ASSET VALUATION ON THE KALTARA BATU KONSTRUKSI INDUSTRIAL PROJECT, KALIMANTAN

Prepared For

PT Kaltara Batu Konstruksi (PT KBK)

Report Prepared by

srk consulting

SRK Consulting (UK) Limited
UK7285

SRK Legal Entity:		SRK Consulting (UK) Limited
SRK Address:		5th Floor Churchill House 17 Churchill Way Cardiff, CF10 2HH Wales, United Kingdom.
Date:		November, 2021
Project Number:		UK7285
SRK Project Director:	Mike Armitage	Corporate Consultant
SRK Project Manager:	Dean McMinn	Senior Consultant
Client Legal Entity:		PT. KALTARA BATU KONSTRUKSI (PT KBK)
Client Address:		Simprug Gallery Blok-S JI, Teuku Nyak Arif No. 10 Selatan, Jakarta, Indonesia, 12220

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SRK Consulting (UK) Limited
5th Floor Churchill House
17 Churchill Way
Cardiff CF10 2HH
Wales, United Kingdom
E-mail: enquiries@srk.co.uk
URL: www.srk.com
Tel: + 44 (0) 2920 348 150

ASSET VALUATION ON THE KALTARA BATU KONSTRUKSI INDUSTRIAL PROJECT, KALIMANTAN

1 INTRODUCTION

1.1 Background

SRK Consulting (UK) Limited ("SRK") has been requested by PT. KALTARA BATU KONSTRUKSI ("PT KBK", herein also referred to as the "Company") to derive a Technical Valuation ("Valuation") for the KALTARA BATU KONSTRUKSI Industrial Mineral Project ("KBK" or the "Project"), located in Indonesia.

SRK understands that the purpose of the Valuation is to inform discussions between the Company and its advisors (the "Advisors") in relation to the ongoing development of KBK.

1.2 Scope of Work/Approach

The Scope of Work completed by SRK was based on discussions with Company representatives as well as other Technical Valuation commissions recently completed by SRK. The overall aim of this work is to produce an Independent Technical Valuation, taking into consideration all aspects of work completed and planned for KBK.

SRK has considered various alternatives in terms of valuation methodologies and then applied those deemed most appropriate to KBK based on its status of development and the information available.

The work consisted of an initial desk-top review of relevant reports and studies provided by the Company to enable SRK to understand the status of the Project and the extent of technical work that has been completed to date. SRK has also visited the Project site on multiple occasions within the past several years to observe exploration and other development activities. These site visits were not part of this Valuation, however the collective observations made during these visits have sufficiently informed SRK of the current situation at site.

As provided by the Company for the purpose of this study, SRK has reviewed:

- all available external reports or data relevant to the Project (see Section 1.3 for list of reports/files provided);
- the exploration completed and expenditures incurred on the Project to date, inclusive of sunk costs and the extent and quality of the data collected and results obtained; and
- the construction and development work and near term expenditure proposed by the Company to advance the Project to the next stage of development.

In undertaking this Valuation, SRK focussed particularly upon the following technical factors which are important for advanced stage projects:

(1) Geological location;

(2) Rock (aggregate) quality and potential quantity of industrial mineral present;

(3) Geological patterns and associations and other factors (such as adjacent exploration development, local infrastructure, project risks and opportunities);

(4) Quantity and quality of technical work completed to date;

(5) Exploration completed at the site;

(6) Processing options available to the project;

(7) Matters related to Environment, Social and Governance, and

(8) Other factors that may impact the technical value of the Project.

Specifically SRK has:-

- Quantified the valuable expenditure incurred to date;
- Quantified the projected near-term expenditure that is required to advance the Project to the next decision point;
- Assessed and ranked the mineral resources and exploration potential of the Project against other similar projects,
- Compiled a list of "comparable transactions";
- Developed a Technical Economic Model to derive a discounted cashflow analysis, presenting three alternate production scenarios;
- Derived three alternative value ranges for the Project based on the above; and
- Prepared this Valuation Report.

This scope of work is based on SRK's understanding that no new data has been collected or additional technical assessments have been conducted since the completion of the most recent drilling programme which finished in June 2021 with final geochemical data having been received in September 2021.

1.3 List of Reports Provided

The following files have been provided by the client for the purpose of this valuation:

- Company FS Cashflow estimate (File ref: KBK_Financial Analysis revisi030717_R5_25_.xlsx)
- File ref: "Projection Report PT Kaltara Batu Konstruksi 2021-2030 v14.pdf"
- File ref: "Exploration and Mining License Fees "PT KALTARA BATU KONSTRUKSI".pdf
- File ref: 07. KBK PRE FS REPORT.pdf
- File ref: Application WIUP 49 Ha.jpg (mining permit)
- File ref: B.Davis - KBK visit Nov2019.pdf
- File ref: Classification of Aggregates.pdf
- File ref: Description of Aggregates.pdf

