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External Memorandum

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Company:	Pt. Kaltara Batu Knostruksi (PT KBK)	**Project Number:**	UK7285
Copied to:	Filip Orzechowski; Dianna Martell; Mike Beare	**Project Title:**	Mine Study for KBK Aggregate Quarry Indonesia
File Ref:	U7285_KBK Aggregate_Mine Study_Memo_Optimisation_v1.0.docx	**Date:**	October 2021
Subject:	**KBK Mine Study October 2021**		

1 INTRODUCTION

SRK Consulting (UK) Limited ("SRK") has been commissioned by Pt. Kaltara Batu Konstruksi ("PT KBK"), hereinafter also referred to as the "Company" or the "Client"), to undertake a high level Mine Study, for the KBK Aggregate Project ("the Project") located in Malinau, northern Kalimantan, Indonesia.

This memorandum presents the work completed to date, including conceptual mine design, pit optimisation and cost model using the input parameters provided by PT KBK Technical Team benchmarked and interpreted by SRK from the various documents provided and other publicly available sources.

2 LOCATION

The Project is located in the Malinau Administrative District, in the Kuala Lapang Village Kota District, Malinau Regency, North Kalimantan Province, Indonesia (Figure 2-1). The IUP mining concession spans 40.9 ha in area. A map of the tenement location is provided in Figure 2-2.

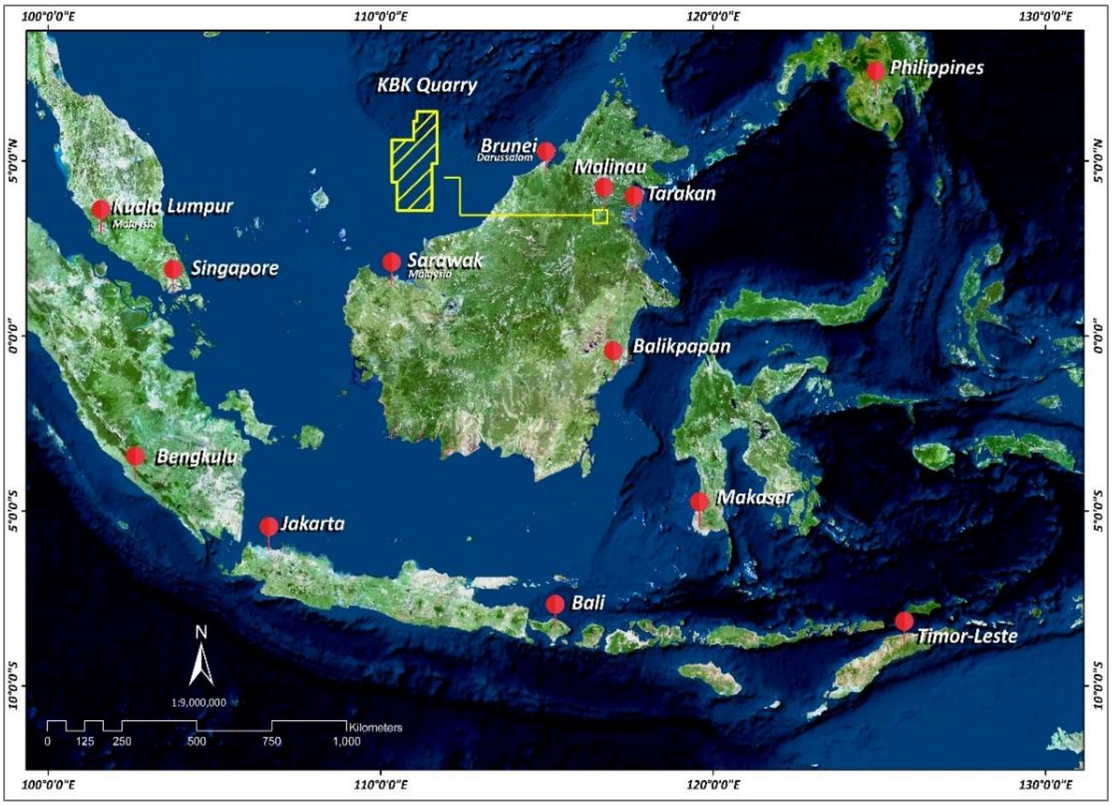


Figure 2-1: General Location Map (source: PT KBK Sept 2021)

The KBK port area is located approximately 8 km of the Project and is wholly owned by PT KBK. As shown in Figure 2-2, the KBK jetty is situated nearby to the township of Malinau.

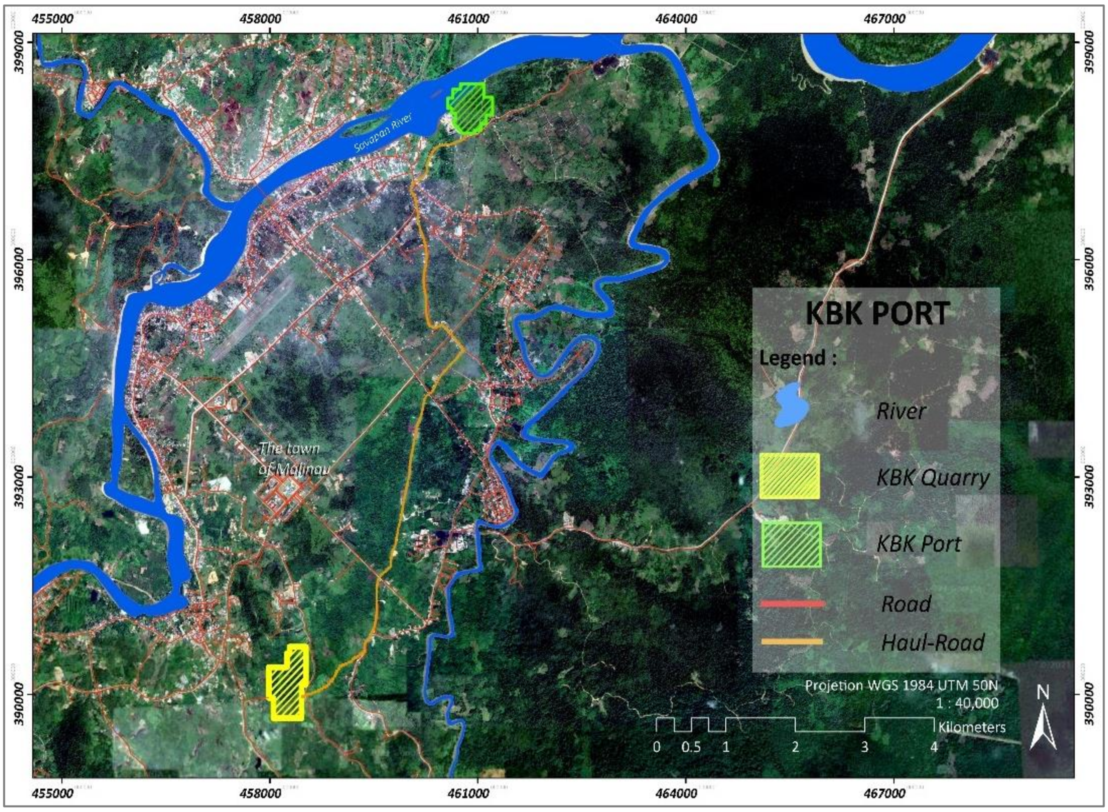


Figure 2-2: KBK River Port (green), existing roads (red) and KBK location (yellow)

3 OPERATIONAL CONCEPT

The Company (PT KBK) is currently owned and managed by a joint venture ("JV") between PT. Puncak Mineral Investai (PMI) (60%) and 40% Ozindo Investments Pty Ltd (OZINDO).

PT KBK intends to produce several aggregate type products from the Project, and the product will be taken from the Quarry, through to the Retail Hub for processing and to the Jetty/Marine Port for further transport to the end customers. A layout of these key areas is shown in Figure 3-1.

