and field instrumentation.
Process Water	Paste plant boundary point.	Paste plant services.
Raw Water (Gland Quality)	Raw water pipeline at paste plant boundary point.	Paste plant services.
Potable Water	Paste plant boundary point.	Safety showers and ablution.
Compressed Air	Air compressor is included in paste plant.	Equipment and valve connection points (instrument). Surface connection into UG distribution pipework.
Binder	Connection point on bulk storage silo fill pipe.	Vortex mixer inlet.
Paste		Discharge into underground stopes.

8. PASTE RETICULATION DESIGN

8.1 Paste Reticulation Flow Mechanics

Paste fill systems are typically characterised by their high pressures. The high-pressure results from significant friction losses within the pipeline. If there are long horizontal lengths of pipeline the friction loss causes the paste to back up the borehole as shown schematically below in Figure 8.1.

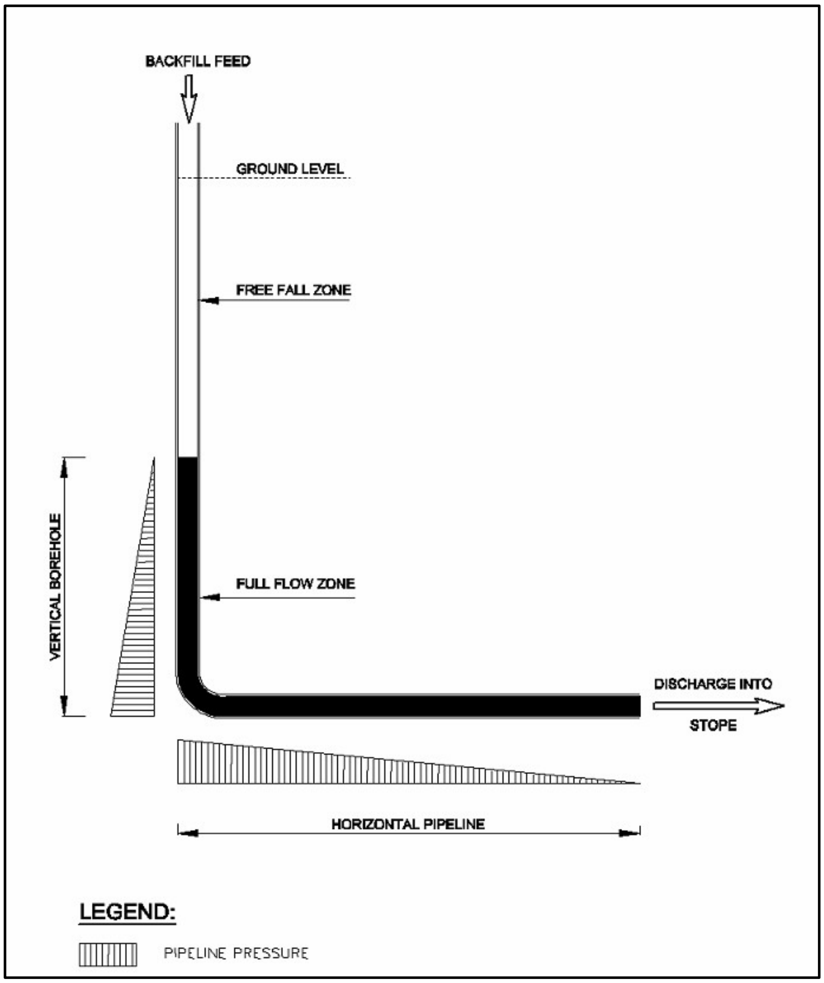


Figure 8.1: Schematic of Paste Fill Reticulation

The total friction loss in the horizontal section is primarily governed by the length of the horizontal section and the slump/yield stress of the paste. The flow within the section of the pipeline filled with paste is typically slow (1.0 – 2.0 m/s) and little wear occurs. However, for the BP33 system, due to the coarse nature of the material, slightly higher flow velocities are targeted (2.2 m/s).

The section of pipe above the full flow zone is classified as the freefall zone. In this region the paste accelerates according to gravitational acceleration. As a result, high velocities may be reached, resulting in high wear rates in the situation where the boreholes are lined. Where boreholes are not lined, then freefall is of less concern.

8.2 Design Methodology

The design of the paste fill system is carried out in the following steps:

1. **Borehole(s) Location**: This was provided by Core and the suitability verified by MineFill.
2. **Design Criteria:** Identification of the key system design parameters. Based on plant throughput and paste material characteristics.
3. **Reticulation Geometry:** Definition of the reticulation system routes. A reticulation route has been modelled to selected areas of the BP33 deposit.
4. **Operating Flow Model:** Selection of a pipe size to maintain velocities in the desired range and subsequent definition of the expected friction loss. The operating flow model then provides the operating pressures throughout the system.
5. **Pipeline Engineering:** Design of all the pipeline components that make up the system including the pipe, couplings, instrumentation, valving, blockage clearance, pressure relief, and pipe supports.

This section follows the above methodology for design of the BP33 paste reticulation system.

8.3 Borehole Location/Management

The 90 m vertical surface borehole(s) break out in a designated cuddy just off the main decline. The proposed location was provided by Core and is deemed suitable to enable filling of the 110 Level stopes.

In MineFill's experience, managing borehole wear is one of the most critical aspects in a backfill operation. To assist with managing wear, it is proposed to design the system with a centrifugal pump with nominally a 1,000 kPa discharge pressure capacity. This allows freefall levels to be reduced which significantly reduces wear in the borehole and also provides extra capacity to reach the uppermost stopes (as described below in Section 8.6).

It is recommended for the minor additional cost, to install a duty and stand-by surface borehole, with the location to be detailed in future investigations, considering plant orientation and underground mining activities.

8.4 Design Criteria

Table 8-1 provides the design criteria used for the design of the BP33 underground paste fill system. As discussed above in Section 4, given the coarse nature of this material it is recommended that the system is designed to transport the paste at a relatively high velocity (2.2 m/s).

Table 8-1
Key Parameters Used in Reticulation System Design

Parameter	Paste Fill	Unit
Solids Specific Gravity (SG)	2.70	
Solids Content	80.0	wt%
Paste Bulk Density	2.02	t/m^3
Flow Rate	75	m^3/h
Flow Velocity Range	2.0 - 2.2	m/s
Design Temperature Range	30	°C
Friction Loss Range	7 - 10	kPa/m

The key input of the flow model is the friction loss experienced within the pipeline. No accurate theoretical method exists to calculate the friction loss of paste flow. Rather the most accurate method for determining the friction loss is using empirical data.

For the purposes of this report a friction loss range of 7 – 10 kPa/m has been assumed. The friction loss values have been chosen based on the expected pipe geometry, material behaviour and flow velocity.

8.5 Underground Reticulation Geometry

The BP33 underground is vertical and compact in nature allowing for a simplistic robust reticulation design. However, the uppermost stopes are relatively shallow being bogged from 110 Level. This results in a relatively short borehole (~90 m), which reduces the amount of energy available to hydraulically transport the paste in the upper regions.

To investigate the ability to reach these upper regions, several flow models were considered. A summary of the design cases used in this study are shown in Figure 8.2.

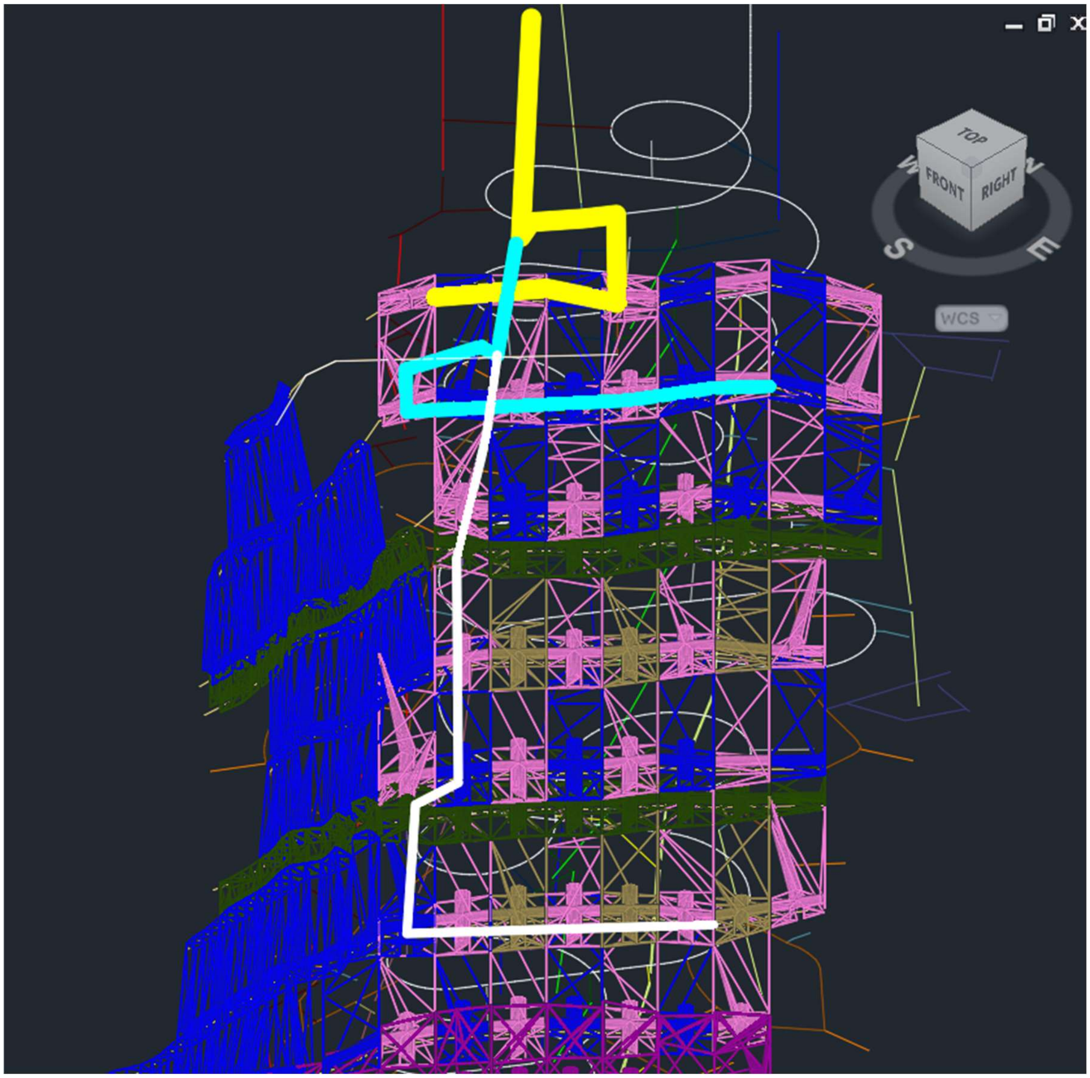


Figure 8.2: Paste Reticulation Design Cases (Viewing from South-East)

The yellow design presents the main borehole and extends to the furthest primary stope on the 110 Level. The cyan route extends down to the 155 Level and extends to the furthest primary stope (cyan route).

As the reticulation extends below the 155 Level, due to the vertical nature of the BP33 orebody and the relatively short horizontal extents, the reticulation analysis is favourable. Therefore, this analysis focuses on the uppermost levels and presents a solution to fill stopes below this level, midway up the orebody (represented by white route).