- File ref: Draft Survey Report Topo.pdf
- File ref: GEOMORPHOLOGY MAP_R1.jpg
- File ref: GTK.00143_Preliminary Report.pdf
- File ref: KBK Declaration of Ownership.pdf
- File ref: KBK Financial Project Report.pdf
- File ref: KBK Product.pdf
- File ref: KBK Site Visit Comments_Luke_Connor.docx
- File ref: KBK_Brief .pdf
- File ref: KBK_Exploration and Mining License Fees.pdf
- File ref: KBK_JETTY AREA_LAND INVESTIGATION REPORT.pdf
- File ref: KBK_Proposed Map.pdf
- File ref: KBK_Reserve_5_Years_Final_R1.xlsx
- File ref: KBK-Preliminary Exploration Report.pdf
- File ref: KBK-Test Report Laboratory.pdf
- File ref: KBK-Topography Measurement Report.pdf
- File ref: Line Mapping.bmp
- File ref: KBK_Sample Analysis_Result_Geochemist&Geotech.pdf
- File ref: Peta Geologi.jpg;
- File ref: Peta Lintasan PT. KBK Malinau.jpg;
- File ref: KBK Final Report Rock.pdf;
- File ref: Regional Geology of Malinau Area.docx;
- File ref: The gravity field of Borneo and its region_JMilson1996.pdf;
- File ref: TOPOGRAPHIC-20181005T110312Z-001.dxf;
- File ref: U7285 KBK Geotech Training Site Visit Summary_Final_rev02_DMCM.pptx;
- File ref: U7285 KBK Site Visit Memo.docx ;
- File ref: KBK Final Report Rock.pdf ;
- File ref: U7285_KBK_MRE_v1.0.docx;
- File ref: PetroLab_Mineralogical_Report_4_Samples_OP4477_KBK_Report_27_05_21.pdf;
- File ref: [English]_SK IUP OP KBK.pdf;
- File ref: Mining Permit Flow Chart.jpg;
- File ref: SchematisationComplete.pdf;
- File ref: KBK_STI_MOU.pdf;
- File ref: SITE CONCEPT DRAWING_PT.KBK_.pdf;

1.4 Basis of Value

SRK has based its Valuation on:-

1. Documents provided by the Company (see Section 1.3) which contain information relating to the exploration and evaluation work completed on the Project to date largely conducted by Company and inclusive of the various technical work produced by SRK between 2017 and 2021.

2. Publicly available information relating to transactions involving industrial/aggregate projects and the equity value of aggregate specific companies on various stock exchanges.

3. Past and Planned near-term expenditures.

4. The recent (September 2021) Mineral Resource Estimate, reported by SRK.

1.5 Reliance

SRK understands that the results of its work will be relied upon by the Company and its advisors only. Notwithstanding this, SRK understands that this Valuation Report may be distributed to third parties in full but that extracts from this will not be distributed to third parties without the express written and prior permission of SRK.

SRK has assumed that:

- All technical information made available to and provided to SRK during the course of its investigation constitutes full disclosure and is material for the purposes of the review; and that,
- The Company has the legal right to disclose information to SRK as required.

SRK has not undertaken a review of the rights and titles associated with the Project and has accepted these documents in ‘good faith’ and further assumed that these are ‘current’ and ‘legally held’ by the Company.

1.6 Limitations

SRK does not assume any responsibility and will not accept any liability to any other person for any loss suffered by any such other person as a result of, arising out of, or in connection with the Valuation or statements contained herein, required by and given solely for the purpose of complying with the mandate as outlined.

1.7 Declaration

SRK will receive a fee for its work in accordance with normal professional consulting practice. This fee is not contingent on the results of SRK’s work or whether or not a transaction takes place.

Neither SRK, nor the authors of this Valuation Report have at the date of this report, nor have had within the previous two years, any shareholding in the Company or the Advisors nor are they Directors or advisors of the Company. Consequently, SRK considers it to be independent for the purpose of this work.

The information in this Report that relates to Technical Assessment and Valuation of Mineral Assets reflects information compiled and conclusions derived by Mr Dean McMinn, who is a current Fellow of The Australasian Institute of Mining and Metallurgy and a full time employee of SRK.

Mr McMinn has sufficient experience relevant to the Technical Assessment and Valuation of the Mineral Assets under consideration and to the activity which he is undertaking to qualify as a Practitioner as defined in the 2015 edition of the 'Australasian Code for the Public Reporting of Technical Assessments and Valuations of Mineral Assets'. Dean McMinn consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

1.8 Deliverables

The Deliverable resulting from this study is a Valuation Report (this document), presented in English language and digital format.

1.9 Copyright

Copyright of all text and other matter in relation to the Deliverable (see Section 1.8), including the manner of presentation, is the exclusive property of SRK. It is an offence to publish this Valuation Report or any part of this Valuation Report under a different cover, or to reproduce and/or use, without written consent, any technical procedure and/or technique contained in this document. The intellectual property reflected in the Deliverables resides with SRK and shall not be used for any activity that does not involve SRK, without the written consent of SRK.

1.10 Report Structure

This Report gives a description of the KBK Project, various technical studies conducted to date, a general description of the industrial minerals industry and commodity pricing, summarises the various valuation methodologies typically used to value projects, describes the methodologies used in this case to derive a valuation range for the Project and presents this valuation range for the date specified, 11 November 2021 ("the Publication Date").

2 PROJECT SUMMARY

2.1 Location

The Project is located administratively in the Malinau District, in the Kuala Lapang Village North Kalimantan, situated north of Balikpapan, Indonesia.