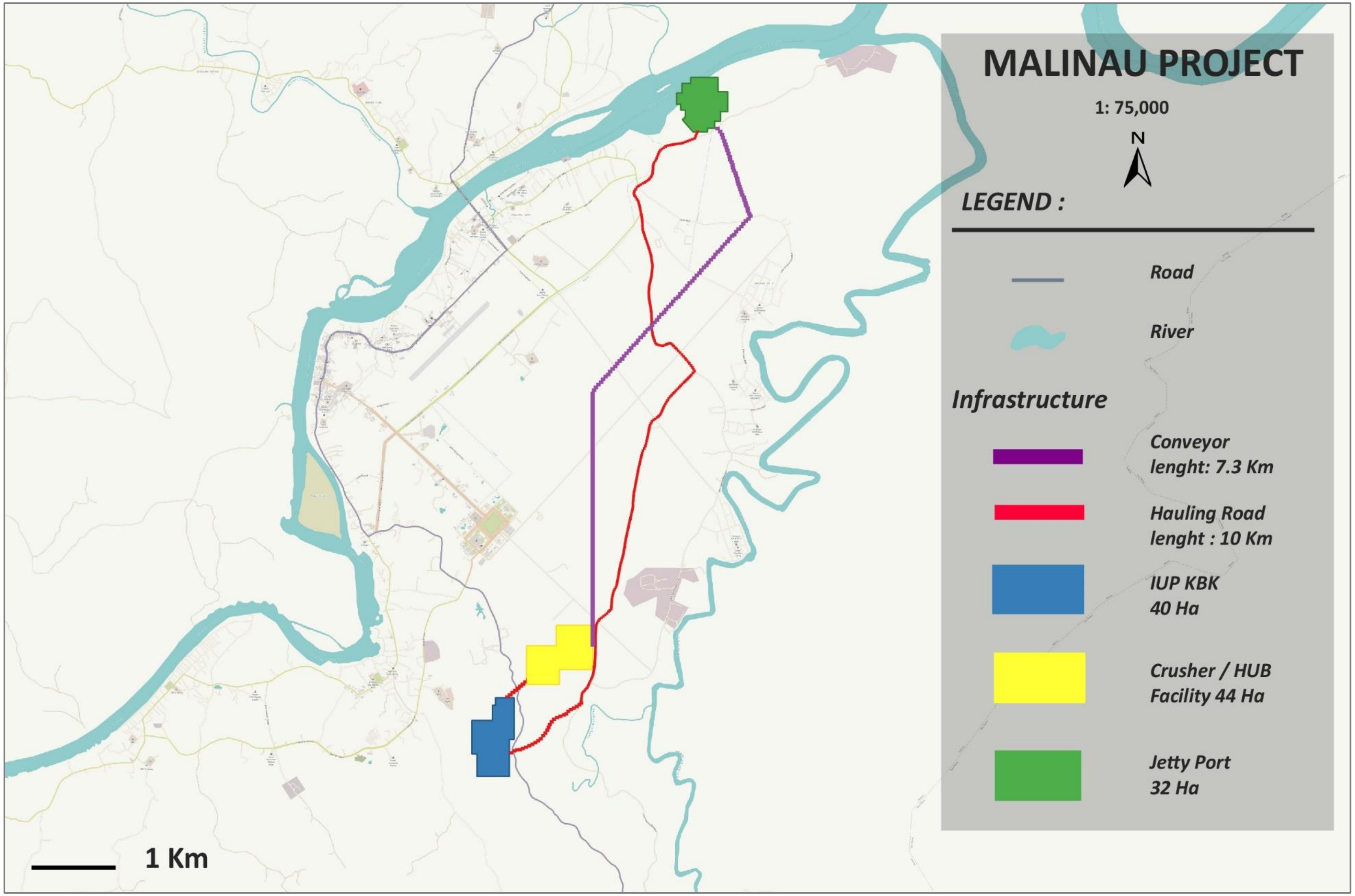


Figure 3-1: General Layout and Location of Key Existing and Proposed Infrastructure Locations (source: PT KBK Sept 2021)

The Quarry Mine Area

The QMA will include the following as required:

- mobile equipment workshop and tooling, as required for level of maintenance anticipated for the site;
- warehousing (consumables, spares etc), hardstanding, parking, laydown areas;
- tyre change and vehicle washing facilities;
- any buildings required by the Contractor such as offices, administration, shift accommodation, canteen and messing, prayer rooms;
- water supply and storage (potable / raw) and dispensing, wastewater collection from infrastructure;
- power generation and communications; and
- security fencing, gates, lighting;
- mobile equipment parking;
- All utilities within the at QMA and connecting to the other interfaces.

The Contractors will be responsible for ensuring the QMA and its functioning complies with all health and safety and environmental (HS&E) directives required as part of the national legislation, best practise and as stipulated in the contractual obligations agreed with PT KBK.

The Retail Hub

The purpose of the Retail Hub is for the wholesale and retail sales and production of aggregate from the KBK quarry. As the Company intend to produce armourstone and crushed rock aggregate, the Retail Hub therefore has two development platforms:

- Crushing, screening and primary stockpiles, and loading for bulk customers. This area also has the workshops and warehouses for plant;
- The “retail area” with PT KBK offices, parking, smaller stockpiles and retain customer loading, dispatch buildings and weighbridge.

An example of the concept being undertaken by PT KBK is presented in Figure 3-2.

Figure 3-2: a 3D schematic view of a section of the retail hub platform (as provided by KBK: source file "3D view (Capture) (002).pdf", provided August 2021)

The KBK Jetty and River Port

In December 2019, the Company purchased 12 hectares of river front on the Sesayap River, and work has commenced in clearing the zone for access and further development. PT KBK appointed PT Zamindo Prima Selaras as a contractor to conducted immediate land clearing and land filling in port area (see Figure 3-3).

Technical and development work conducted to date at the newly purchased port area is as follows:

- Site selection survey and preliminary land investigation; and
- Preliminary river bathymetric readings and sampling;
- Some water quality monitoring;
- Some inert material site investigations, and land compacting (details and extent to be confirmed).

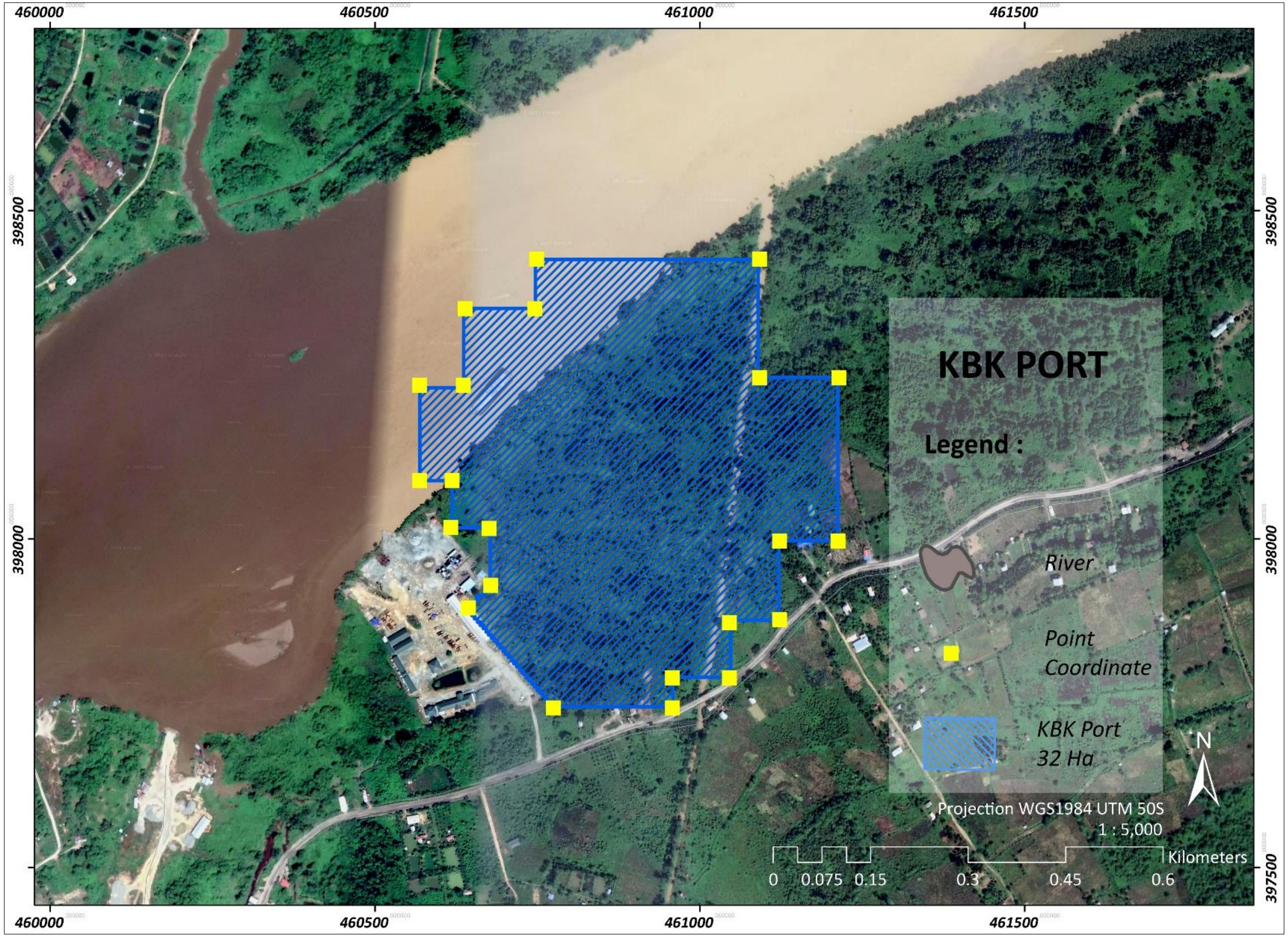


Figure 3-3: PT. KBK (yellow outline) and existing surrounding infrastructure (Source: PT KBK, October 2021)

3.1.1 Other Significant PT KBK Owned Infrastructure

The following items have been established at site and are also owned by the Company (Figure 3-1).

- office buildings;
- site buildings (accommodation, workshops, core shed, security out-buildings);
- local vehicle fleet;
- access roads;
- surface water management (port site and mine site);
- retail and wholesale intermediate stockpile area;
- offsite accommodation and office block, and
- periphery real-estate adjoining the IUP permit boundary.

4 MINING METHODOLOGY

4.1 Introduction

PT KBK will engage Mining Contractors who will be responsible for the development and operating the quarry. It is understood there will be two work streams involving the production of armourstone and crushed rock products. A mining sequence flow chart is presented in Appendix A showing both of the work streams.

For the crushed rock production, the quarry will use typical open pit mining methods including backhoe configured hydraulic excavators in conjunction with conventional haul trucks. The mining extraction using drilling and blasting techniques will be managed by the mining contractors and will use ammonium nitrate/fuel oil (ANFO) explosives for fragmentation of rock prior to digging.

Armourstone production will rely on Non-Explosive Demolition Agent (NEDA) products which apply a non-explosive system using ECOBUST© product (see Appendix B) for splitting of rock after pre-drilling. Mining Extraction using Explosives. Currently the Company are reviewing Mining Contracts now for this work.

Drilled and blasted rock will be loaded onto the trucks and hauled to the crushing and screening facility (“HUB”). Layout of the HUB area is presented and described in Section 3. Haulage from the pit will use the in-pit ramp which exits the pit on its northern side, as detailed in Section 6.1.2.The proposed haul exit ramp crosses a public road and enters the HUB area in a distance of 250m from the pit edge. Rock extracted by using explosives will be subsequently crushed and screened inline direct from crushing into the following products piles:

- Rock Ash (0 – 5 mm)
- Split Stone (5 – 10 mm)
- Casting (10 – 20 mm)
- Floor Casting (20 – 30 mm)

- Bolder (30 – 50 mm)

A table of images showing the various intended product types is shown in Figure 4-1. These products have formed the basis of the mine concept study herein, and they are also applied in the pit optimisation (see Section 5.2).

Rock Aggregate: Size 0 - 5 mm
(Price: USD 5.63/Ton, Capacity: up to 3 million ton/Year)

This measure is often referred to as rock ash. This size is the softest, the particle size resembles soft sand. This size split stone is much needed for the process of paving, making culverts, making brick presses, or being used as a substitute for sand.