8.6 Flow Model

Flow models were developed for assessment of the pressure and flow characteristics in delivery of paste to the fill areas throughout the mine. Several cases were analysed covering delivery to the areas presented in Figure 8.2.

For each location, the reticulation system hydraulic grade line (HGL) was analysed to understand the flow characteristics throughout the pipeline. The operating pressure and maximum hydrostatic pressure during a no-flow condition were also examined. The resulting flow model diagrams present the data in the following sections and are explained as follows:

- The blue solid line is the two-dimensional reticulation profile, i.e. the physical borehole, pipeline lengths and angles plotted in two dimensions. This is plotted against the primary vertical axis (left).
- The orange line is the pressure profile. This represents the head in metres of paste fill. The height of this line above the reticulation profile is equal to the head in metres of paste fill at that point. Therefore, the greater the distance between the reticulation and pressure profiles the greater the head (pressure). Where the orange line intersects the blue surface borehole line provides an indication of how far the paste has backed up the borehole to overcome the friction loss in both the horizontal piping and the borehole itself. If the lines did not cross, this would indicate that the entire borehole was full of paste. This is plotted against the primary vertical axis (left).
- The yellow dashed line is the operating pressure in the system at any point. This is plotted against the secondary vertical axis (right).

8.6.1 Flow Modelling Strategy

For the design cases considered, a friction loss was chosen to enable the delivery of paste to the nominated deposition point and ensure the paste system is not overly sensitive to natural variations that are likely during operation.

8.6.2 Design Case 1: 110 Level

Design Case 1 delivers paste from the paste plant, down the surface borehole to the first stoping level (110 Level), then along a 150 m length of horizontal pipework to reach the furthest primary stope on this level. The flow model for this design case with a friction loss of 7.0 kPa/m is presented in Figure 8.3.

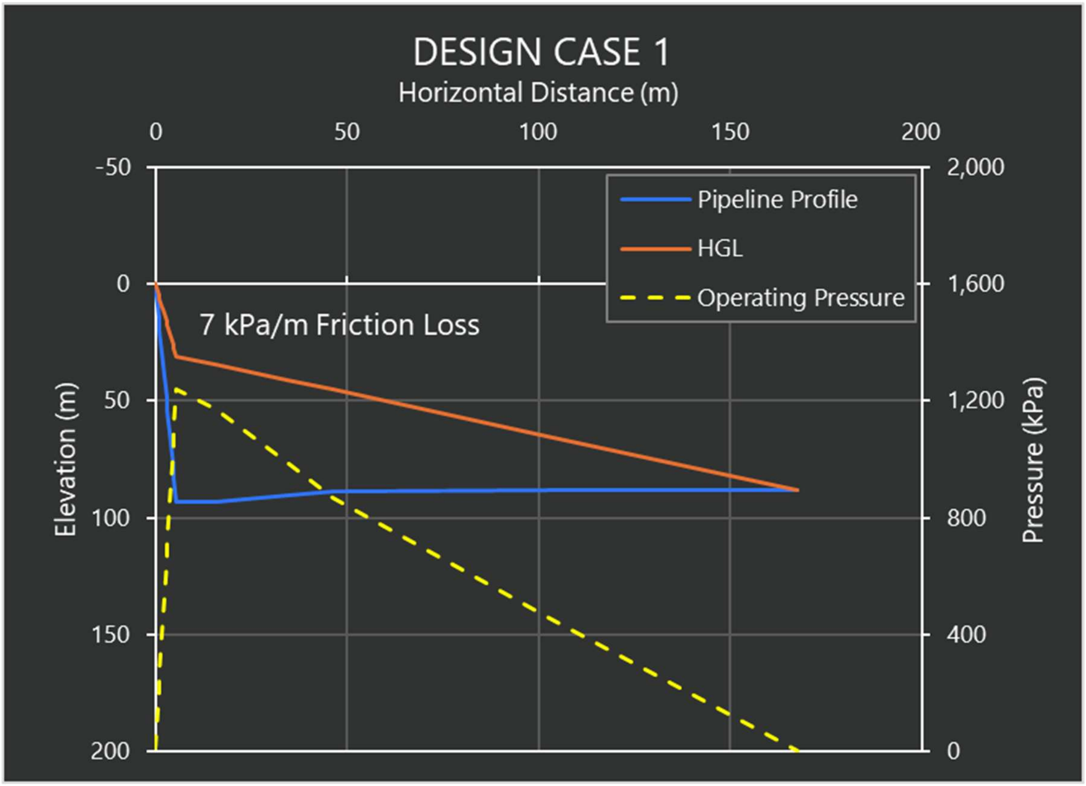


Figure 8.3: Design Case 1 - 110 Level @ 7 kPa/m Friction Loss

Figure 8.3 indicates that at 7 kPa/m friction loss, this stope cannot be filled under gravity alone. However, the pump requirements are small with only a small discharge pressure required (10 kPa) which is suitable with extra capacity that is supplied by the proposed paste pump.

To investigate the sensitivity of the flow models to friction loss, another flow model was considered using the upper bound friction loss of 10 kPa/m and this increased the pump discharge pressure to 763 kPa as shown in Figure 8.4.

An alternate solution is to add more water to reduce the friction loss of the paste, however the modelling presented suggests that all stopes can be filled with proposed paste pump at 7 kPa/m friction loss.

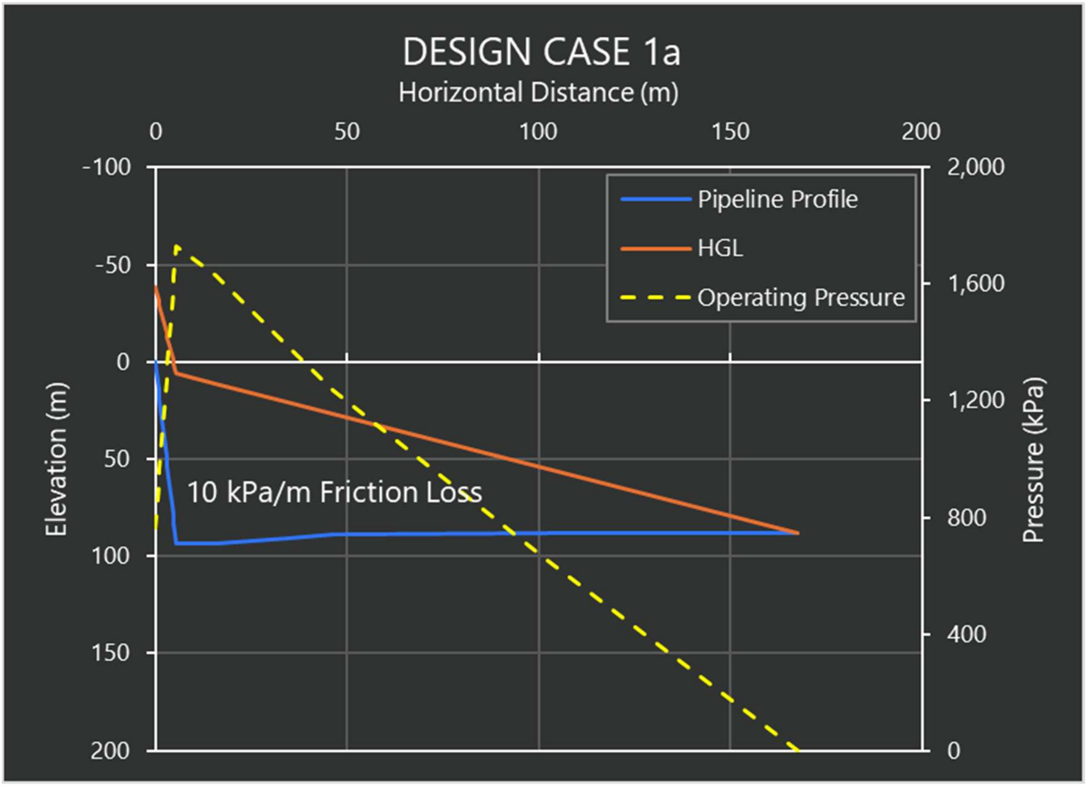


Figure 8.4: Design Case 1a - 110 Level @ 10 kPa/m Friction Loss

8.6.3 Design Case 2: 155 Level

Design Case 2 delivers paste from the paste plant, down the surface and interlevel borehole to the furthest primary stope. The route extends approximately 200 m to the furthest deposition point required on this level. The flow model has considered 7 kPa/m friction loss for this analysis and the results are presented in Figure 8.5.

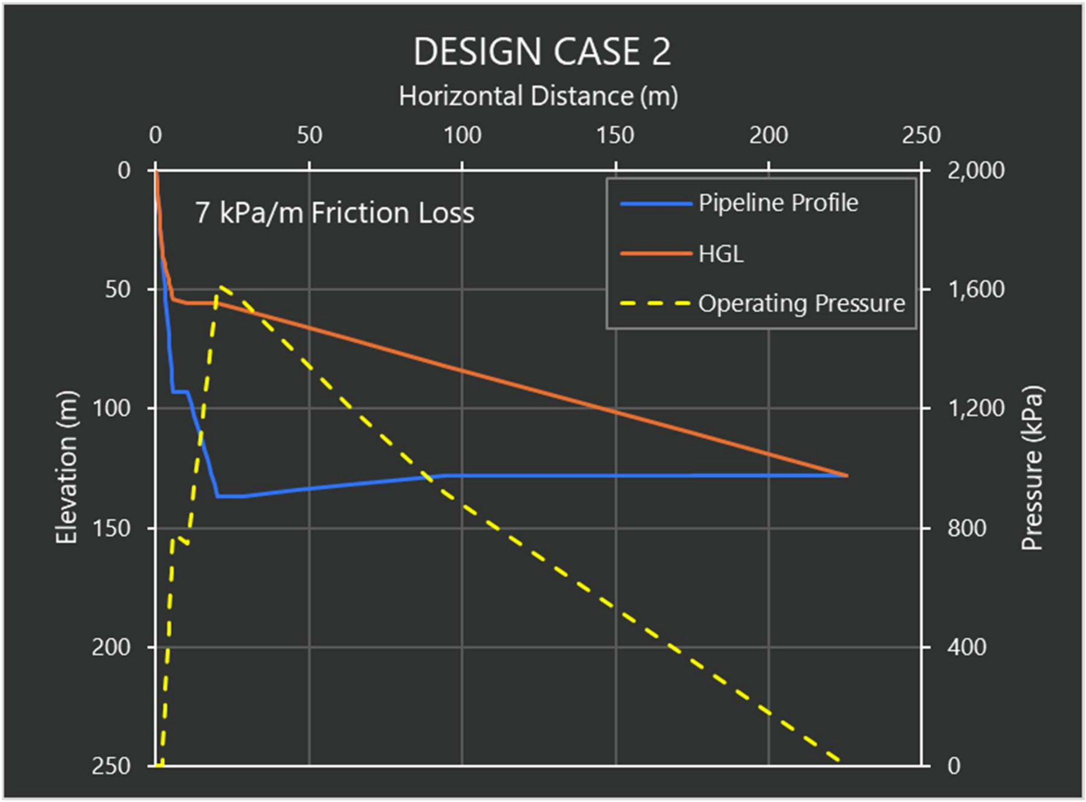


Figure 8.5: Design Case 2 - 155 Level @ 7 kPa/m Friction Loss

Figure 8.5 indicates that the paste can be transported under gravity to the furthest stope on the 155 Level using 7 kPa/m friction loss. This results in relatively low operating pressures and 30 m freeboard in the borehole.