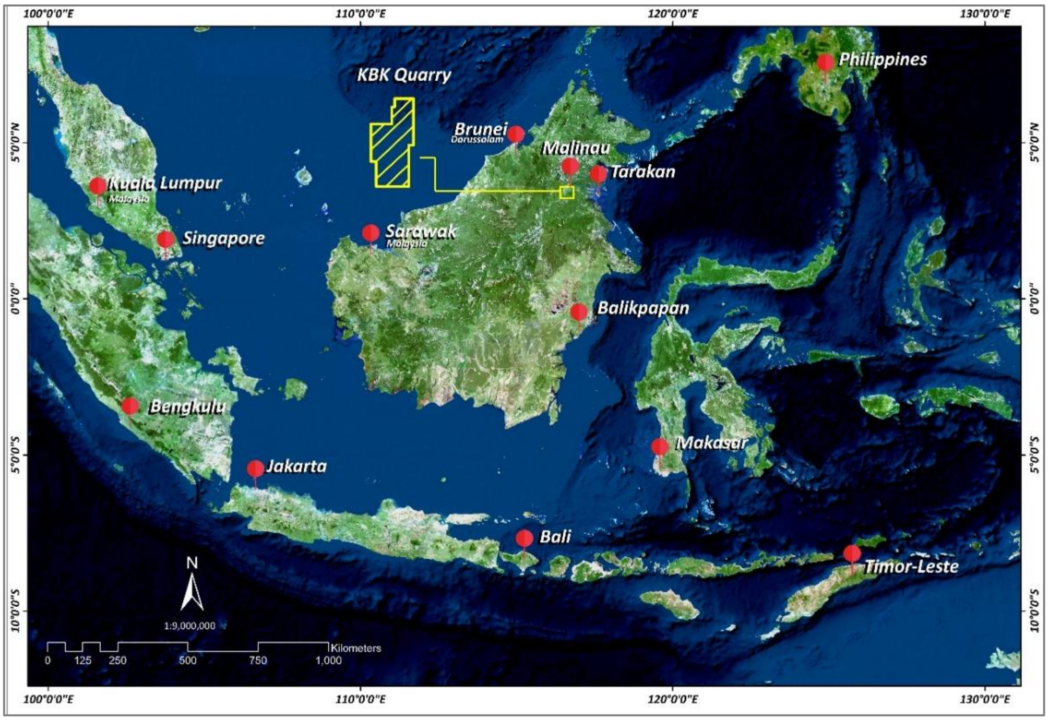


Figure 2-1: General Location Map (source: PT KBK, Sept 2021)

Figure 2-2: Access to site from Jakarta is via plane or river (source: PT KBK Sept, 2021)

The KBK Port site is located approximately 16 km north east of the deposit, in the Malinau Kota District, Malinau Regency, North Kalimantan Province (see Figure 2-4). There are several connections daily to Malinau from either Jakarta or Tarakan. The port site is also connected to Tarakan via the major river 'Sayapan'.

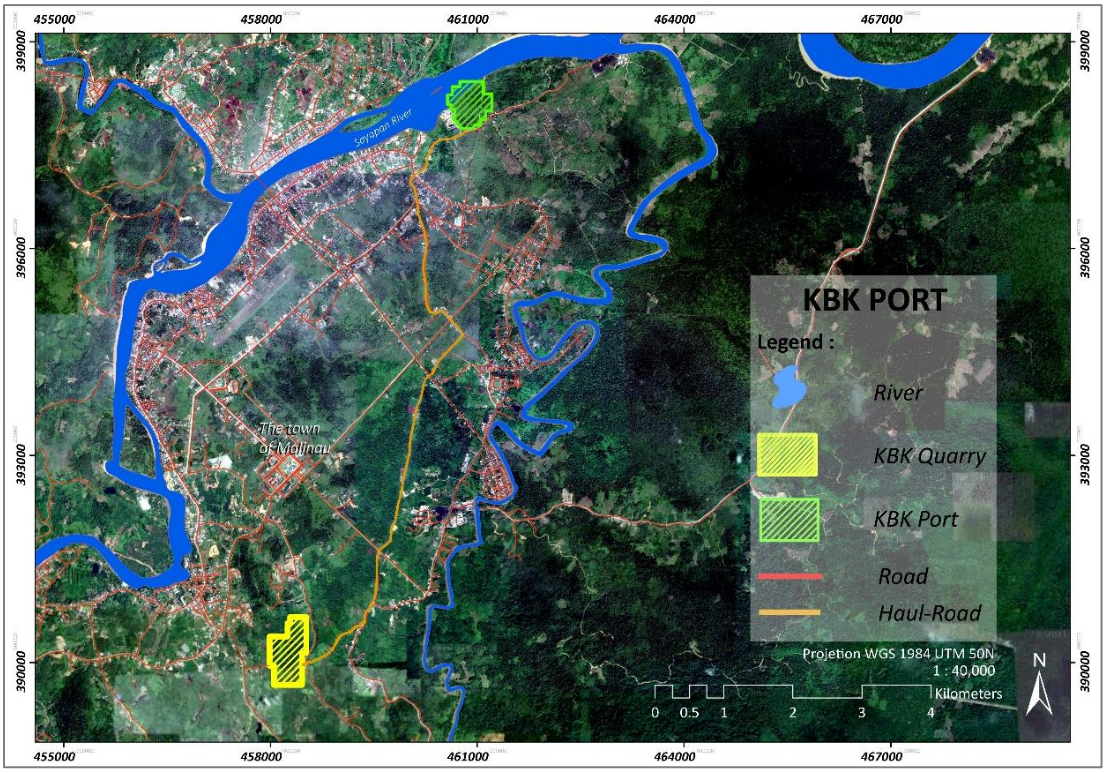


Figure 2-3: KBK Port site location, (source: PT KBK Sept 2021)