Rock Aggregate: Size 5 - 10 mm
(Price: USD 27.11/Ton, Capacity: up to 3 million ton/Year)

This size is also known as a 3/8 cm split stone. This size is widely used for mixtures in the process of paving roads, from light roads to class 1 roads. Split stones of this size will be mixed with asphalt into mixed plant asphalt or also known as hot mixed asphalt.

Rock Aggregate: Size 10 - 20 mm
(Price: USD 27.11/Ton, Capacity: up to 3 million ton/Year)

This size is widely used for casting materials of various types of construction, ranging from light to heavy construction. Buildings that use cast concrete from split stone materials of this size include toll roads, multi-storey buildings, airports, railroads, ports / docks, piles, bridges and others.

Rock Aggregate: Size 20 - 30 mm
(Price: USD 27.11/Ton, Capacity: up to 3 million ton/Year)

This size is widely used for floor casting and other horizontal casting materials.

Rock Aggregate: Size 30 - 50 mm
(Price: USD 26.40/Ton, Capacity: up to 3 million ton/Year)

This measure is usually used for the base of the road body before using other materials, rail bearing supports, pipe covers or ballast on the seabed, and cast concrete breakwaters.

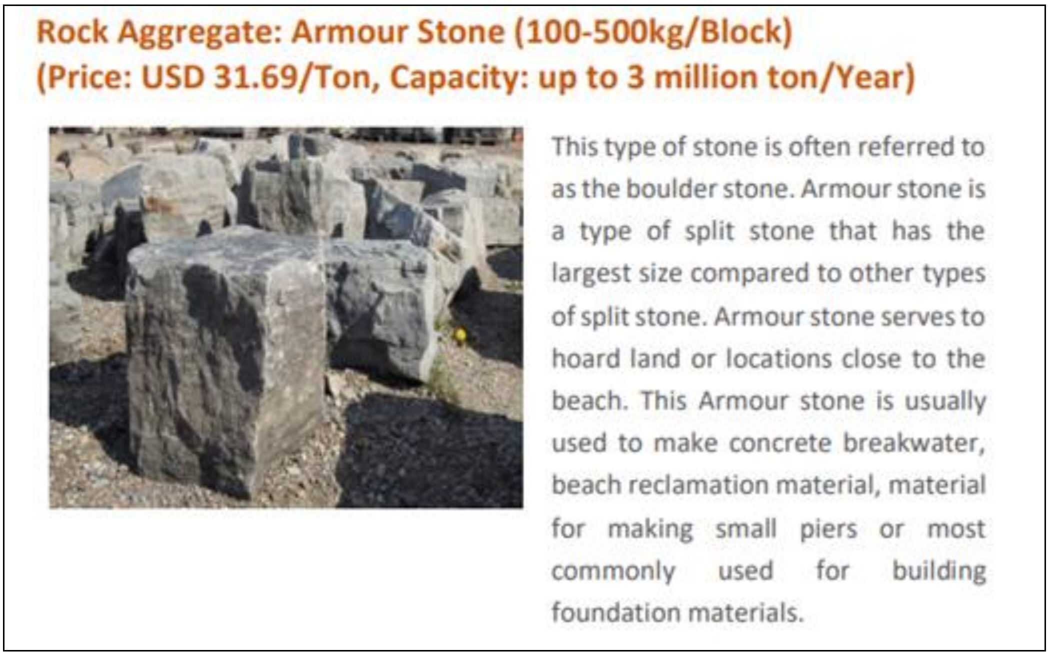


Figure 4-1: KBK Local Product Pricing (source: company report file ref: KBK_STI_MOU_pdf)

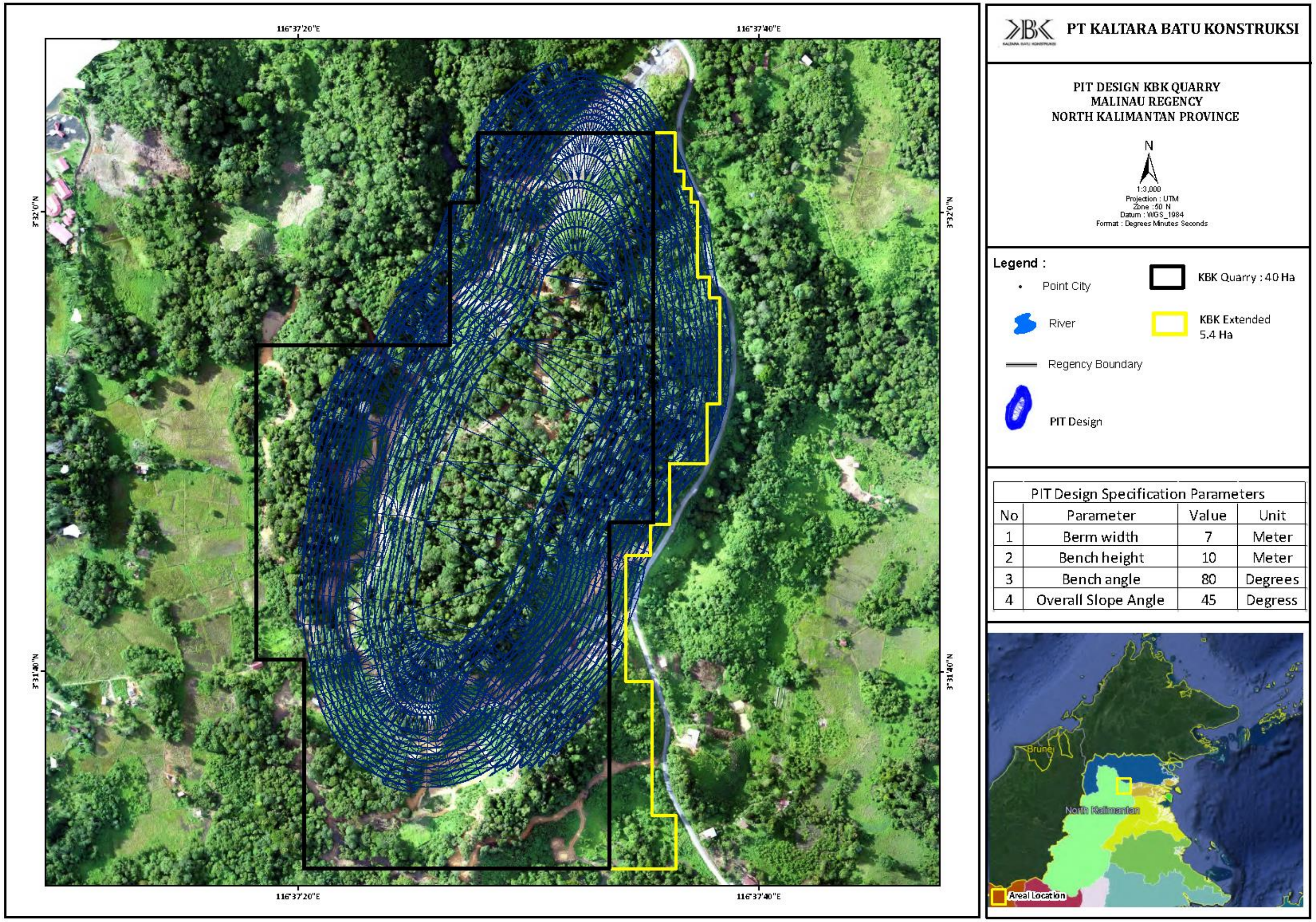
4.2 Mining Extraction using Nonexplosive Techniques

A nonexplosive technique also referred to as NEDA will be applied for production of armourstone (see Appendix B). The non-explosive system will require a smaller drill hole diameter when compared to conventional blasting (max. 1.50”). It is proposed by the Contractor completing this work that a hand-drill (airleg) will be used which will require much smaller spacing between the drill holes (max 18” for rock mining).

Once drilling patterns are completed, the NEDA is poured directly into the drill holes which is prepared by mixing it with water. In the drillhole, the NEDA subsequently expands and breaks the rock into large blocks that are approximately 30cm to 80cm in length and 30-50cm in height.

Rocks extracted using this technique are either stockpiled at the quarry for direct offtake by customers, or the blocks are transported via the Companies flatbed truck to the HUB area. Armourstone blocks are not fed into the crushing system, instead they are sold directly to the customers on a per tonne, per block basis.

Examples of nonexplosive product are given in Appendix B. The Company is currently reviewing contractors quotations to conduct this work. This style of NEDA mining is common place in Indonesia with several operators producing armourstone in Jakarta and surrounds using this method.



PIT Design Specification Parameters			
No	Parameter	Value	Unit
1	Berm width	7	Meter
2	Bench height	10	Meter
3	Bench angle	80	Degrees
4	Overall Slope Angle	45	Degress

Figure 4-2: Permit outline (black polygon) draped to Landsat Image on main Area of Interest at KBK showing optimised pit shell outline (blue contours), with expansion area showing (yellow) to be applied for in 2025 (Source: PT KBK Sept 2021)