8.6.4 Design Case 3: White Route

As the reticulation extends below the upper two levels at BP33, the reticulation is far more favourable. However, to reduce wear at key components such as elbows at the bottom of internal boreholes, a common solution is to install additional horizontal pipework (typically referred to as friction loops), effectively increasing the amount of friction in the system and allowing paste to back-up to a more suitable location. An example of this is presented in Figure 8.6, which shows a flow model halfway down the BP33 orebody (refer white route in Figure 8.2) with friction loops installed on the relevant levels, nominally one 100 m friction loop per mining panel.

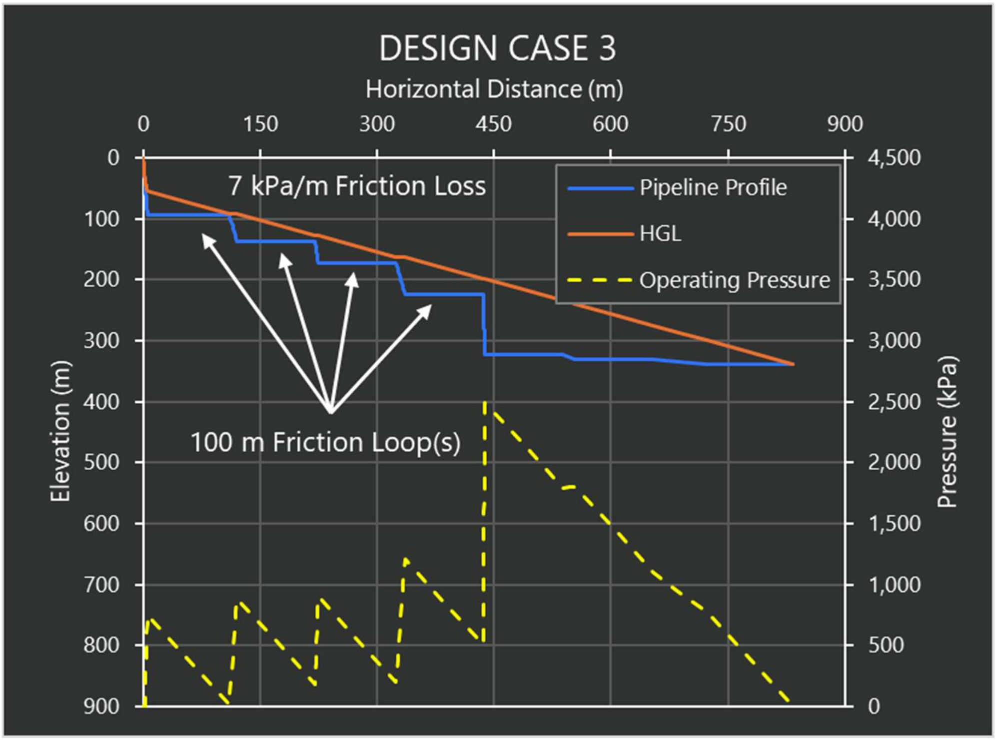


Figure 8.6: Design Case 3: Showing Use of Friction Loops at 7 kPa/m Friction Loss

8.6.5 Maximum System Pressure

The maximum potential pressure that can be generated if the entire pipe system were to be filled is at the lowest level in the reticulation system. The current mine design has a depth of 767 m and therefore the maximum potential pressure in the paste system is 15,200 kPa at the bottom of the mine. Adding the potential pump head results in 16,200 kPa.

8.7 Pipeline Engineering

8.7.1 Approach

There are two approaches that may be applied when designing a backfill reticulation system; 1) selection of piping equipment that can withstand the full system pressure, or 2) defining a maximum allowable operating pressure (MAOP) for the system and installing burst protection in the event of a blockage. The first approach is normally applied in shallow systems where the maximum hydrostatic pressure is below 10,000 kPa. Once pressures exceed 10,000 kPa the piping equipment becomes very expensive, and results in a high-cost system to construct and operate. The second approach is usually applied to deep systems with high maximum hydrostatic pressures. In these cases, a MAOP is selected that is moderately higher than the maximum operating pressure for the system yet at a level that the required piping equipment is economical in cost.

For BP33 underground, it is recommended the second approach is taken. The recommended MAOP of the system is defined, with burst pipes employed as described in Section 8.7.9.

8.7.2 SRCP Pipe Design

Steel reinforced composite polyethylene (SRCP) pipe is now replacing steel pipe in most modern paste fill system designs. It provides all the benefits of high density polyethylene (HDPE) pipe in terms of its resistance to corrosion, low weight (half to a third the weight of Schedule 80 steel pipe), and a small amount of flex allowing significantly faster install rates compared to steel.

SRCP is constructed with an inner layer of HDPE covered with cross helically wound layers of steel wire and covered with a protective layer of HDPE. Both sides of the layer of steel wire are coated with an adhesive to bond the polyethylene to the metal. Figure 8.7 shows the process of winding the steel wires around the pipe. The number and diameter of the steel wires is modified depending on the pipe pressure rating.

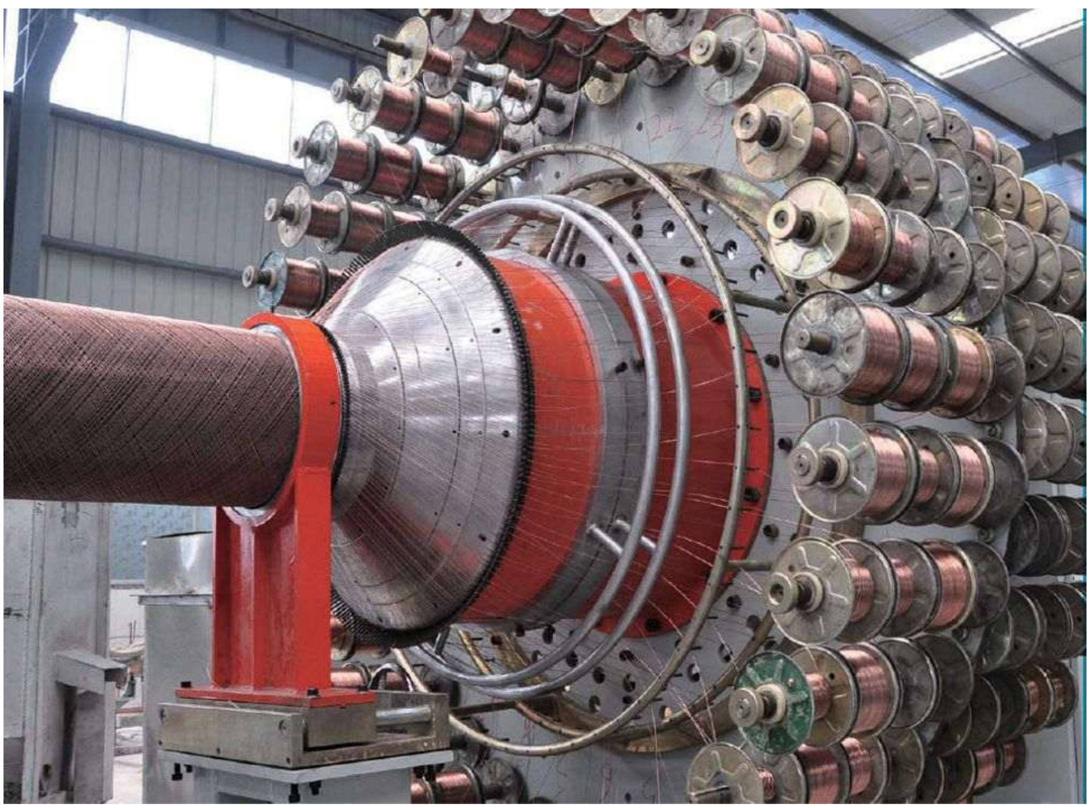


Figure 8.7: Manufacture of SRCP

As outlined in (Backfill Pipeline Solutions, 2024), in a similar way to normal HDPE pipe, SRCP is derated with increasing temperatures. For underground SRCP, typically 30°C (the temperature when fluid is flowing through the pipes and not the ambient mine temperature) is used as the design temperature resulting in a MAOP of 10,440 kPa and is therefore suitable for the BP33 backfill system. Either long radius SRCP elbows or Victaulic cast steel elbows may be used with the SRCP pipe system.

Being internally lined with polyethylene, the SRCP wear rates in a full flow paste system are very low. However, it is recommended that the SRCP be periodically inspected for wear. If the internal layer of HDPE has worn through, then the pipe section shall be replaced.

8.7.3 Pipeline Specification

As discussed in Section 8.4, the flow velocity range for the BP33 reticulation system is targeted around 2.0 – 2.2 m/s. With consideration to achieving the target flow velocities, Table 8-2 presents suitable pipe materials and the respective flow velocity that is achieved at 75 m^3/h paste production.

Table 8-2
Pipe Material and Flow Velocity

Pipe Material	Location	Inside Diameter (mm)	Flow Velocity @ 75 m^3/h (m/s)
125 NB Schedule 120 Carbon Steel	Borehole	115.9	1.98
140 OD 12.0 MPa SRCP	Main Trunkline	110.0	2.19
DN140 SDR 11	Stope Piping	114.0	2.04

8.7.4 Pipe Coupling Selection

Victaulic HP-70ES couplings, which have a pressure rating of 13,800 kPa, are used throughout the entirety of the steel/SRCP piping extents. For transitioning from SRCP to HDPE, Victaulic 907 couplings are recommended. For the HDPE piping sections, Victaulic 995 or 905 couplings are recommended. The 995 couplings are more suited to backfill application as they are a "hugger" type coupling whereas the 905 uses a serrated metal ring which cuts into the HDPE and is not as easy to reuse as the stope piping is moved throughout the mine.

8.7.5 Boreholes

Lining of boreholes is recommended where poor ground conditions exist, which includes both the surface to underground and interlevel underground boreholes. However, where ground conditions are suitably competent no lining is recommended. For unlined boreholes a collar and toe pipe are grouted in place to adapt to the pipework.

8.7.6 Stope Piping

HDPE piping is recommended to be used at the end of the reticulation piping into the stopes. DN140 SDR 11 (PN16) is selected to match the internal diameter of the other pipes in the system. With a 30°C derating, the SDR 11 pipe has a MAOP of 1,392 kPa.

8.7.7 Pipeline Instrumentation

Pressure transducers are recommended in horizontal piping on levels with friction loops. A flow meter at the bottom of each surface borehole from the plant provides real-time indication of the system flowrate.

The purpose of the instrumentation includes:

- Allowing the engineer to update flow modelling after collecting friction loss data;
- Giving the operator an indication of what is happening based on pipeline pressures relative to other transducers;
- Alarming the operator in the case of abnormal conditions with unexpected high or low pressure or flow; and
- Enabling the operator to determine the location of a problem within the underground distribution system.

Two transducers in series are recommended at the bottom of the surface boreholes from the paste plant at about 100 m apart. They are used to monitor the surface borehole paste level and calculate friction loss in the pipework as noted above.

8.7.8 Blockage Clearance Systems

Two systems are recommended for cleaning a plugged pipeline:

- Dump valves; and
- Blast spools or yank tees.

Dump valves provide a mechanical means of opening the piping system to discharge the contents to a dump sump underground. A variety of dump valves are available for this application at a range of price points and functionality. For the BP33 underground reticulation application, a multi-port valve such as the Victaulic 725T as shown below in Figure 8.8 is recommended. These valves provide a zero dead-zone valve with multiple ports that can be configured to dump and divert all in the one valve.