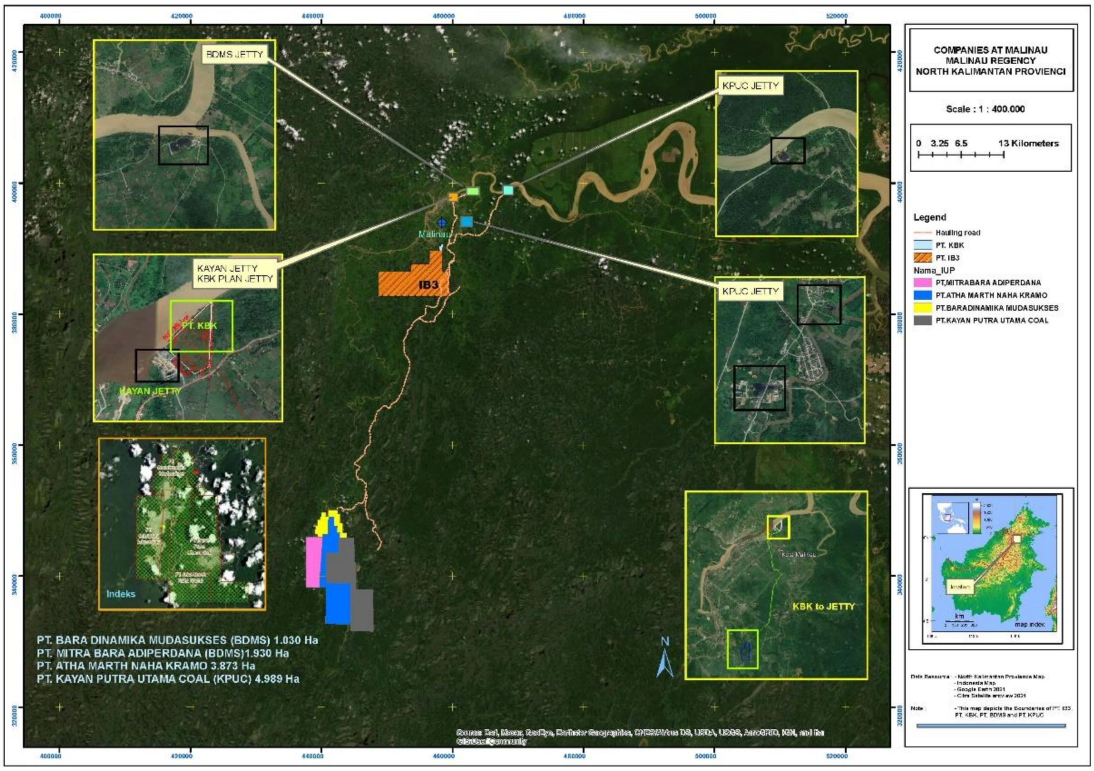


Figure 2-4: Location of local jetty/river ports, and existing mining haul roads (orange)

2.2 Climate and Physiography

The climate at the project site is tropical rainforest and characterized by heavy to very heavy rainfall year-round. Total average annual rainfall around 2300 mm/year.

Ground elevations in the study area typically range between 0 m ASL at river level through to 150m on hill tops, and generally flat deltaic plains lie directly to the north of the site. Most of the site is covered by dense vegetation with minor tributaries running across the deposit.

2.3 Ownership

2.3.1 Introduction

For the purpose of this study, SRK was provided with a "Declaration of Mining Permit and Land Ownership" status document (file ref: "KBK Declaration of Ownership.pdf"), the details of which are summarised below.

2.3.2 KBK Mining Permit

- Status: Production Operation Permit
- Number: 38/ 1 / IUP / PMA / 2020
- Issue Date: 02 September 2020
- Ownership: 60% PT. Puncak Mineral Investasi, 40% Ozindo Investments Pty Ltd
- Total Area: 40 Hectares (400,000 m^2)
- Permit Validation: 15 Years (5 x 5 x 5)
- Permit Extension: 15 years x 15 years

2.3.3 Mining Land Ownership

Ownership of the property currently held by PT. Puncak Mineral Investasi and Ozindo Investments Pty Ltd is +/- 15 hectares (150,000 m^2) of land inside the total 40 hectares of KBK Mining Operation Production Permit. The mining land has the following proof of ownership:

1. Certificate of rights for Buildings / Plants On State Land in Kuala Lapang Village Number: 590 / 025 / Pem / 2017 date 7 November 2017;
2. Certificate of Right of Buildings / Plants On State Land Kuala Lapang Village Number: 590 026 / Pem / 2017 dated 7 November 2017.

The coordinates of the license are given below and it covers a total area of 104.2 km^2 as shown in Figure 2-1.

Table 2-1: License coordinates for KBK Mining Permit (WGS84 UTM coordinates/projections)

Code	x	y
A	458518	390137.7
B	458458.8	390137.7
C	458458.6	389674.7
D	458050.1	389674.8
E	458050.3	389954.2
F	457986.1	389954.3
G	457986.3	390374.9

Code	x	y
H	458245.7	390374.8
I	458245.8	390565.8
J	458283.1	390565.8
K	458283.2	390658.8
L	458518.2	390658.7