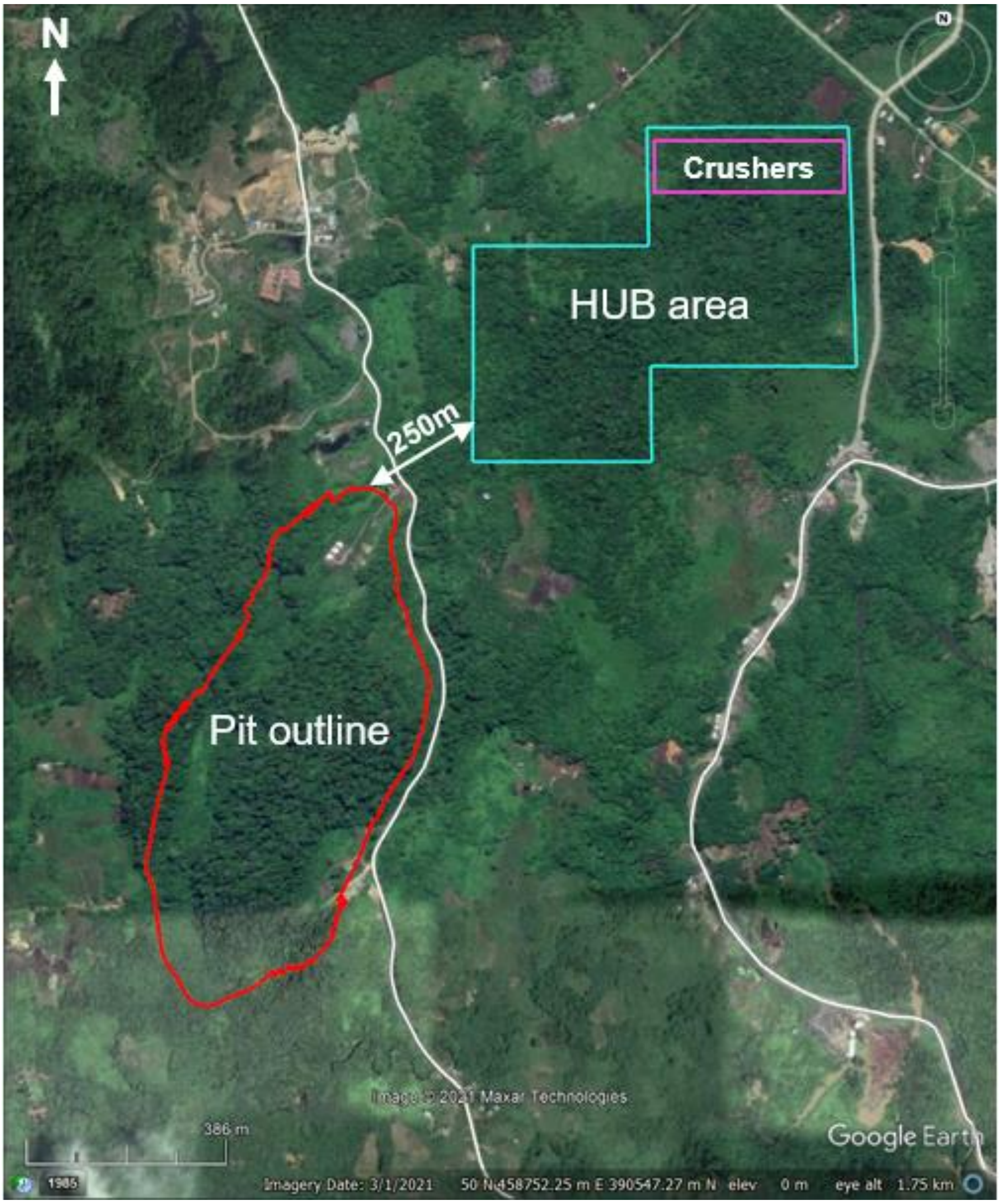


Figure 4-3: General Layout Pit outline and HUB area with proposed crushing area (source: SRK September 2021)

5 PIT OPTIMISATION

5.1 General

In order to identify the optimum pit limits for the quarry, SRK has undertaken open pit optimisation using Studio NPVS software. Studio NPVS uses the Lerchs-Grossmann algorithm for determining the shape of an optimal pit using a set of input technical economic parameters.

The optimisation process produces a series of “nested” pit shells, each showing the maximum economic pit at a set of given prices (i.e. armourstone or crushed rock, crushed dust product etc). The nested pit shells provide an indication of the sensitivity of the deposit at various prices for the input costs and modifying factors. The nested pit shells are evaluated using a base case overall aggregate price of USD25.99 per tonne of aggregate rock. Revenue Factor (“RF”) is the factor by which the revenue for each mining block is estimated to produce one of the nested pit shells. Consequently, RF=1 is equivalent to the base case aggregate price of USD25.99/t.

The objective of the open pit optimisation has been to assess the potential economic pit extents, understand the economic and physical characteristics of the deposit, and then select a pit shell to use as the basis for the final pit design and scheduling.

It should be noted that the above-mentioned aggregate selling price of USD25.99/t is the lowest price of all the future products. Such approach of using the lowest price is driven by the fact that it is well expected that there is a minimal amount of waste material (shale) in the geological model and little to no overburden which in turn should support the assumption that the entire deposit is economic for mining. SRK has assumed at this stage that the pit optimisation is used primarily as a means for verifying the assumptions that have been applied during the optimisation exercise (see Table 5-1: Optimisation Parameters) as well as finding a pit shell shape with applied geometrical assumptions (ie. slope angles and offset from public road).

5.2 Pit optimisation Input Parameters

The pit optimisation parameters are shown in Table 5-1 and are discussed below. The optimisation has included Indicated and Inferred classified material (“Ind + Inf”) and used the geological model sub-blocked to the smallest block size being 5 x 5 x 5 m as well as a constraint of 20m offset from the public road, as shown later in Figure 5-1.

Several other input parameters and modifying factors have been applied, and these are described below.

- **Geotechnical slope angles:** Overall slopes were derived based on the inter ramp angle (“IRA”) developed by SRK in their conceptual assessment;
- **Mining Recovery and Dilution:** No losses or dilution were assumed. There is almost no waste in the geological model therefore any impact of the contact zones between the greywacke material and waste is insignificant. SRK is not aware for any karstic features but potential for these should be analysed in any next studies providing better level of confidence.
- **Processing Recoveries and Costs:** Processing cost of USD8.39/t feed to the plant has been used and is based on the data provided by PT KBK in their financial model.
- Processing recovery applied was 99%. 1% provision for losses is consideredin the material handling, human mistakes and rejects from the process (ie. dust).

- **Mining Costs:** Mining operating cost of USD5/t rock have been used and is based on the recent contractor quote for crushed aggregate. SRK notes that no breakdown has been provided in that quote to show what would be the unit cost with explosive and nonexplosive methods.
- General and Administration: Additional cost assumptions include fixed costs of USD0.5/t of greywacke rock to cover general and administration costs (G&A).
- **Selling Price:** Product prices were provided by PT KBK in their financial model and SRK did not review them within this conceptual study.
- **Cut off grade:** No economic or quality related cut-offs were used.

The optimisation parameters are summarised in Table 5-1.

Table 5-1: Optimisation Parameters

Parameters	Units	Value
Geotechnical OSA		
Footwall	(Deg)	45
Hanging wall	(Deg)	45
Mining Factors		
Dilution	(%)	0.0
Recovery	(%)	100.0
Processing		
Recovery Au	(%)	99.0
Operating Costs		
Mining Cost (Armour)	(US$/tore)	8.00
Mining Cost (Crushed Aggregates)	(US$/tore)	5.00
Processing	(US$/tprod)	1.00
Infrastructure	(US$/tprod)	1.45
Export & Logistics	(US$/tprod)	3.87
G&A	(US$/tprod)	0.50
Other Fees	(US$/tprod)	0.44
Royalty	%	0.10
Selling Cost		
Crushed Aggregates Local Sales	(US$/tprod)	2.60
Armour Local Sales	(US$/tprod)	3.17
Crushed Aggregates Export Sales	(US$/tprod)	3.12
Aggregate Rock Prices		
Local Sales	(US$/t)	**25.99**
0-5mm (Dust)	(US$/t)	5.63
5-10mm	(US$/t)	27.11
10-20mm	(US$/t)	27.11
20-30mm	(US$/t)	27.11
30-50mm	(US$/t)	26.40
Armour Local Sales	(US$/t)	**31.69**
Armourstone	(US$/t)	31.69
Export Sales	(US$/t)	**31.18**
0-5mm (Dust)	(US$/t)	6.76
5-10mm	(US$/t)	32.53
10-20mm	(US$/t)	32.53
20-30mm	(US$/t)	32.53
30-50mm	(US$/t)	31.68
Other		
Discount Rate	(%)	10
Total operating cost		
Marginal Local Crushed Aggregates	(US$/$t_{ore}$)	8.39
Marginal Export Crushed Aggregates	(US$/$t_{ore}$)	12.26
Marginal Local Armour	(US$/$t_{ore}$)	10.39
Margin		
Marginal Local Crushed Aggregates	(US$/$t_{ore}$)	15.00
Marginal Export Crushed Aggregates	(US$/$t_{ore}$)	15.81
Marginal Local Armour	(US$/$t_{ore}$)	18.13

5.3 Results

The Pit Optimisation results are shown in Figure 5-2 where it is noted that first pit-shells are generated for Revenue Factor ("RF") of a minimum of 0.60 with the ore tonnage just above the 60Mt. This indicates that below the 60% of the selling price, the operation is not economic assuming Operating Expenditures ("OPEX") only.

By increasing the RF, the ore inventory increases as well until RF1 and then maintain the ore tonnage between 86 – 90 Mt. That is interpreted as the entire ore inventory available in the model to be mined with the applied geometrical assumptions. Waste inventory increases from RF1 and beyond but with its every increase, ore inventory increases only marginally.

SRK understands that the main objective in this study is to maximise the ore inventory, therefore SRK has selected the pit-shell of RF=1 for which the inventory is shown in Table 5-2. It can be noted that around 75% of ore inventory in the pit is classified as Inferred and 25% as Indicated.