Considering the need to change between filling on level, to an interlevel borehole, or to a dump sump, the dump valve can be used to achieve all three at the bottom of the surface borehole and all borehole nodes. These valves may also be provided as 48 V which incorporates an integrated battery backup as another level of risk mitigation so the valve may still be actuated at the underground valve local control panel in the event of loss of power or communications to the valve. It is recommended that a dump valve is located at the base of the main borehole.

Figure 8.8: Victaulic 725T Dump/Diversion Valve

Blast spools/blast caps (as shown in Figure 8.9) are a last form of system protection as it is difficult to replace the cap and flush the remainder of the system after blasting. As such, these should be used as a last resort. However, as this is often required in a high-pressure situation it's critical that a blast procedure be established prior to the commencement of paste fill operations.

Figure 8.9: Blast Spool

The alternate manual dump method is a yank-tee as shown in Figure 8.10. This does not require explosives and rather an IT or similar is used to break the coupling and allow the paste to be dumped.

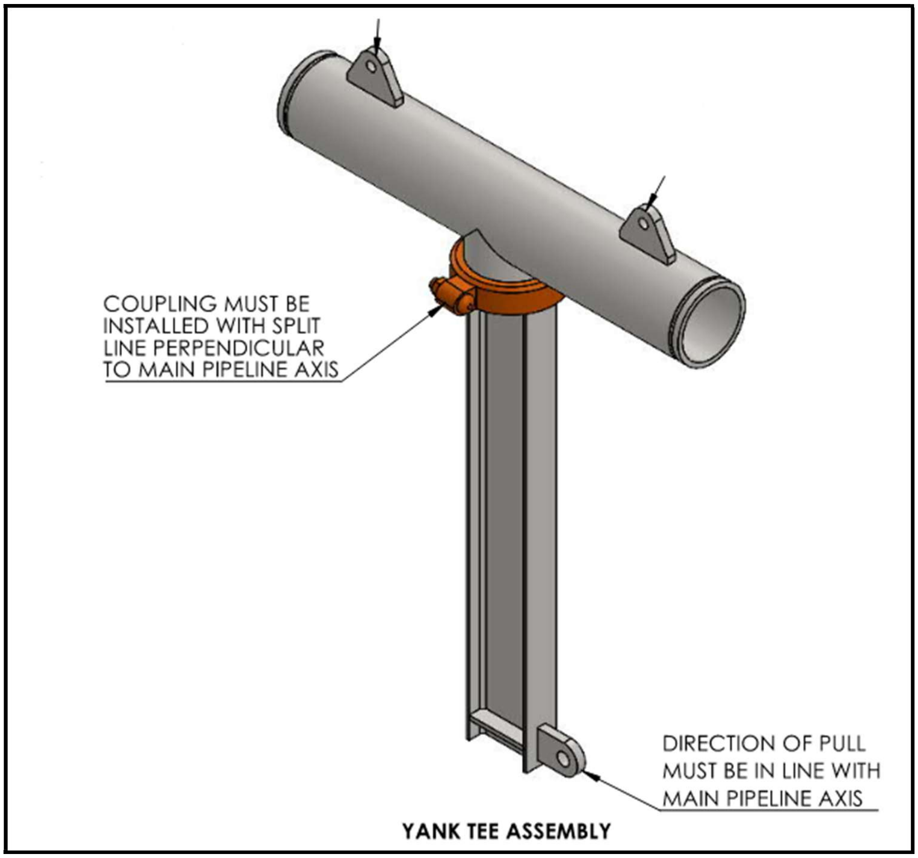


Figure 8.10: Yank Tee

8.7.9 Pipeline Protection

The pipe design philosophy followed for BP33 system specifies a MAOP for normal operating conditions. To account for a blockage scenario where pressures can exceed the MAOP, overpressure protection devices are installed to ensure any failures in the system are controlled, i.e. confined to a bunded exclusion zone. The simplest way to protect the pipeline is by using a "weak link" component capable of withstanding the normal operating pressure at its installed location but will fail at the system design pressure. The challenge with this approach is to ensure that sustained operating pressures (below the bursting pressure) fatigue the "weak link" leading to nuisance bursts at pressures below the design bursting capacity.

For the BP33 application a burst disc is recommended. A photograph showing a similar burst disc is presented in Figure 8.11.

As the operating pressures are relatively low throughout the BP33 orebody, the MAOP is 10,440 kPa and the maximum expected static pressure (including pump) is 16,200 kPa, the pipeline protection devices are not required until the mine is developed beyond 470 m Level. The locations should be investigated in the next phase of works to ensure that personnel are not exposed and the locations do not disrupt mining activities.

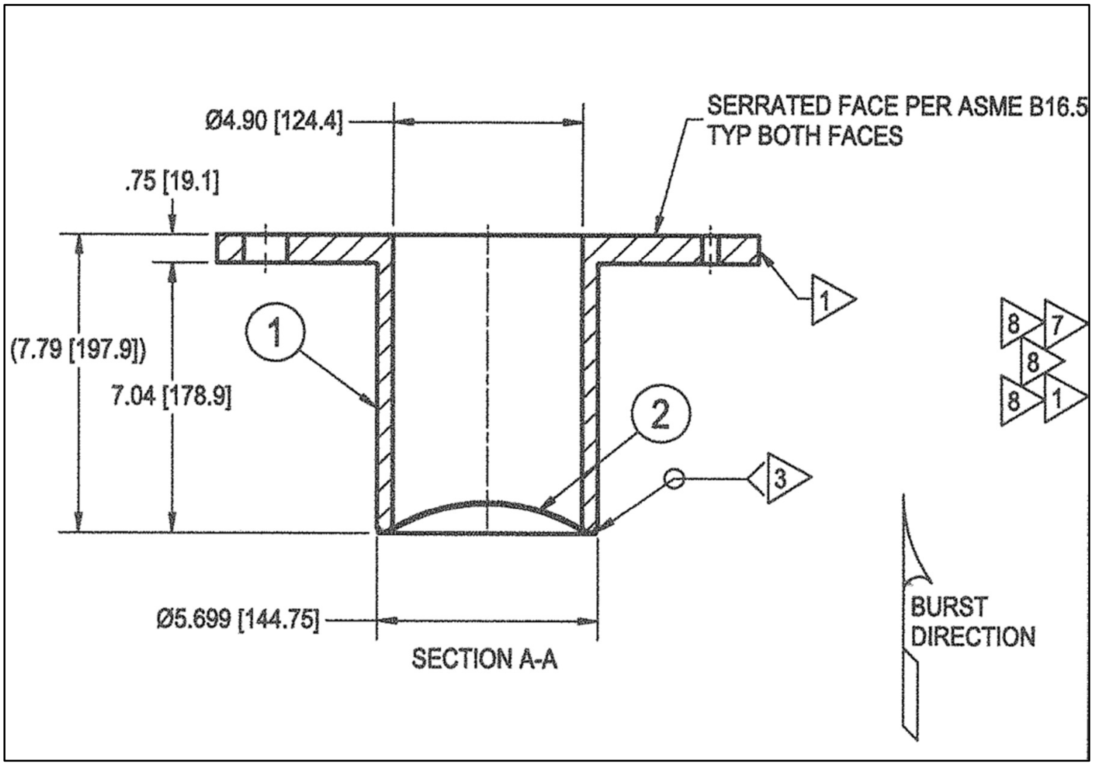


Figure 8.11: Burst Disc

The functionality of systems with burst discs require a pragmatic design as the bursting capacity, fatigue capacity and position are all important for both ensuring that the disc is not exposed to excessive (fatigue) pressures during normal operation, while ensuring that the disc bursts at a pressure that prevents the pipe system from being exposed to pressures that exceed the design rating. The proposed burst disc is recommended as they are designed to fail in buckling, meaning that the operating pressure can be closer to the bursting pressure without inducing fatigue.

Another potential solution is SRCP burst pipes as shown below in Figure 8.12. These are a suitable product for this application as they are available in a range of pressure ratings to suit most backfill systems and can be installed seamlessly into the piping system using the same Victaulic couplings as the pipework.

Figure 8.12: SRCP Burst Pipe

8.7.10 Pipe Supports

A combination of single and twin rock-anchor supports as per Figure 8.13 below are recommended for the steel/SRCP pipeline sections. Two supports per 6 m pipe are allowed for in the material take off plus some additional allowance for changes in direction and lateral support.

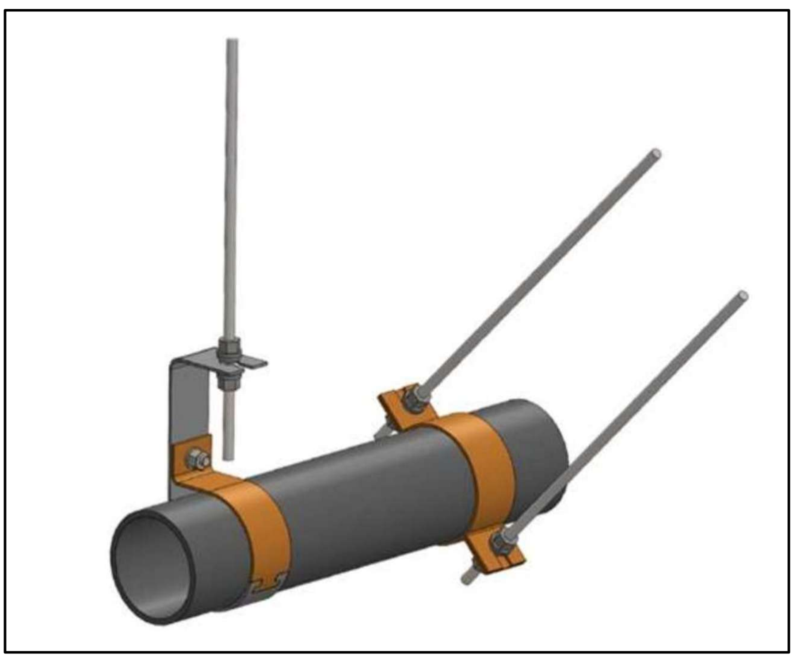


Figure 8.13: Single and Twin Rock-Bolt Pipe Supports

Chain wrapped around HDPE pipe is recommended for the HDPE stope pipe sections as it is quick and effective for both install and retrieval of the pipe in these areas.

Significant diversion forces are generated at the toe of boreholes where paste impacts the elbow. Additional supports are required in these areas and a suitably engineered solution must be applied. Allowance for these additional supports at the bottom of the two surface to underground boreholes has been included.

9. PASTE OPERATIONS

As previously described, Core's mine plan of the BP33 orebody employs an open stoping method which is mined globally top-down, with each mining panel extracted bottom-up. In this mining method, most stopes are filled from the upper level. For the sill stopes where there is generally no top access, development through the paste may occur thus creating top access, however it is likely filling will occur through blind upholes.

9.1 Stope Arrangement

Mining operations will be required to develop a set of standard practices and procedures around the arrangement of the backfilled stopes, refer to Figure 9.1. MineFill recommends the following minimum ancillaries should be installed to promote safety and efficiency around the backfill pour:

Bogging Level

- Backfill bulkheads (described in Section 9.2) designed to the requirements of the stopes;
- Mullock containment bund (catch berm);
- Restricted access signage; and
- Camera and in-stope instrumentation.

Fill Level

- Safety bund;
- Stope and warning lights;
- Fall-arrest provisions; and
- Restricted access signage.