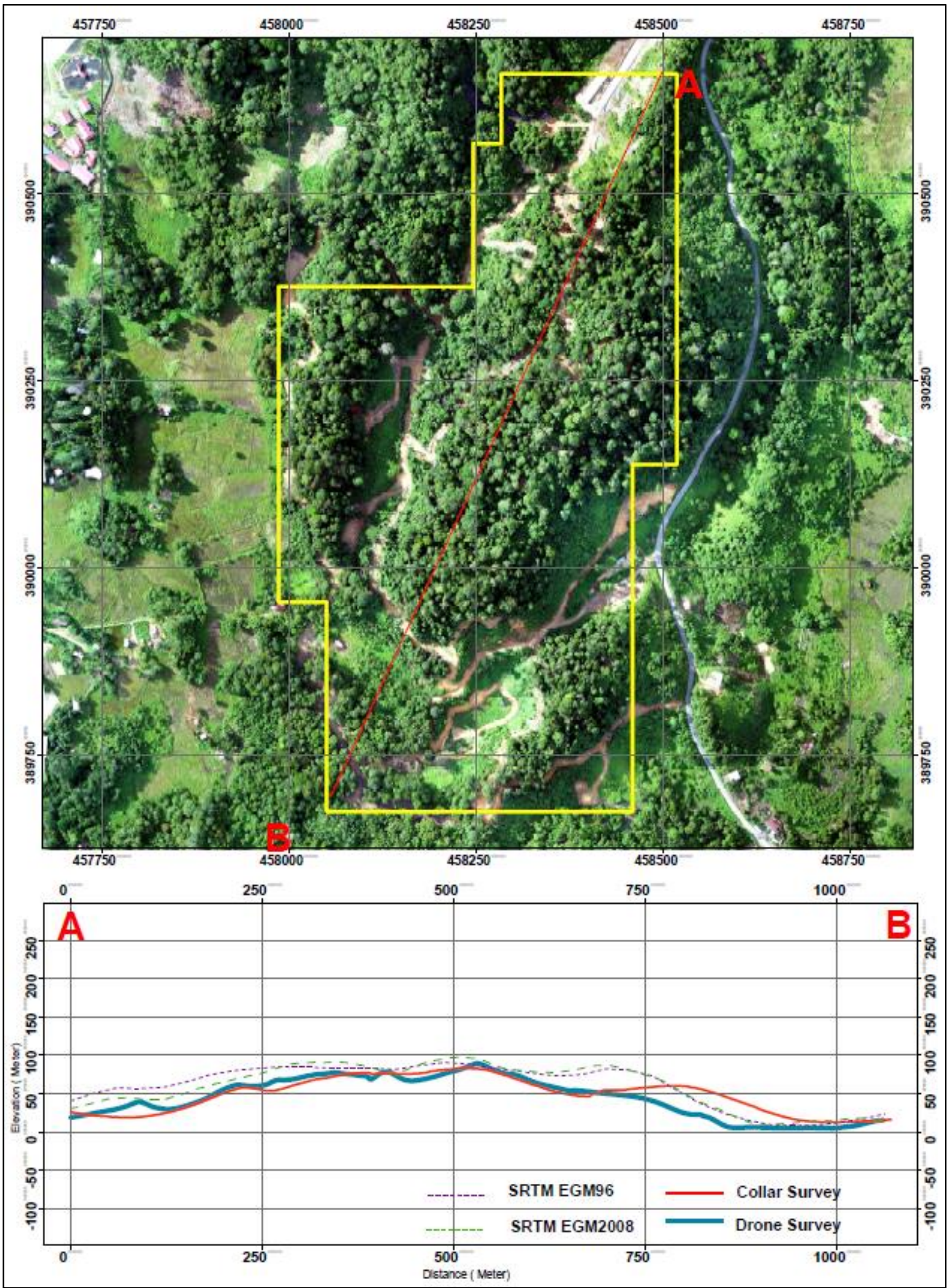


Figure 2-5: Image showing current permit outline, draped to drone image and elevation profile A-B at the main Area of Interest at KBK.

2.3.4 Port Land Ownership

Ownership of the Port Site is currently held by PT. KBK. The port itself consists of +/- 12 hectares (120,000 m^2) of land ownership inside the total 32 hectares of KBK Port Area Boundary. The Port Site has the following proof of ownership:

1. Freehold Title No. 04964 Malinau Kota Village, Malinau Kota District, Malinau Regency, North Kalimantan Province;
2. Freehold Title No. 04967 Malinau Kota Village, Malinau Kota District, Malinau Regency, North Kalimantan Province;
3. Freehold Title No. 04968 Malinau Kota Village, Malinau Kota District, Malinau Regency, North Kalimantan Province;
4. Freehold Title No. 04969 Malinau Kota Village, Malinau Kota District, Malinau Regency, North Kalimantan Province;
5. Freehold Title No. 04971 Malinau Kota Village, Malinau Kota District, Malinau Regency, North Kalimantan Province;
6. Freehold Title No. 04972 Malinau Kota Village, Malinau Kota District, Malinau Regency, North Kalimantan Province; and
7. Freehold Title No. 04973 Malinau Kota Village, Malinau Kota District, Malinau Regency, North Kalimantan Province.