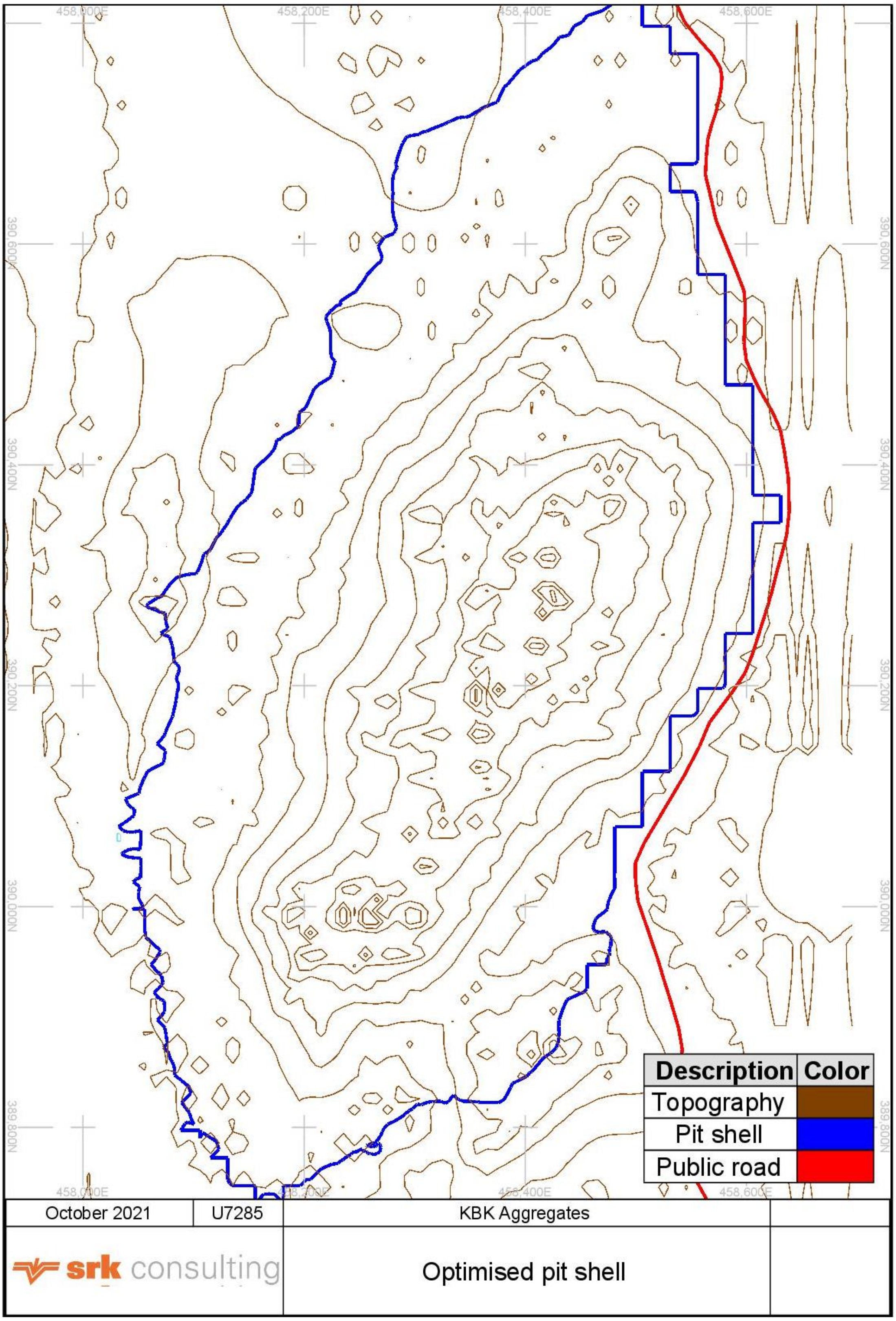


Figure 5-1: Optimised Pit shell showing the 20m offset from the existing public road

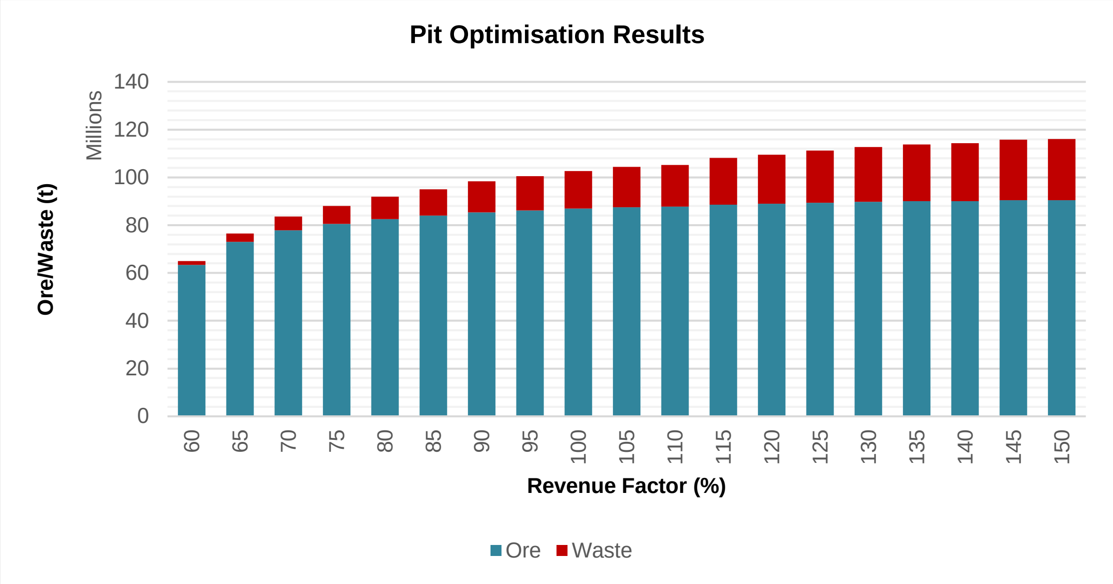


Figure 5-2: Pit Optimisation Results for Ore and Waste

The estimated pit shell inventory for revenue factor 1 are summarised in Table 5-2. SRK notes that the Company intends to stockpile all waste (shale) material that is mined, as there is the potential to also sell this material in the local market for decorative stone for pathways and driveways in the local area. In this sense there will be no waste coming from the mine. However, SRK has not included any credits for waste (shale) in the pit optimisation conducted herein.

Table 5-2: Pit-shell Inventory (RF1)

Physicals	Units	Values
Rock	(Mt)	102.67
Ore	(Mt)	86.98
* Indicated	(Mt)	22.82
* Inferred	(Mt)	64.16
Waste	(Mt)	15.69
Stripping Ratio	(t:t)	0.18

6 PIT DESIGN

6.1 Pit Design Parameters

6.1.1 Open Pit Slope Angles

Geotechnical pit slope design parameters used to develop the pit design are summarized in Table 6-1 below:

Table 6-1: Geotechnical Design Parameters

Zone	Description	Inter-Ramp Angle (°)	Bench Face Angle (°)	Berm Width (m)	Bench Height (m)
Aggregates	Surface of 140m depth	50	80	7	10
Geotechnical overall slope angle must be lower than 50°					

6.1.2 Haul Road and Ramp Design Parameters

The main in-pit ramp was designed to have an overall width of 20m. The selected road width is adequate for accommodating three times the width of a Dump Truck Volvo FMX440 which is assumed to be used onsite (as specified by the mining contractor in their Project Execution Plan). Ramps considers additional room for drainage ditches and safety berms.

6.2 Pit Design

The quarry design is based on the pit shell's shape selected in the pit optimisation process (RF=1). It should be noted that an offset between 10 and 20 meters from the east public road has been applied and maintained. The main ramp's exit from the pit is located in the western wall and connects the quarry with HUB area in the shortest possible distance although, the haul road crosses the public road. Figure 6-1 below show the designed pit offset to the road subsequent Figure 6-2 shows comparison with the optimised shell.