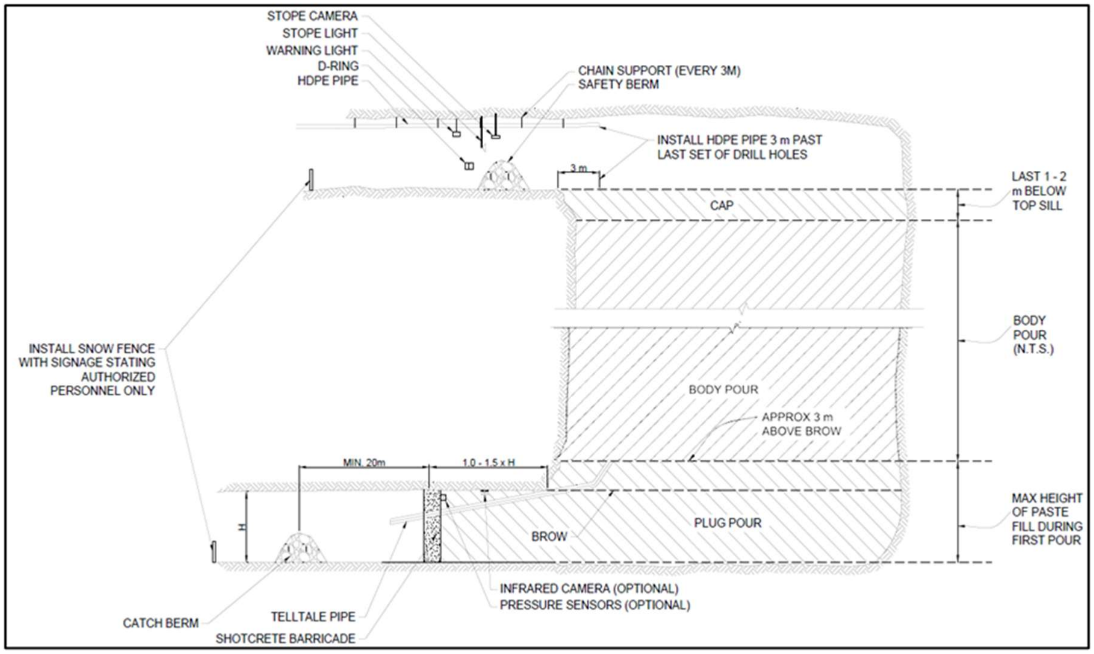


Figure 9.1: Typical Stope Arrangement With Top and Bottom Access

9.2 Backfill Bulkheads

One of the most critical designs for operation of a paste backfill system is the design of the bulkheads. Guidance on typical fill bulkhead designs is provided herein, however, detailed design is required prior to fill operations commencing.

As stopes are accessed from the extents of each level, a backfill bulkhead is placed at the draw point. Two bulkhead options are presented in the next section as well as their benefits based on operations and equipment availability.

9.2.1 Shotcrete/Fibrecrete Bulkhead

The use of an arched shotcrete/fibrecrete bulkhead is the most common paste fill bulkhead type. These bulkheads are designed to withstand between 150 and 300 kPa of lateral pressure and generally exhibit excellent performance in paste applications.

The bulkhead should be located well within the mucking drift. A general rule of thumb is to locate the mid-point of the arched bulkhead a distance of 1.5 times the drift height from the brow. The bulkhead can be located closer to the brow but will require a hazard assessment or remote placement for operator safety.

Figure 9.2: Stages of Construction of a Shotcrete Barricade

A typical shotcrete/fibrecrete bulkhead is constructed as follows (refer to Figure 9.2):

- Assembly of pre-fabricated steel arches.
- Installation of wire mesh tied to the steel frame.
- Installation of geotextile to cover the wire mesh.
- Install second layer of wire mesh to enclose the burlap/geotextile.
- Install depth markers for the fibrecrete.
- Apply fibrecrete to the recommended minimum thickness.

The final design of the shotcrete/fibrecrete bulkheads should consider the rate of rise of the backfill within the stope and how critical stope turnover is to the mining schedule.

9.2.2 Waste Rock

An alternate bulkhead is one constructed from waste rock (Figure 9.3). These bulkheads can be constructed quickly and require little labour. They are however typically not employed in narrow stoping operations, since the bulkheads only have a limited load capacity, and they place an excessive restriction on filling.

Waste rock bulkheads provide containment due to the self-weight of the fill material in the muck pile. The interaction between the floor and sides of the access cross-cut and the muck pile creates a resistance to sliding. Waste rock bulkheads are thus designed to prevent sliding. Typical waste rock bulkheads are made from run of mine development and packed using the underground bogger. This allows for the material to be compacted as well as placed as tightly to the back as possible.

The most common issue is the difficulty in achieving a tight seal at the back contact and hence leakage of paste over the muck pile (see Figure 9.3). Most mines address this issue by providing some sort of capping on top of the muck pile. This capping can be constructed with timber, bricks, mortared waste rock blocks, sandbags, and even wire mesh. Shotcrete is then applied to the capping and to the perimeter to seal the interface between bulkhead and the drift, sill and back.

Figure 9.3: Timber Fence (Left) and Waste Rock Fence with Timber Cap (Right)

The use of a waste rock bulkhead mandates the need for a paste plug pour since this type of bulkhead is not designed to withstand the full hydrostatic loading of a stope filled with paste. Once the paste plug attains the design strength to isolate the bulkhead from the bulk paste pour and the remainder of the stope can be filled with paste.

A typical waste rock bulkhead can be constructed in a single shift with a 2-man crew. Benefits to the use of waste rock bulkheads is low cost and quick construction. Waste rock material can be reused as much as practically possible. An operational difficulty with waste rock bulkheads is the dedication of a dump truck/bogger to tram the waste material into place and remove the material once the next stope in sequence is ready to be mined. Due to the large size of waste rock bulkheads, cycle time and the mining of the slot in the adjacent stope can become impacted with removal of the bulkhead.

9.3 Exclusion Zones

A key step in understanding the exclusion zone requirements for BP33 (and hence paste strength requirements) is to understand the paste strength development and consideration of any containment bunds, exclusion zones and/or other forms of physical separation used to manage exposure of personnel to the hazard of mine fill egress into the workings, *Item 2.2 and 7.9* (Government of Western Australia, 2016).

For this phase of the study, it is recommended exclusion zones are designed to contain all paste fill that is less than 100 kPa. Given the proposed lower paste fill strength target at 28 days is 800 kPa (as discussed in Section 6.3), this results in favourable conditions with managing the exclusion zones. The minimum paste strength of 100 kPa is expected after 24 hours, and therefore at the proposed fill rate of 75 m^3/h, it is recommended that the exclusion zone is designed to contain 1,800 m^3 of fill. Given the standard drive is 5 m x 5 m, a 72 m exclusion zone is required. In detailed design, further assessment and detailed engineering of bulkheads and exclusion zones is recommended.

9.4 Video/CCTV and in Stope Monitoring

The use of mine communications has greatly developed in the recent years allowing surface operations to fully monitor paste backfill pours from the paste plant control room. In addition, improvement in technology has allowed regular real-time monitoring of the in-situ stope conditions. This allows a much safer approach to maximise filling rates and also results in a significant improvement and ownership of the in-stope filling efficiency and safety from the paste plant operators.

Figure 9.4: Camera Setup for Bulkhead Monitoring

10. FINANCIAL ANAYLSIS

10.1 Capital Cost Estimate

The capital cost estimate (CAPEX) is provided to an accuracy of ±25% and the full breakdown can be found in Appendix F.

Table 10-1 below shows the CAPEX from the Rev C design in Australian dollars. The detailed estimate is included in Appendix F.

Table 10-1
Capital Cost Estimate Rev C (AU$)

Description	Paste Plant @ 75m^3/h
Engineering	$895,000
Procurement	$11,870,629
Construction	$6,014,589
Total EPC Costs (Surface Infrastructure)	**$18,780,217**
Project Indirects	$2,682,783
Total Surface Plant Costs	**$21,463,000**
Boreholes	$540,000
Underground Capital Piping and Equipment Including Installation	$842,184
Total Paste Distribution Costs	**$1,382,184**
Backfill System Total (± 25%)	**$22,857,184**

10.1.1 Estimating Methodology

The capital estimate includes all the major process equipment including the mechanical equipment, air and water services, electrical, piping, automation, and the start-up costs for backfill delivery.

Detailed engineering, freight, commissioning, first fluid fills, commissioning spares, and EPC fees are included.

The plant equipment and construction costs in the capital estimate were derived from recent vendor quotations and recent construction of similar plants by MineFill. The detailed cost breakdown is contained in Appendix F.

The estimate also includes paste reticulation to the underground for the first year of operation, including all required infrastructure; the paste piping and couplers, boreholes, bracing and pipe supports, valving, instrumentation, control boxes and installation.

The capital estimate does not include:

- Geotechnical works;
- Bulk earthworks for the plant, overland pipeline corridor, and site grading/access roads;
- Any underground civil works, excavations or service audits, except capital paste boreholes;
- Any underground development for the surface paste boreholes;
- On-site accommodation and messing;
- Allowance for taxes and duties; and
- Permitting.

The capital cost estimate does not contain any contingency or Owners costs and is provided to an accuracy of ±25%.

10.2 Operating Cost Estimate

The operating cost estimate (OPEX) for the paste backfill system is summarised in Table 10-2 and provided to an accuracy of ±15%. This includes personnel, binder, transportation and underground crew. The full breakdown for operating costs can be found in Appendix G.

Table 10-2
Paste Fill Operating Costs

Area	Paste Fill Operating Cost
Surface Activities	**$34.81 / m^3**
Fixed Costs	$1,292,368
Variable Costs	$13,325,804
Underground Activities	**$7.25 / m^3**
Fixed Costs	$1,945,680
Variable Costs	$1,101,000
Total Operating Cost - Annual	**$22,704,852**
Total Operating Cost - $/m^3	**$42.06 / m^3**

Binder accounts for over 54% of the operating cost, with the average binder cost over the LOM $22.99/m^3. The cost of binder for the high and low strength targets (as discussed in Section 6.3), result in $32.77/m^3 and $19.53/m^3, respectively.

The surface paste production OPEX is estimated at AU$34.81/m^3. The underground paste production OPEX cost is estimated at AU$7.25/m^3.

The total OPEX cost is AU$42.06/m^3 ±15% of paste.

The operating cost estimate has been developed with the following assumptions:

- OPEX is based on average annual fill volume of 420,000 m^3.
- Cost of backhauling reject tailings stream was provided by Core.
- All labour resources are input based on estimated labour rates provided by Core.
- Personnel costs are all-in costs.
- Training and management allowance is included to cover ad hoc engagement of external training/consulting services for the paste system.
- Variable costs and underground installation equipment are based on information from MineFill's data library.

Surface operational costs include all labour required to operate and maintain the paste system. All inputs to the plant are included; power, water and cement. Plant wear, spare parts and paste QAQC consumables are allowed for in the operational calculation.

The underground distribution costs allow for periodic replacement of borehole casing, piping, supports and couplers, interlevel and stope boreholes, and stope barricades. Cost for replacement boreholes is noted on a dollar per cubic metre of backfill placed. The underground labour costs include paste crew for the construction of bulkheads, maintaining and extending the paste distribution piping.

11. STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS ANALYSIS

A strengths, weaknesses, opportunities and threats (SWOT) analysis was undertaken for paste fill and the analysis is presented in Table 11-1.