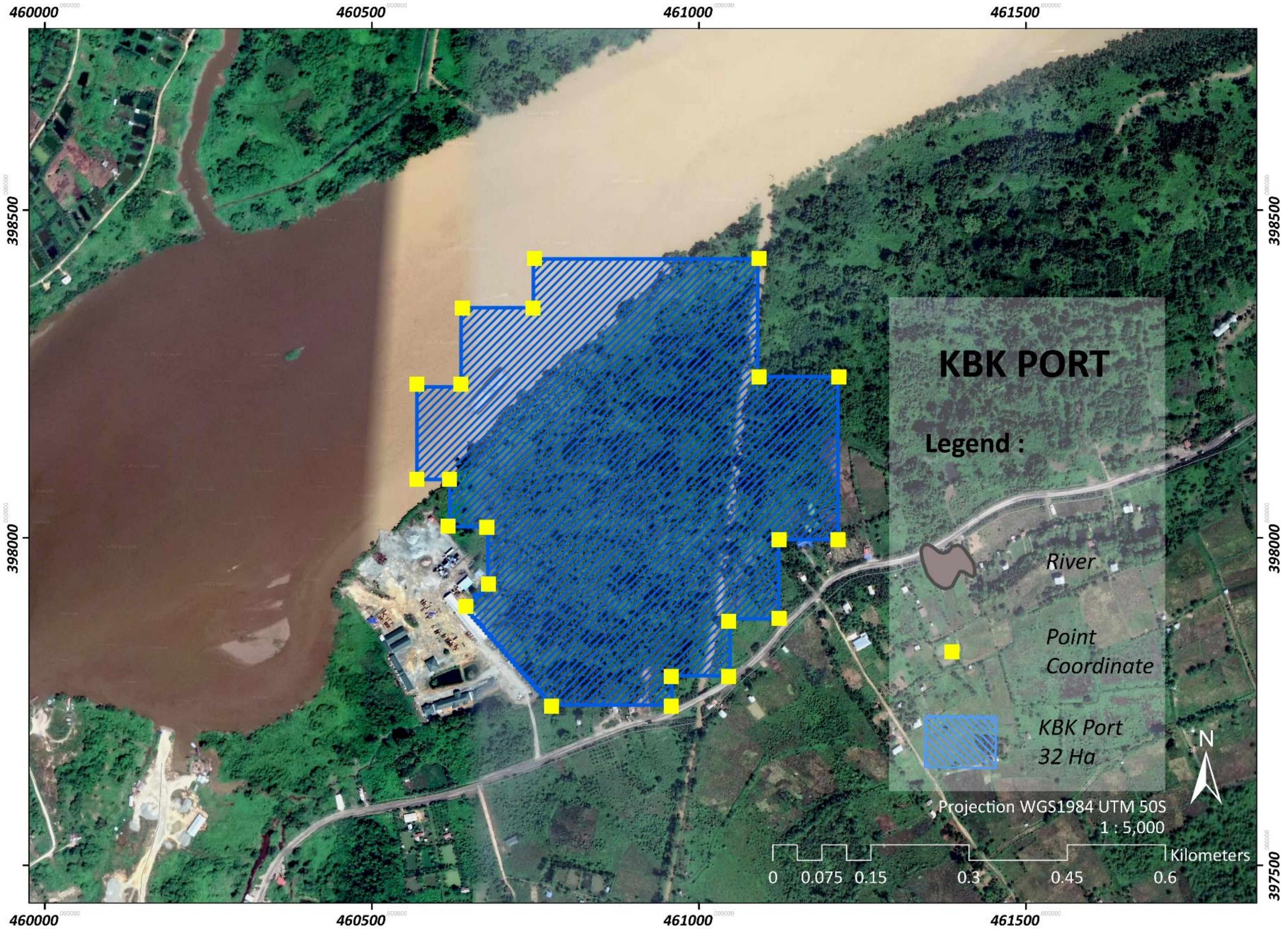


Figure 2-6: PT. KBK Port coordinates (blue hatched polygon) and existing access road

2.3.5 Additional Properties Associated with the Asset

Indo Batu 3 (IB3)

IB3 is a 5,000 hectare aggregate target and the current tenement holding is a Mining Exploration Permit (IUP). The property is majority (60%) owned by PT. Puncak Mineral Investasi (PMI) who is also a majority owner of the KBK jetty and KBK. The Company has plans of carrying out a drilling programme in early 2022. IB3 contains a similar geological stratigraphy to KBK, consisting of predominantly greywacke sandstone of the Malinau Formation (see Section 2.5.1).

Most importantly, the IB3 property is directly adjacent toward the southern boundary of KBK and there are likely synergies in respect to infrastructure sharing, and operational strategy that both IB3 and KBK properties could mutually benefit from inclusive of, for example, water supply and hydro management facilities, access roads, crushing facilities, stockpile handling and carriage ways, port and jetties, and power installations.

Indo Batu Aggregate Properties 2-5 (IB 2-5)

PMI, majority owner of the KBK jetty and Parent Company of the KBK asset, also wholly own several additional aggregate properties nearby the KBK asset. Indo Batu 2 – 5 are a mix of greywacke and andesite targets currently being explored by PMI. The location of these assets is close by the KBK asset and strategically along the River Sesayap, as shown in Figure 2-7. The collective total area of these assets is over 20,000 hectares.

Indo Pasir 1 (IP 1)

Recently, PMI have acquired a sand exploration target (IP 1) which is located approximately 4 kilometers toward the west of KBK. This property is being investigated for the aggregate sand potential. The Company has conducted mapping, broad scale sampling along the river banks and into river bed on its flanks along the length of the property (see Figure 2-7). PMI wishes to include this property in the greater Malinau production portfolio should the results from the exploration activities prove to be positive in the coming campaigns.