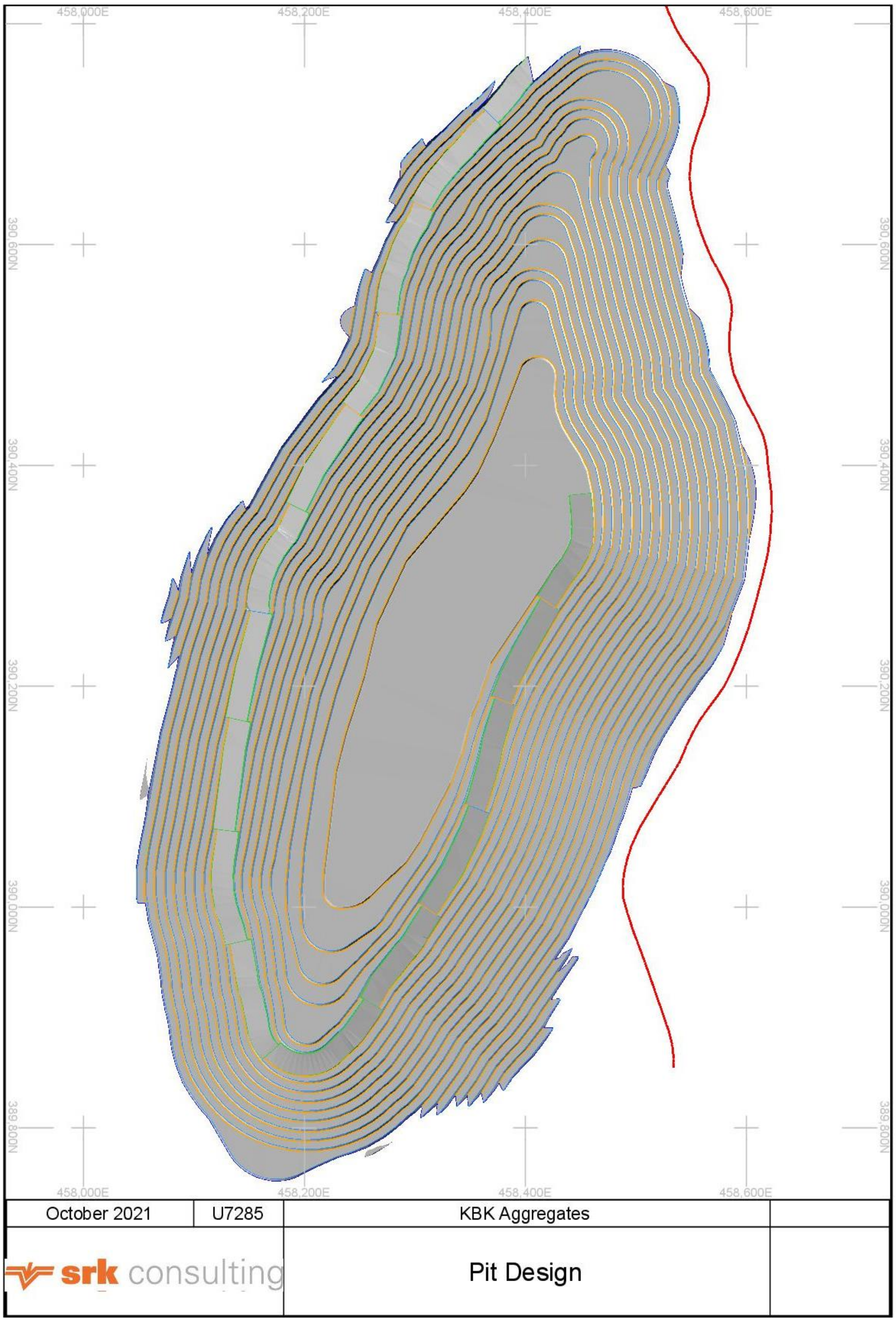


Figure 6-1: Proposed Pit Design with exit ramp to the north of the permit

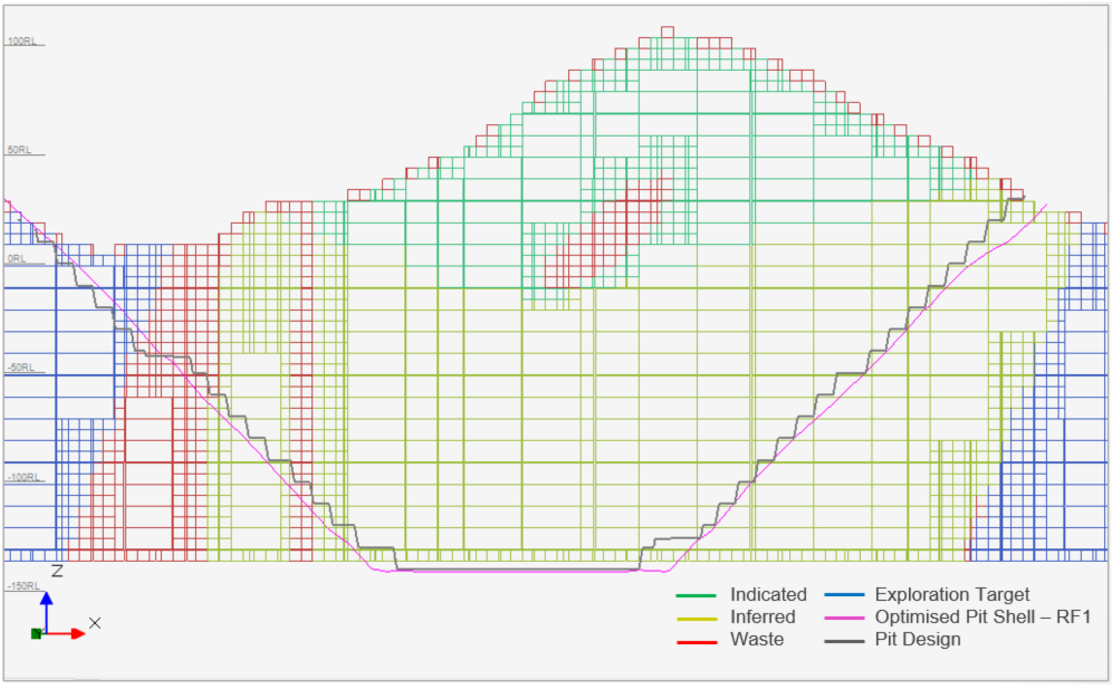


Figure 6-2: Pit Design and Pit Shell Cross-Section

6.3 Waste Rock Dump design

No waste rock dumps ("WRD") are designed for the Project. Due to the low stripping ratio (0.18), it was assumed that sufficient space would be available to dump waste as back-fill in the mined-out voids. A temporary external WRD may only be required at the beginning of the LoM but is considered insignificant to the Project at this stage. Furthermore, the Company has advised that it is currently investigating options to sell the waste (shale) material as decorative stone for use as pathways and driveways coverings in the local market.

6.4 Operating Strategy

It has been assumed that PT KBK will engage a Mining Contractor who will be responsible for all mining activities:

- Drilling, blasting and breaking the rock (where nonexplosive techniques apply);
- Loading;
- Hauling and transporting to the HUB area.

A general operating strategy is required for the equipment selection and estimated productivities. The objectives of the operating strategy are summarised below:

- Equipment fleet selection;
- Estimate of loading productivities;
- Estimate of haulage cycle times;
- Estimate of equipment operating times; and
- Estimate of drill and blast parameters.

6.4.1 Loading

The equipment fleet has been selected based on the material movement profile and Client's preliminary discussions with mining contractors.

It is assumed that 3.1 m3 bucket capacity excavators may be selected as the primary shovel for mining of rock, with planned productivity of 4.5 Mtpa. 40 t capacity trucks will be used for ore and waste.

A 3.4 m3 front-end loader will be used to assist small-scale material handling at site

The loading productivities have been estimated from first principles applying SRK's experience and industry standard equipment operating practices and conditions. The loading productivities are shown in Table 6-2.

Table 6-2: Excavator Productivity Estimate

Material Characteristics						Loading		Haulage			Loading Productivity					
Name	Material Type	In-Situ Density (t/bcm)	Swell Factor (lcm/bcm)	Loose Dry Density (dt/lcm)	Moisture Factor (%)	Bucket Fill Factor (%)	Bucket Size (m3)	Truck Capacity (t)	Truck Capacity (m3)	Pass (#)	Job Efficiency Factor (%)	Loader Eff. (dt/doh)	Op. Eff (%)	Loader Productivity (t/op. hr)	Utl (%)	Loading Prdty (Mtpa)
Indicated Primary Excavator	**Indicated**	**2.50**	**1.40**	**1.79**	**5.00**	**90**	**3.10**	**40.00**	**27.00**	**8**	**75**	**602**	**68.05**	**409.30**	**48.8**	**1.71**

6.4.2 Haulage

SRK has undertaken a conceptual haulage estimate to define cycle times. The cycle times have been estimated based on haulage distances from the mining location within the pit to the HUB area with a 10% ramp gradient. Based on the analysis the following results were observed:

- 1-way haulage distances range from 2.0 to 3.0 km on average;
- 2-way haulage travel times range from 10 to 13 minutes;

The one-way distances and cycle times are shown in Figure 6-3 and Figure 6-4 respectively.

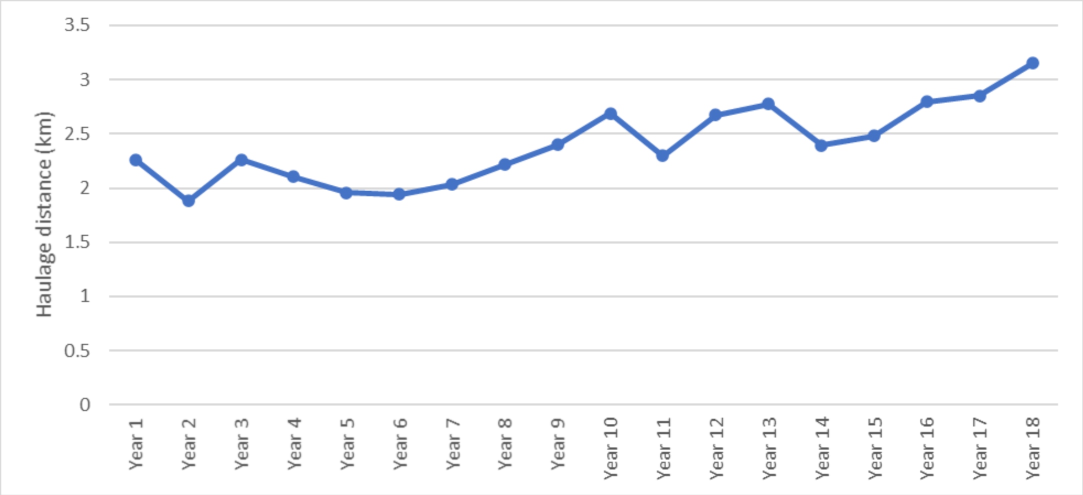


Figure 6-3: Haulage Distance (one-way)

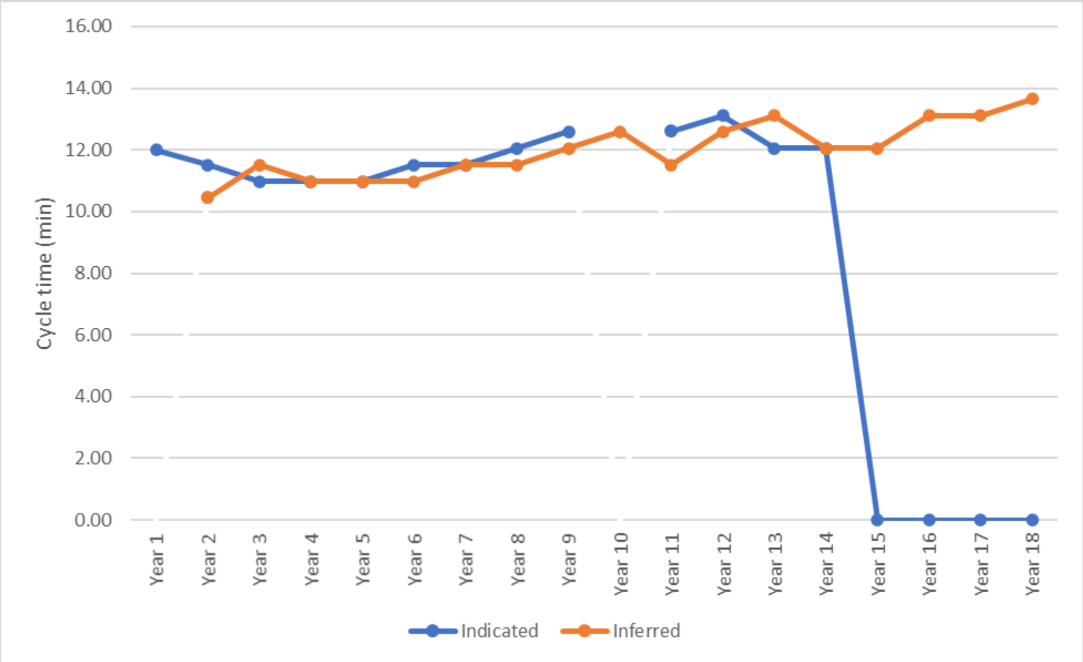


Figure 6-4: Estimated Cycle Times

6.4.3 Drilling (for blasting with explosives)

The drill and blast estimate is based on the production schedule and material types. Drill and blast activities are anticipated to be required for all material types. It's been assumed than no, pre-split drilling will be required.