Table 11-1
Paste Fill SWOT Analysis

Strengths	Weaknesses
▪ Engineered fill solution that meets the mass balance requirements and mine design. ▪ Majority of Slimes is used in paste, reducing the quantity of Slimes reporting to TSF. ▪ Robust solution with addition of pump to reduce potential wear in the underground reticulation system. ▪ Ability to tight fill stopes.	▪ Blending of three material streams - making operation more complex and more controls required. ▪ Backhauling rejects material using ore trucks requires extra screening / material handling.
Opportunities	**Threats**
▪ Potential to investigate minimum Slimes content required to manufacture paste fill to de-risk Slimes mass balance. ▪ Maximise Slimes usage to reduce quantity of Slimes reporting to TSF.	▪ Any issues with the manufacture of Slimes has potential to delay filling. ▪ Paste plant down time due to unforeseen issues could create temporary mass balance concerns. ▪ Potential for stockpile contamination due to backhauling using ore trucks and/or placing material into incorrect stockpile.

12. IMPLEMENTATION SCHEDULE

It is estimated that the paste system presented will take 12-14 months to complete.

13. CONCLUSIONS AND RECOMMENDATIONS

This report details the paste fill pre-feasibility study to meet the monthly fill requirement of 35,000 m^3 at Core's BP33 underground mine. To meet the backfill demand, 75 m^3/h of paste fill is required based on a 24-hour operation.

Paste fill can be manufactured using the ratio of 50% ultrafine rejects / 41% undersize rejects / 9% Slimes, with the Slimes portion being a critical factor in the design. Paste fill can only be manufactured using the -10 mm processing scenario as insufficient Slimes are available in the -14 mm processing scenario.

The Slimes are transferred at Grants from the thickener to a 1,000 m^3 agitated storage tank. The Slimes are pumped ~8.8 km to a 2,000 m^3 agitated storage tank at BP33. One of the main risks to the paste fill operation is usage and availability of Slimes, hence the large storage volumes decrease this risk and enable consistent Slimes supply. During paste filling, slightly more Slimes are used than instantaneously produced from the Grants processing plant. The large storage tanks assist with the mass balance required to meet the life of mine backfill demand.

With the paste mix design being quite coarse, it does increase the risk of material build-up in the reticulation system over time due to settling. To mitigate this, a nominal pipeline velocity of >2 m/s is targeted. This reduces the risk of settling yet the velocity is not too high to generate excessive friction losses. The reticulation system is designed with SRCP pipe. SRCP is effectively high-pressure poly pipe and provides significant safety and cost benefits through increased ease of installation. For the overland sections of the paste system the cost savings are very large compared to the requirements of a surface steel pipeline.

The capital cost for the proposed paste plant is AU$21.46 M ±25% with a further AU$1.38 M for the underground distribution system. This results in the total cost of AU$22.86 M ±25% for the full EPC turnkey solution. The capital costs comprise the paste plant facilities including tailings transport and ancillary equipment required to deliver paste to the underground stopes. Surface and underground reticulation material and installation costs are also included for nominally the first year of filling.

The total OPEX cost is AU$42.06/$m^3$ ± 15% of paste. Binder accounts for 54% of the operating costs.

It is recommended that future investigations consider:

- Investigate the minimum Slimes content required to manufacture a suitable paste fill product. This solution will likely prove more cost effective than the use of additives.

14. REFERENCES

Backfill Pipeline Solutions. (2024). *Paste System Design with 12 MPa SRCP 150 NB System.* BPS-TA16.

Government of Western Australia. (2016). *Underground Mine Fill Audit - Guide.*

MineFill. (2025). *25042-RPT-0001_r0 Core Lithium Backfill Options.*

Appendices

Appendix A
Design Criteria

MINEFILL SERVICES	**CORE LITHIUM LIMITED** **PASTE FILL** **DESIGN CRITERIA**		
		Originated	S. McGrath
		Approved	M.Revell
		Date	28/09/2025
		Document No.	25042-DCR-0001
		Revision	B

Description	Value	Unit	Source	Comments
Site Conditions				Site conditions were taken from:
Altitude		mAMSL		As per Primero dcoument '23902-DSH-GE-0001
Temperature				
Highest Monthly Mean	33.3	deg C	CL	
Lowest Monthly Mean	19.3	deg C	CL	
Highest Maximum	38.9	deg C	CL	
Lowest Minimum	18	deg C	CL	
Mean Relative Humidity				
Minimum	37	%	CL	
Maximum	83	%	CL	
Yearly Average Rainfall	1730	mm/y	CL	
Wind (AS1170)				
Wind Design Velocity	88	m/s	CL	
Terrain Category	2		CL	
Prevailing Direction	D		CL	
Overview				
Life of Mine	8	years	CL	Approximately
Mine Operation	365	d/y	CL	
	24	h/d	CL	
Number of Shifts	2	per day		
Shift Length	12	hours		
Mill Operating Hours	8059	hours/year	C	
Mill Tailings Availability	92.0	%	CL	
Tailings Characteristics				
Tailings SG	2.70	t/m^3	T	All tailings streams
Ultrafine Rejects Available (-3.35mm / +0.64mm)	3,074,850	t	CL	LOM
Undersize Rejects Available (-0.64mm / +0.045mm)	2,172,060	t	CL	LOM
Slimes Available (-45 µm)	536,311	t	CL	LOM
Tailings Streams pH	7		T	
Raw Water Characteristics				
pH Range	6.4		T	
Temperature Range	< 25	deg C	A	
Specific Gravity	1.00	t/m^3	T	
Electrical Conductivity	122	mS/m	T	
Total Dissolved Solids	100	mg/L	T	
Total Suspended Solids	<5	mg/L	T	
Chloride	6	mg/L	T	
Sulphate	<1	mg/L	T	
Binder Material Properties				
Binder Used	Low Heat	-	T	
Material SG	3.16	t/m^3		
Bulk Density (maximum) - for loading calcs	1.3	t/m^3		
Bulk Density (minimum) - for volumetric calcs	1.1	t/m^3		
Underground				
Underground Ore Production	1,200,000	tpa	CL	
Paste Fill Requirement	420,000	m^3/a	CL	35,000 m^3/month
Monthly Paste Fill Required	35,000	m^3/mo	CL	
Refill Volume	98	%	A	
Annual Paste Fill Required	411,600	m^3/a	C	
High Strength Backfill Required	26	%	CL	684,312 m^3 @ 1,500 kPa (Provided by Core - completed by Others)
Low Strength Backfill Required	74	%	CL	1,933,847 m^3 @ 800 kPa (Provided by Core - completed by Others)
Paste Plant Design Utilisation	63	%	C	
Backfill Requirement				
Paste Fill Plant Design	75	m^3/h	E	
BP33 Mine Stopes				
Min Stope Length Along Strike	4	m	CL	
Max Stope Length Along Strike	40	m	CL	
Min Stope Width Across Strike	20	m	CL	
Max Stope Width Across Strike	20	m	CL	
Min Stope Height	15	m	CL	
Max Stope Height	45	m	CL	
Average No. of Stopes to be Filled Per Annum	20	no.	C	
Average No. of Barricades Per Stope	1.5	no.	C	2 for Primary, 1 for Tertiary

MINEFILL SERVICES	CORE LITHIUM LIMITED PASTE FILL DESIGN CRITERIA	Originated	S. McGrath
		Approved	M.Revell
		Date	28/09/2025
		Document No.	25042-DCR-0001
		Revision	B

Description	Value	Unit	Source	Comments
Fill Production	**Paste Fill**			
Fill Production Method - Slimes pumped + fine aggregates loaded into hoppers				
Ultrafine Rejects (-3.35mm / +0.64mm)	50	%	T	
Undersize Rejects (-0.64mm / +0.045mm)	41	%	T	
Slimes (-45 μm)	9	%	T	
Ultrafine Rejects (-3.35mm / +0.64mm) - Solids Content	97	%	CL	
Ultrafine Rejects (-3.35mm / +0.64mm) -To Backfill Plant	58	tph (solids)	C	
Undersize Rejects (-0.64mm / +0.045mm) - Solids Content	95	%	CL	
Undersize Rejects (-0.64mm / +0.045mm) -To Backfill Plant	48	tph (solids)	C	
Slimes (-45 μm) - Solids Content	35	%	CL	
Slimes (-45 μm) - To Backfill Plant	10	tph (solids)	C	
Vortex Mixer Slimes Addition	10	tph (solids)	C	
Vortex Mixer Slimes Addition Solids %	35.0	% solids	CL	
Fill % Solids - by mass	80.0	% solids	T	
Fill SG	2.02	t/m^3	T	
Paste Fill Dry Density	1.62	t/m^3	C	
Water Contained in Fill	30.3	m^3/h	C	
Paste Throughput	75.0	m^3/h	C	
Fill Plant Runtime	24	h/d	E	
Fill Plant Availability	80	%	E	
Max Fill Rate (daily)	1,797	m^3/d	C	
Material Placed Underground (wet)	3,636	tpd	C	
Range in Binder %				
High Strength Fill (dry w/w)	6.1	%	T	Low Heat
Low Strength Fill (dry w/w)	3.7	%	T	
Average Binder Usage as % of Fill	4.3	%	T	
Binder Consumption (average)	5.2	tph	C	$75m^3/h$ @ 4.3% Binder
Binder Consumption (average)	28,980	tpa	C	69 kg/m^3
	2,415	t/month	C	
	345	t/week	C	
Fill Flowrate	75.0	m^3/h	CL	
Borehole Casing Size (ID)	115.9	mm	C	125NB Sched 120
Velocity in Borehole	1.97	m/s	C	
Underground Reticulation (ID)	110.0	mm	C	140OD 12MPa SRCP
Pipeline Velocity	2.19	m/s	C	

Legend	
Assumed	A
Calculated	C
Client advised	CL
Engineer experience	E
Not applicable	NA
Previous Studies	PS
Testwork	T
To be advised (Site Specific)	TBA
Vendor advice	V

Appendix B
Mass Balance

MINEFILL SERVICES

CORE LITHIUM LIMITED
PASTE FILL MASS BALANCE
9% Slimes / 41% Undersize Rejects (-0.64mm/+0.045mm) /
50% Ultrafine Rejects (-3.35mm/+0.64mm)