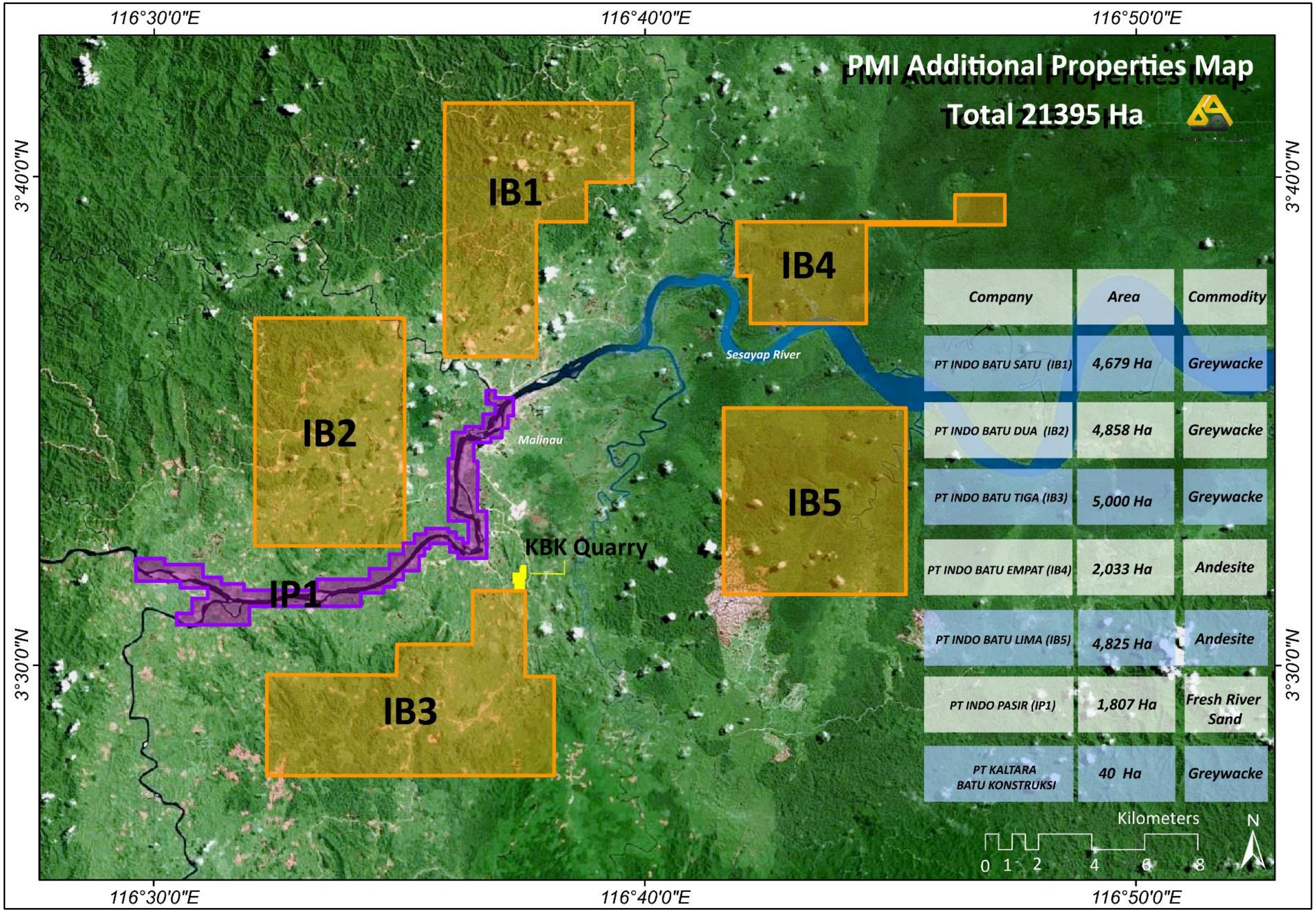


Figure 2-7: Additional properties associated with the KBK asset but not included as part of this valuation (source: PT KBK Sept 2021)

2.4 Access, Infrastructure and Physiography

2.4.1 Introduction

The proposed quarry location is situated the base of a topographic high which has a maximum elevation of approximately 100mASL while the surrounding area is circa 32 mASL. The Malinau township (7mASL) has population of circa 62,000 people (2010 census), and there is a host of existing local services and community.

The regional infrastructure is relatively well established, and several existing mining operations use the infrastructure for their own operations. The following section gives a general description of the infrastructure that is not owned by KBK, however it is available to the Project.

2.4.2 Airport

Malinau has a domestic airport (the “Robert Atty Bessing Airport”) located within 10 minutes by road and receiving flights from Balikpapan. The airport is well supported by local services, and flights regularly connect in Balikpapan to international services and airports within Indonesia.

2.4.3 Roads

A number of national roads and mining haul roads the area. These are shown in Figure 2-4. The current proposed haul road (as detailed below) follows 3.7 km of national road followed by 10.6 km of mining haul road, followed by 0.7 km of national road.

National roads (6 m wide) are reported to have a payload limit of 20 tonnes. Speeds are restricted by road conditions and equipment capability. Laden 4x2 trucks (and empty 6x2 rigid tipper) were noted.

Mining haul roads (circa 10 m wide) are understood to carry trucks (standard 6x2 rigid tipper; mainly HINO 500 FM250/260, rangers) with a payload of 30 tonnes. Speeds are restricted to road conditions, which were poor in some places, with conditions indicating an average journey speed for a truck to be in the region of 20 kph. The Company is in discussions with the owners to gain access to mining haul roads for commercial purposes.

The KBK Project is easily accessed from Malinau by existing local roads (see photo in Figure 2-8), which is 7.5 km from the centre of the main township.