Production drilling will be undertaken on a 3.0 m by 2.6 m spacing on 5 m benches with a 88 mm blasthole diameter.

6.4.4 Drilling (for rock breaking with nonexplosive agent)

SRK notes that assumptions for using nonexplosive agent are based on benchmarked values from publicly available marketing information. No test-work or more detailed study has been undertaken to analyse suitability of this technique to the product, production rate and the deposit. Based on that, it's been assumed that production drilling will be undertaken on a 0.5m by 0.43 m spacing on 2m benches with a 38mm drillhole diameter. Resulting powder factor would be 10kg/m^3, which based on the collected marketing and technical information, is in the low range.

6.4.5 Operating Hours

The key assumptions are that the operation will operate 365 days per year with two 8-hr shifts per day.

6.4.6 Equipment Requirements

The maximum equipment requirements are shown in Figure 6-2. The ancillary equipment requirements have been based on the material movement profile, the primary equipment size and requirements, labour requirements, and the number of working areas.

Table 6-3: Equipment levels

Equipment Requirements	Peak Value
Primary Excavator	**4**
Primary Truck	**11**
Primary Drill	**2**
Secondary Drill	**4**
Primary Track Dozer	**2**
Primary Motor Grader	**1**
Water Truck	**1**
Blast Truck	**1**
Fuel/Lube Truck	**1**
Lighting Plant	**9**
Light Vehicle	**6**
Crew Bus	**2**

6.4.7 Labour Requirements

The labour requirements have been estimated from the outcomes of the production schedule and the equipment levels. The labour estimates have been based on the following criteria according to the position: material movement profile, equipment fleet requirements and number of shifts.

The project schedule is based on two work crews working two 8-hr shifts per day. Office staff are assumed to work a standard 40-hr work week.

A summary of the estimated annual labour requirements is provided in Table 6-4.

Table 6-4: Labour Requirements

Labour Requirements	(#)	127
Mine Operations	(#)	120
Mine Maintenance	(#)	3
Technical Services	(#)	4

7 LIFE OF MINE SCHEDULE

7.1 Approach

The open pit life of mine ("LoM") plan is based on the final pit design. The LoM schedule was created in NPVS software. A single life of mine plan scenario has been developed as part of the Study.

7.2 Scheduling Parameters

The key scheduling parameters were as follows:

- Processing plant feed target of 4,5Mtpa;
- Maintain short haul distances at the beginning of the LoM;
- Schedule first year on monthly basis and annually thereafter.

7.3 Schedule Results

The main features of the mine schedule are summarised as:

- 90% mining rate has been applied as a ramp-up in Year 1;
- Total mining rates vary between from 4.3 Mtpa and 6.0 Mtpa (including waste), and
- The LoM schedule runs for 18 years.

Table 7-1, Figure 7-1 and Figure 7-2 illustrate total tonnes mined each year and per material and classification as well as Strip Ratio ("SR"):

Table 7-1: Quarry Annual Production Schedule

Mining Schedule						
Year	Total Tonnes	Ore			Waste	SR
		Total Ore	Indicated	Inferred	Total Waste	
	(Mt)	(Mt)	(Mt)	(Mt)	(Mt)	(t:t)
2022	4.3	4.1	4.1	0.0	0.1	0.0
2023	5.0	4.5	2.8	1.8	0.4	0.1
2024	5.2	4.5	3.4	1.1	0.6	0.1
2025	5.5	4.6	3.3	1.3	0.9	0.2
2026	5.5	4.5	3.5	1.0	0.9	0.2
2027	5.4	4.5	1.6	3.0	0.9	0.2
2028	5.5	4.5	2.6	1.9	1.0	0.2
2029	5.7	4.5	0.1	4.4	1.1	0.3
2030	5.6	4.6	0.0	4.5	1.1	0.2
2031	5.5	4.6	0.0	4.6	0.9	0.2
2032	5.6	4.5	0.6	3.9	1.0	0.2
2033	5.7	4.6	0.3	4.2	1.2	0.3
2034	5.4	4.5	0.3	4.2	0.9	0.2
2035	5.6	4.6	0.1	4.5	1.0	0.2
2036	5.7	4.5	0.0	4.5	1.1	0.3
2037	5.4	4.5	0.0	4.5	0.9	0.2
2038	6.0	4.6	0.0	4.6	1.4	0.3
2039	3.8	3.7	0.0	3.7	0.1	0.0
Total	**96.3**	**80.6**	**22.8**	**57.8**	**15.7**	**0.2**

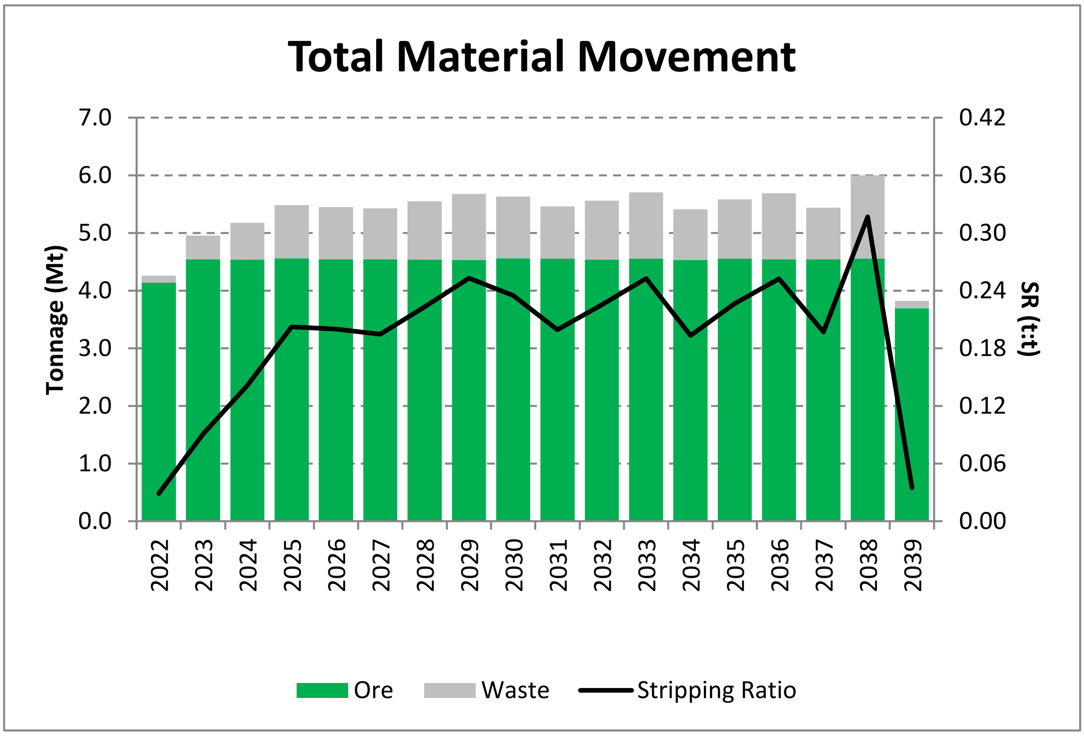


Figure 7-1: LoM Material Movement

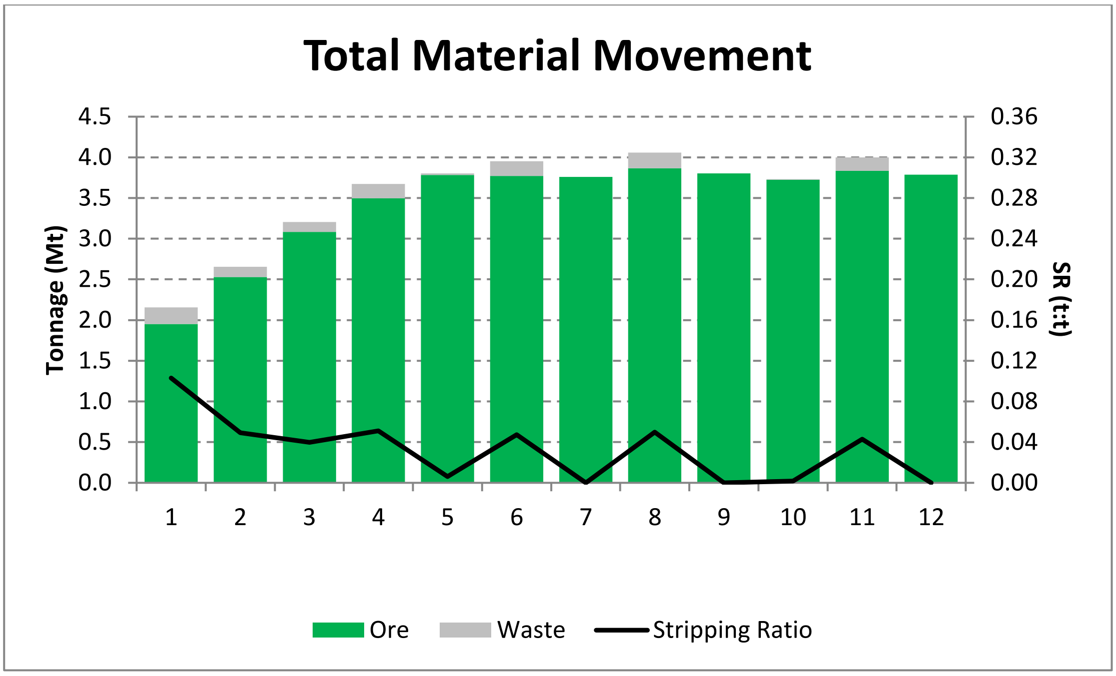


Figure 7-2: Year 1 Material Movement

8 OPERATING COST ESTIMATE

Operating costs estimates have been prepared based on the mining physicals included in the production schedule. Costs have been estimated and presented below on an owner-operated basis (no contractor margin has been applied here), using benchmarked values from SRK's experience, databases SRK subscribes to as well as marketing and technical information (nonexplosive agent).