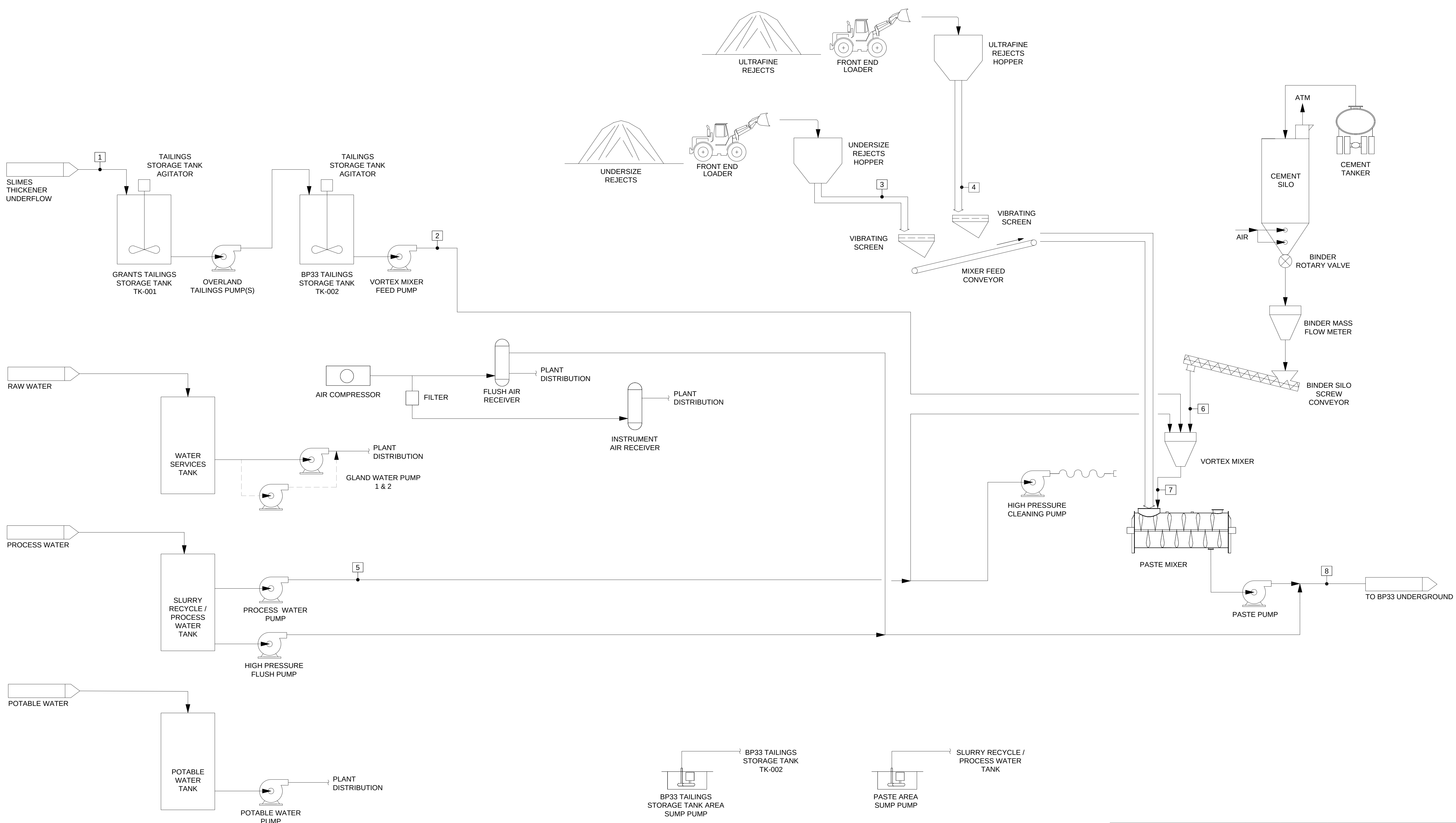
Originated	S.McGrath
Approved	M.Revell
Date	29/09/2025
Document No.	25042-MBL-0001
Revision	B

Stream No.		1	2	3	4	5	6	7	8
Stream Name	Units	Slimes Transfer to BP33 (-0.045mm)	Slimes Used for Paste (-0.045mm)	Undersize Rejects (-0.64mm / +0.045mm)	Ultrafine Rejects (-3.35mm / +0.64mm)	Water Addition	Dry Cement (4.3%)	Vortex Mixer (Slimes + Binder + Water)	Paste
Solids	t/h	7.4	10	48	58	0	5.2	16	121
Solids Content	wt%	35.0%	35.0%	95.0%	97.0%	0.0%	100.0%	37.6%	80.0%
Water	t/h	14	19	3	2	6.6	0	26	30
Solids SG	t/m^3	2.70	2.70	2.70	2.70	1.00	3.15	2.85	2.72
Water SG	t/m^3	1.00	1.00	1.00	1.00	1.00	0	1.00	1.00
Pulp SG	t/m^3	1.28	1.28	2.49	2.57	1.00	3.15	1.32	2.02
Solids Flow	m^3/h	3	4	18	21	0	2	5	45
Water Flow	m^3/h	14	19	3	2	7	0	26	30
Pulp Flow	m^3/h	17	23	20	23	7	2	31	75
Pulp Mass	t/h	21	30	50	60	7	5	42	151

Client Data

From Testing

Appendix C
Process Flowsheet



MINEFILL SERVICES
www.minefill.com

DRAWN	JF
SCALE	NTS
CHECKED	SM
UNITS	mm
EQUIPMENT NUMBER	
CLIENT DRAWING NUMBER	
CLIENT	CORE LITHIUM LIMITED
PROJECT	BP33 UNDERGROUND

DRAWING TITLE

PROCESS FLOW DIAGRAM
BP33 PASTE PLANT

SIZE	SHEET	DRAWING No.	REVISION
A1	1 / 1	25042-PFD-0001	A

REVISIONS

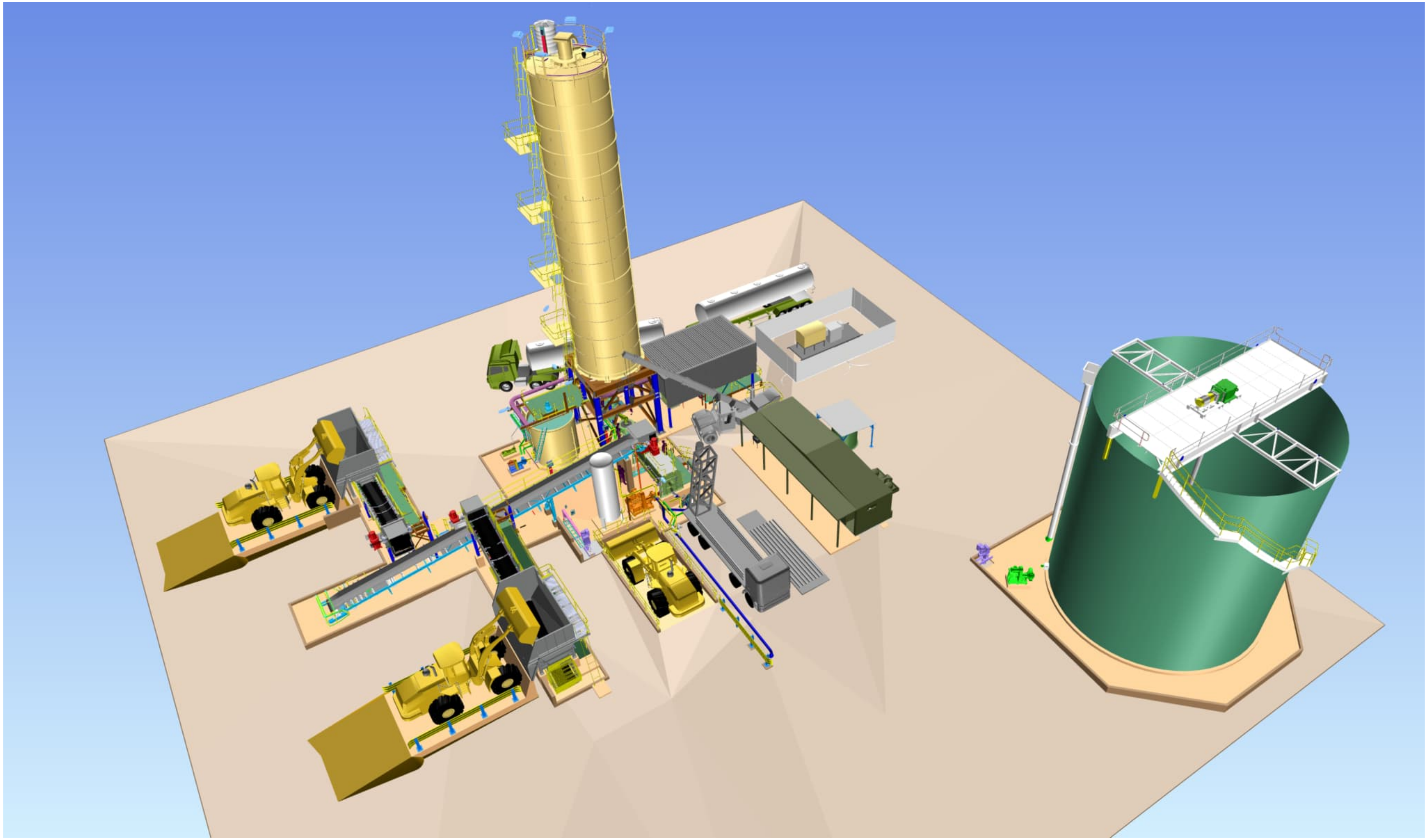
REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
A	24/09/2025	ISSUED FOR PRELIMINARY FEASIBILITY STUDY	JF	SM	

REFERENCES

DOCUMENT NO.	TITLE

Appendix D
General Arrangement Drawings

FILE PRINTED ON 02/10/2025 BY JASON F USING AutoCAD 2024 VERSION T.53.0.0 (UNICODE)



PASTE PLANT - ISOMETRIC

REFERENCES		
	YYxxx-GAD-0095	GENERAL NOTES
	DOCUMENT NO.	TITLE

REVISIONS

REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
A	01/10/2025	ISSUED FOR PRELIMINARY FEASIBILITY STUDY	JF	SM	MR

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DRAWN	JF
CHECKED	SM
SCALE	NTS
UNITS	mm
EQUIPMENT NUMBER	
CLIENT DRAWING NUMBER	
CLIENT	CORE LITHIUM LIMITED
PROJECT	BP33 UNDERGROUND
DRAWING TITLE	BP33 PASTE PLANT PLANT ISOMETRIC
SIZE	A1
SHEET	1 / 1
DRAWING No.	25042-GAD-0030
REVISION	A

CAD FILE LOCATION \Box\Projects\25042 Core Lithium PFS\004 Drawings\10 Plant Layout\Markups for next revision\25042-GAD-0030-A.dwg

Appendix E
Mechanical Equipment List

MINEFILL SERVICES

CORE LITHIUM
BP33 PASTE FILL PLANT
MECHANICAL EQUIPMENT LIST

Originated	Mat Revell
Approved	Richard Pearce
Date	3/10/2025
Document No.	25042-LST-0001
Revision	B

Equipment No. Area	Equip.	No.	Equipment Title	Make	Installed Motor Power (kW)	Starting Type	Comments
			GRANTS & OVERLAND TAILINGS TRANSFER				
80	AG	001	Tailings Storage Tank Agitator	Lightnin	55	DOL	
80	TK	001	Tailings Storage Tank	MineFill Services	-	-	
80	PU	001A	Overland Tailings Transfer Pump A	Weir Minerals	37	VSD	
80	PU	001B	Overland Tailings Transfer Pump B	Weir Minerals	37	VSD	
80	PU	001C	Overland Tailings Transfer Pump C	Weir Minerals	37	VSD	
80	PU	002A	Overland Tailings Transfer Pump Stand-By A	Weir Minerals	37	VSD	
80	PU	002B	Overland Tailings Transfer Pump Stand-By B	Weir Minerals	37	VSD	
80	PU	002C	Overland Tailings Transfer Pump Stand-By C	Weir Minerals	37	VSD	
85	PU	003A	Paste Plant Supply Gland Water Pump Stage 1	Grundfos	3	VSD	
85	PU	003B	Paste Plant Supply Gland Water Pump Stage 2	Grundfos	3	VSD	
85	PU	003C	Paste Plant Supply Gland Water Pump Stage 3	Grundfos	3	VSD	
			TAILINGS				
100	AG	001	Tailings Storage Tank Agitator	Lightnin	75	DOL	
100	TK	001	Tailings Storage Tank	MineFill Services	-	-	
100	PU	001	Vortex Mixer Feed Pump	Weir Minerals	7.5	VSD	
			PASTE MODULE				
100	BN	001	Ultrafine Rejects Feed Hopper	MineFill Services	-	-	Fabricated with UHMWPE liner
100	BN	002	Undersize Rejects Feed Hopper	MineFill Services	-	-	Fabricated with UHMWPE liner
100	CV	001	Ultrafine Rejects Feeder	MineFill Services	22	VSD	Belt feeder
100	CV	002	Undersize Rejects Feeder	MineFill Services	22	VSD	Belt feeder
100	CV	003	Paste Mixer Feed Conveyor	MineFill Services	15	DOL	
100	MC	001	Paste Plant 415V Motor Control Centre		-	-	
100	MX	001	Paste Mixer	MC^2	132	S/S	
100	PU	002	High Pressure Cleaning Pump	Karcher	-	INT	240 V Plug In in Field
100	PU	003	Mixer Discharge Pump	Weir Minerals	200	VSD	-
100	PU	004	Mixer Discharge Pump Gland Water Pump	All Pumps	3	DOL	-
100	WS	001	Ultrafine Rejects Weightometer	Dynamic Weighing	-	-	
100	WS	002	Undersize Rejects Weightometer	Dynamic Weighing	-	-	
			BINDER STORAGE AND METERING				
100	BN	003	Binder Silo	Euromecc	-	-	
100	DC	001	Binder Silo Dust Collector	WAM	-	-	24V DC Reverse Pulse
100	FD	001	Binder Silo Screw Conveyor	WAM	7.5	DOL	
100	FM	001	Binder Mass Flow Meter	Schenck	1.1	DOL	
100	MX	002	Vortex Mixer	MineFill Services	-	-	150 NB Outlet
100	RV	001	Binder Rotary Valve	Rotaval	1.5	VSD	
			AUXILIARIES MODULE				
100	AG	002	Slurry Tank Agitator	Mixtec	5.5	DOL	Single blade agitator
100	BI	001	Control Room, Laboratory and Ablutions	Ausco	-	-	
100	BI	002	Switchroom	Custom	-	-	
100	CM	001	Air Compresor	Atlas Copco	45	FEED	
100	PU	005	Hose Up Pump	Southern Cross	7.5	DOL	65 m TDHw at 12 m3/hr, End Suction, 217 mm impellor
100	PU	006	Mixer Feed Pump (Slurry)	Weir Minerals	15	VSD	
100	PU	007	Mixer Area Sump Pump	Weir Minerals	11	DOL	
100	PU	008	Tailings Storage Tank Area Sump Pump	Weir Minerals	11	DOL	
100	PU	009	Paste Plant Gland Water Pump	Grundfos	3	DOL	
100	PU	010	Potable Water Pump	Davey	1.6	DOL	
100	PV	001	Plant Air Receiver	Atlas Copco	-	-	1,100 kPa 6,170 mm High, 1,770 mm PCD
100	SF	001	Binder Silo Safety Shower	Pratt Safety Systems	-	-	3 l/s
100	TK	002	Slurry & Process Water Tank (Fabricated Steel)	MineFill Services	-	-	Fabricated 3 m diameter x 3.218 m high
100	TK	003	Septic Holding Tank	MF Portables	-	-	
100	TK	004	Potable Water Tank	Bushmans	-	-	Located on Binder Silo Structure
100	GE	01	Essential Power Genset	GenPower	-	-	100-AG-001 Back-up power
				TOTAL	**872**		

Appendix F
Capital Cost Detailed Estimate

MINEFILL SERVICES		Core Lithium BP33 Paste Fill Paste System CAPEX (± 25%)				Originated Approved Date Document No. Revision		S. McGrath M.Revell 7/10/2025 25042-BDG-0001 C

Ref. No	Description	Specification	Quantity	Units	Unit Cost (AU$)	Total Cost (AU$)
1.00	***Engineering + Indirects + Logistics***					
1.10	Paste System Engineering		1	lot	$895,000	$895,000
1.11	EPCM Fee		15%	ea	$2,682,783	$2,682,783
					Subtotal Engineering	**$3,577,783**
2.00	***Procured Items***					
2.10	**Grants, Overland and Tailings**					
2.11	Tailings Storage Tank + Agitator	Grants - 1,000m³	1	ea	$727,220	$727,220
2.12	Overland Pumps	3/2	6	ea	$40,000	$240,000
2.13	Overland Pipework (Inc. install)	3.5 MPa SCRP	8,800	m	$175	$1,155,000
2.14	Gland Water Pumps	CR1-36	3	ea	$4,000	$12,000
2.15	Tailings Storage Tank + Agitator	BP33 - 2,000m³	1	ea	$1,081,000	$1,081,000
2.20	**75 m³/h Paste Mixing Plant**					
2.21	Feed Hoppers	2 x Rejects	2	ea	$37,315	$74,629
2.22	Mixer Feed Conveyors	2 x Rejects + 1 x Central	1	lot	$242,897	$242,897
2.23	Vibrating Screens (Incl Structures)		2	ea	$869,000	$1,738,000
2.24	Vortex Mixer Pump		1	ea	$19,000	$19,000
2.25	Conveyor Ancillaries + Weightometers		1	lot	$112,584	$112,584
2.26	Paste Mixer + Head Chute	KCV8000	1	ea	$549,733	$549,733
2.27	Plant Structure & Access Ways		1	lot	$190,000	$190,000
2.28	Borehole Feed Pump System		1	lot	$243,896	$243,896
2.30	**Cement Storage & Metering**					
2.31	Cement Silo	455 m³ bolted silo	1	ea	$435,453	$435,453
2.32	Screw Conveyor		1	ea	$60,000	$60,000
2.33	Mass Flow Meter	S40	1	ea	$83,700	$83,700
2.34	Binder Rotary Valve		1	ea	$42,000	$42,000
2.35	Access Structure		1	lot	$70,000	$70,000
2.36	Vortex Mixer		1	ea	$30,000	$30,000
2.40	**Auxiliaries**					
2.41	Spillage Management System	Slurry tank + agitator + sump pump	1	ea	$210,232	$210,232
2.42	Air Compressor + Awning	GA45FF	1	ea	$49,980	$49,980
2.43	Air Receivers	10 kL plant air	1	ea	$42,668	$42,668
2.44	Process + Paste Mixer Water Pump		1	ea	$23,000	$23,000
2.45	Hose-Up Water Pump		1	ea	$6,995	$6,995
2.46	Potable Water System	Tank + Pressure Pump + Safety Showers / Eyewash	1	ea	$37,153	$37,153
2.47	Control Room and Laboratory	12x3 demountable	1	ea	$215,000	$215,000
2.48	Plant Piping and Valving		1	lot	$265,000	$265,000
2.50	**Electrical, Instrumentation + Control**					
2.51	Switchroom & MCC		1	ea	$1,200,000	$1,200,000
2.52	Generator (100-GE-001)		1	ea	$350,000	$350,000
2.53	Instrumentation		1	ea	$127,600	$127,600
2.54	Start/Stop Field Stations		1	ea	$35,000	$35,000
2.55	Control System Hardware & Software		1	lot	$54,800	$54,800
2.56	Cable Tray		1	lot	$70,000	$70,000
2.57	Light Fittings		1	lot	$110,000	$110,000
2.58	Under Slab Conduit System. (LV and Comms)		1	lot	$25,000	$25,000
2.59	EIC Ancillaries + Testing		1	lot	$178,963	$178,963
2.60	**Procurement, QAQC + Management**					
2.61	Procurement, Freight to Site, Insurance, QAQC + Management		1	lot	$1,762,127	$1,762,127
					Subtotal Procurement	**$11,870,629**
3.00	***Construction***					
3.01	Preliminaries, General, Construction Management		1	lot	$1,414,214	$1,414,214
3.02	Civil Works (Bulk Earthworks BY OTHERS)		1	lot	$1,219,900	$1,219,900
3.03	Plant Installation					
	SMP	All structure, equipment, field piping install + pre-comm	1	lot	$1,908,296	$1,908,296
	EC&I	All cabling, trays, conduits, earthing	1	lot	$769,000	$769,000
3.04	Commissioning & Start-Up Training	4 weeks commission + 4 weeks operator training	1	lot	$703,178	$703,178
					Subtotal Construction	**$6,014,589**
					PASTE PLANT COST	**$21,463,000**
4.00	***Underground Distribution***					
4.01	Surface to UG Borehole	~90m includes drillings + install ($3,000/m)	2	lot	$270,000	$540,000
4.02	UG Reticulation System	Capital allowance for piping + installation	1	lot	$842,184	$842,184
					Subtotal UG Distribution	**$1,382,184**
					TOTAL PASTE SYSTEM COST	**$22,857,184**

Appendix G
Operating Cost Detailed Estimate

MINEFILL SERVICES	CORE LITHIUM BP33 PFS OPEX COSTING Paste Fill Operating Cost (±15%)	Originated	S.McGrath
		Approved	M. Revell
		Date	7/10/2025
		Document No.	25042-BDG-0002
		Revision	C

Cost Center	Units	Qty	Rate	Cost (AU$)	Comments
Operating Time	Hour	6,160	per annum		24 hour operation (+10%); 75m^3/h
Backfill per Annum	m^3	420,000	per annum		
Surface Activities					
Fixed Costs					
Plant Operators	A$/annum	5	$ 150,270	$ 751,350	1 x Plant Operator - Core Provided Cost
Backfill Engineers	A$/annum	1	$ 215,613	$ 215,613	Core Provided Cost
Plant Maintenance Labour / Operator Support	A$/annum	2	$ 150,270	$ 225,405	Core Provided Cost
Training & Management	A$/annum	1	$ 100,000	$ 100,000	Allowance
Variable Costs					
Power	A$/kW·h	4,028,640	$ 0.262	$ 1,055,504	Core - $0.262/kWh
Water	A$/kL	61,600	$ 1.00	$ 61,600	Minimal Esimtate
Binder	A$/t	28,980	$ 331.00	$ 9,592,380	FCS Delivered to site (Low Heat) - 69kg/m^3
Plant Wear, Including Pump and Spare Parts	A$/m^3	420,000	$ 0.72	$ 302,400	Estimate
Haulage Rejects - Grants to BP33	A$/t	630,000	$ 0.70	$ 443,520	Core provided costing; 0.08tkm (8.8km)- Back Haulage Grants to BP33
Loader to Feed Plant	A$/h	6,160	$ 290	$ 1,786,400	Operator+Equipment cost
Testing QA/QC	A$/m^3	420,000	$ 0.20	$ 84,000	Estimate
			Subtotal per annum	**$ 14,618,172**	
			Per m^3	**$ 34.81**	
Underground Activities					
Fixed Costs					
UG Paste Crew	A$/annum	8	$ 193,210	$ 1,545,680	UG personnel shared - Core Provided Cost
UG IT + Install Tooling	A$/annum	1.5	$ 200,000	$ 300,000	
Training & Management	A$/annum	1	$ 100,000	$ 100,000	Allowance
Variable Costs					
Interlevel and Stope Boreholes	A$/hole	10	$ 10,000	$ 100,000	Supply + Install
Paste Reticulation Extensions + Maintenance	A$/m^3	420,000	$ 1.55	$ 651,000	Materials
Bulkheads	A$/unit	20	$ 17,500	$ 350,000	Average stopes per annum
			Subtotal per annum	**$ 3,046,680**	
			Per m^3	**$ 7.25**	

TOTAL per annum	**$ 17,664,852**
TOTAL Per m^3	**$ 42.06**