8.1 Input Assumptions

A summary of the estimated units costs for main consumables used in the optimisation are shown in Table 8-1. The salary levels are shown in Table 8-2, as provided by the Client.

Table 8-1: Consumable Costs

Consumables	Source	Units	Cost
Fuel	Client	(US$/L)	0.79
Power	SRK estimate	(US$/kWh)	0.075
Lube	SRK estimate	(US$/L)	10.00
Ammonium Nitrate	SRK estimate	(US$/t)	1,500
Ecobust (1)	Internet/Quote	(US$/t)	1,700
Primer	Orica Pricelist	(US$/unit)	10.07
Detonator	Orica Pricelist	(US$/unit)	9.34
Blasting Accessories	SRK estimate	(%)	5.00
Sampling	SRK estimate	(US$/unit)	20.00
Stemming	SRK estimate	(US$/lcm)	10.00

Notes: (1) See Appendix B for description

Table 8-2: Estimated Labour Costs Based on Local Staff Rates (source: PT KBK, Sept 2021)

Position	Salary (US$pa)
Mine Maintenance	
Welder	8,988
Mechanic	9,173
Mechanic Helper	7,876
Electrician	9,173
Maintenance Superintendent	27,797
Maintenance Supervisor	20,848
Maintainer	13,899
Maintenance Administration	6,949
Mine Operations	
Excavator Operator	9,266
Dozer Operator	8,432
Truck driver	7,691
Checker	5,559
Drilling crew	6,621
Charging crew	6,621
Grader Operator	8,432
Water Truck Driver	7,691
Compactor Operator	8,432
Mine Manager	34,746
Production Superintendent	27,797
Production Supervisor	20,848
Foreman Production	13,899
Administration	6,949
Mine Plan Superintendent	27,797
Mine Plan Supervisor	20,848
Mine Engineer	17,373
Safety Officer	20,848
Safetyman	10,424
Safety Administration	6,949
Technical Services	
Surveyor	13,899
Draftsman	10,424
Surveyor Helper	6,949
Geologist	19,111

8.2 Results

A summary of the estimated operating costs for open pit mining is provided in Table 8-3 and Table 8-4, by category and equipment, respectively. A contingency or potential contractor's margin has not been included in this estimate.

Table 8-3: Open Pit Operating Costs - Category

Category	Units	Unit Cost
Labour	(US$/t)	0.18
Maintenance	(US$/t)	0.21
Fuel	(US$/t)	0.77
Lubricants	(US$/t)	0.31
Tires	(US$/t)	0.04
Wear Parts	(US$/t)	0.19
Explosives + Nonexplosive agent	(US$/t)	4.93

Total	**(US$/t)**	**6.63**

Table 8-4: Open Pit Operating Costs - Equipment

Activity	Units	Unit Cost
Management	(US$/t)	0.01
Loading	(US$/t)	0.23
Hauling	(US$/t)	0.60
Ancillary	(US$/t)	0.37
Drilling	(US$/t)	0.48
Blasting +Breaking	(US$/t)	4.94
Total	**(US$/t)**	**6.63**

9 RISKS

Based on this conceptual study, SRK identified the following risks for the Project:

- 75% of the pit inventory is based on the geological resource classified as Inferred, which represents the lowest level of confidence in mineral resources classifications.
- Assumptions taken for the nonexplosive mining method and its configuration are theoretical and conceptual in nature. Although it is understood the Company intends to have an experienced operator on site that has existing operations producing armourstone blocks already in Jakarta, at this stage no test work has been conducted on the KBK material or on site at KBK to prove that the methodology is suitable for the KBK operations or to achieve the production rate proposed;
- Nonexplosive agent price and availability will require verification with local distributors;
- Any potential karstic features not yet identified within the deposit may cause losses in the pit inventory. Finer spaced drilling will need to be completed to test assess this;
- Potential mining contractor team(s) may be less efficient than assumed western standards for operator and equipment efficiency and may require more equipment and related labour effort;
- Crossing the public road by the quarry trucks requires verification with local authorities. Should this be not possible, a different way of crossing the road would need to be considered potentially impacting the haul distances, truck specification, cost and pit geometry;

10 RECOMMENDATIONS

Based on this conceptual study, SRK recommends the following:

- Given that the Company has an offtake agreement for armourstone that is the highest price of all proposed products at KBK, SRK recommends that PT KBK should conduct a mine study on the use of NEDA (more specifically or ECOBUST) nonexplosive agents for the Armourstone production and the viability of large scale armourstone production rates (i.e. greater than 2 mpta);
- In the next phase of assessment, the Company should undertake a focused drilling programme to upgrade classification of the Exploration Target or currently classified Inferred Mineral Resource material to an increased level of confidence (i.e., to either

Indicated or Measured Resources);

- SRK recommend that that Company undertake a detailed mine study in the next stage of development and once the current Mineral Resource (September 2021) has been update from infill drilling and targeted Measure Resource / Reserve drilling. The detailed mine study should include the following general scope items:
  - Site Visit - Qualified Mining Engineer and Competent Person should undertake a site visit to understand the site topography and overall layout considering proposed pit development and facilities.
  - Mining Model Development – based on the geological block model, a suitable mining model should be created to better understand and quantify what is the most suitable mining method applicable for the project. As a part of that process, suitable equipment estimated levels of mining dilution and losses should be assessed. This process would typically result in a mining reserve model which will be of use in the mine planning and scheduling work.
  - Mine Optimisation and Strategic Planning - using Datamine's NPV Scheduler (or similar), optimum and economic pit limits, strategic direction for the mine, mining areas and extraction sequence should be determined. The pit optimisation process should be based on several iterations (or "operational scenarios") to determine the best strategy. The Company should undertake a series of open pit optimisation and scheduling activities to understand how the different options compare either practically or economically.
  - The orebody characterisation should be conducted to better assess the grade (physical properties) and rock type distributions. This work should identify key drivers for mine scheduling. Technical and cost parameters used in the optimisation study will useful in establishing appropriate cut-off grades (ie., UCS, Total Sulphur, etc). The results should be discussed with the end customers in mind.
  - Equipment Selection Option Studies and the mining equipment options suitable to the deposit should be assessed in a focus option study. Owner operated option would typically form the base case for the study and then appropriate comparisons should be made.
  - Design of Final Open Pit, an d pit strategic stages needs to be addressed. This would include, design of major haul routes. It is recommended that the Company design an engineered pit using the slope and berm configurations confirmed from a Geotechnical Study and using the final optimisation pit shell as a basis. Stages would typically be based on these constraints and designed within the final engineered pit. Any waste dumps would be incorporated into the design and based on capacity requirements from the pit designs and mine schedule. The Company should define the haul routes to provide sufficient access to the pit(s) taking into consideration the terrain and location of existing infrastructure and dual operating production lines (armoustone and crushed rock).
  - Mine Schedule Development – It is recommended that the open pit mine schedule should be developed using Deswik software (or similar) in sufficient detail for the feasibility level study and utilising an agreed upon fleet configuration and production and material movement target. The Mine Schedule should reflect the mining strategy

developed in the earlier and agreed upon with the Client. The open pit mining schedule will:

- Develop the sequencing of material movements within stages and the final pit designs;
- Reporting of stockpile movements (if any);
- Use annual periods;
- Estimate the primary and auxiliary equipment operating hours and fleet requirements;
- Estimate the management, technical staff and mining personnel for mining activities;
- Estimate the main specified physicals including tonnes, grade, material types to feed into the cost estimation; and,
- Estimate the main consumables used in all open pit activities including drilling, blasting, load and haul
- Operating Strategy - An operating strategy for the operation will be outlined based on the production schedule and equipment requirements.
- Capital and Operating Cost Estimate - The cost estimate for the capital and operating costs will be generated using quotations from Equipment Suppliers and suitable Open Pit Contractors, which are to be provided by the Client:
- Capital Cost Estimate - Develop the mine capital cost to a level of accuracy of +-25% i.e. Pre-Feasibility Study level. Develop the capital cost of Sustaining Capital over the mine life indicating dates required and cost to +-25% accuracy. The Capex estimating methodology will include:
- Budget quotes for all mechanical equipment greater than USD$10k and in-house data for minor mechanical equipment;
- Budget quotes for major packages, including software and survey equipment.
- Operating Cost Estimate – Develop sufficient data to derive the operating costs of the mine and associated services to ±25%. The operating cost estimating methodology will include:
- Labour – organisation chart and local rates. Local rates will be provided by the Client;
- Consumables – such as lube, diesel, tyres, parts, etc. based on quotes and equipment hours (unit rates to be provided by the Company);
- Maintenance – based on a percentage of capital cost/annum; and
- Explosives – based on assumptions to be provided by the Client
- Electric power consumption
- Exclusions
- Battery limits for the mining study will be a hopper of the RoM Crusher;

o Key elements that should be developed as a result of the Mine Study

- Capital and Operational Cost estimates and timing (+/-25%);
- Life of Mine development plan;
- Pit design;
- In-pit and ex-pit haulage fleet requirements;
- Access to the electronic files generated during the mining study including but not limited to:
- Pit optimisation shells
- Pit, waste dump and cutback designs
- Open pit scheduling
- Materials handling
- Cost estimation
- Mining study technical report.
- Schedule

- Given there has only been one Mining Contract supplied to date, SRK recommends that PT KBK request additional quotes from local mining contractors to better understand the potential service providers in the local region and to obtain more exposure to other potential operators (both armourstone and crushed rock producers);
- As the Company intends to stockpile all waste (shale) material that is mined, and if there is the potential to also sell this material in the local market as decorative stone for pathways and driveways in the local area, SRK recommend in the first instance that the Company conduct a local market study and assess the economic merits of this option. The results of the study should be incorporated into a detailed mine study during the next stage of development. However at this stage, SRK has not included any credits for waste (shale) in the pit optimisation conducted herein but it may offer significant uplift to the overall economics of the Project given that there is approximately 10% of shale classified as waste in the current mine study and geological block model.

For and on behalf of SRK Consulting (UK) Limited

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