Figure 2-8: Existing access road, looking north from the site entrance; also showing local electrical power supply lines [Source: SRK, photo taken 20/03/2018]

2.4.4 Power

Power is supplied to Malinau from two 8 MW thermal powerplant installations. A low voltage distribution line runs directly adjacent to the licence area (see example in Figure 2-8) and feeds domestic properties and local businesses. However, SRK understands that there is restricted capacity on the Malinau grid and therefore the low voltage distribution line is unlikely to be suitable for providing sustained power to a future larger mining operation, which would need to generate its own power.

The Company is investigating measures to supply power from a hybrid of grid, HFO generated and alternative power generated sources in order to potentially gain on the environmental performance of the operation. The Company has advised that it is evaluating a combination of HFO + renewables (mainly solar and wind power generation). It is thought at this stage that the base load operations will be HFO with a top-up from solar and wind power during the day.

2.4.5 Water

To date, no detailed hydrological studies have been conducted at KBK. It is thought that primary water is required for washing, dust suppression, and potable needs only. SRK has been advised that water supply infrastructure will be developed by the Company in the next stage of development. Contracting teams will also bring own water trucks for suppression purposes for their activities.

A high level review of the mine water management requirements for the Project has been undertaken by SRK and this has included commentary on the status and adequacy of the information gathered so far and the provision of recommendations for further work to advance the Project. Available historical information on relevant surface and groundwater information for the site has concluded that there appears to be calculation errors in the climate statistics, and this could in turn affect predictions of potential project impacts on erosion and water quality.

Water management requirements for the future mine operation have been considered by the Company and are now being included in the environmental planning and field studies that are currently underway. These studies will be guided by the international environmental consultancy, PT ESC Environment Indonesia (ESC) who will undertake site visits, conduct field work for baseline data collection (if/where gaps exist) and compile summary reporting for the ESIA and the AMDAL documentation which is to be resubmitted for the revised project description in Q1 of 2022.

Little or nothing is known about the groundwater regime in deposit area, as there have been no formal assessments completed to date. Based on SRK's experience of similar sites, some attempt has been made to conceptualise the local hydrogeological conditions, but it is clear that the Project would benefit from a technical assessment of groundwater.

The main water management issues for KBK are likely to be, surface water control and potential impacts on the environment and local community. All these matters are being investigated by ESC in the environmental and social study which is now underway.

Water management is an essential component of all mining operations whether it is for water supply, surface and groundwater control, or measures to contain and mitigate the effects of pollution and derogation of supply on the local communities and the environment. The significance attached to these factors is very dependent on the type of mine and the physical setting in which it is operating. In the case of the KBK Project, the mine will be a series of shallow open pit operations located on the top of flat or steep rounded plateaux in a wet, tropical environment. The ore will not be processed or crushed on site but will be transported to the crushing area for further transport or export in its raw state. As such, the main water management issues for the project are likely to be, surface water control, and impacts on the environment.

The Project is located in a region that experiences high levels of rainfall with much of this occurring during short, intense convectional storms. Run-off from the site during such storm events is therefore likely to be high giving rise to flooding and erosion. In order that operations and production are not impacted and to limit damage to key elements of mine infrastructure, it is important that run-off is managed properly. This is likely to entail the construction of berms and diversion ditches upstream of pits, stockpiles, waste dumps, haul roads, and site buildings, which then report to a series of holding ponds. Other measures are likely to include the introduction of cambers to haul roads and parking areas and the use of pumps and pipes to help move water away from operationally vulnerable areas.

Various measures will need to be introduced to divert flows away from potentially polluting sources and to promote settlement of solids out of solution. The use of liners, diversion ditches, earth-clay bunds, and settlement ponds should help to mitigate these effects.

There may also be local villages that rely for water on (a) springs that discharge from the slopes below the future operation; and (b) from the stream or streams that are selected to supply a water supply reservoir for the operation, should this form part of the mine-water management solution. In the case of (a), the derogation (drying-up) of resource results from the stripping of sediment overburden and aggregate ore from area above slopes that have sources of spring water. ESC's environmental impact study for the Project should assess both of these risks.

2.4.6 Rivers

Malinau lies on the southern bank of the River Sesayap (see Figure 2-19 and Figure 2-20) which flows eastward to the Celebes Sea. Tarakan City (population circa 271,000 in 2019) is the next regional population centre on the Pelau Tarakan Island in the mouth of the River Sesayap.

Approximate river width is between 300 m to 500 m. A tributary of the River Sesayap is located immediately east of the licence area. This tributary is called the River Bengalun. Both the River Sesayap and River Bengalun have a number of river jetties being utilised for import / export of minerals and materials in the range of kt to Mt per annum.

2.4.7 River Ports/Jetty's

There are three river ports at which coal is loaded to barges:

- Batu Lidung Coal River Port, located on Sesayap River, owned by KPUC
- Bengalun Coal River Port, located on Bengalun River, owned by KPUC and operated by AMNK
- Tibu Coal River Port, located on Sesayap River, owned and operated by KPUC

SRK made informal visits to the Tibu Coal River Port and Bengalun Coal River Port.

There is also a number of private and national jetties which are not used for coal. Of note are the Kayan Lestari Jetty, the Pemda Jetty, and the Public Jetty (Jetty Trisno). There is also a "Consumables Import Jetty" for coal mining located at the KPUC intermediate stockpile. These are shown in Figure 2-4.

Figure 2-9: Location of River Ports (Labelled), national roads (red) and existing mining haul roads (orange)

Bengaluh Coal River Port

The Bengaluh Coal Jetty is operated by AMNK but is understood to be owned by KPUC. The river port (1.5 Ha) consists of a coal stockpile managed my two excavators, a quay, a mobile conveyor loader and support infrastructure (weighbridge, truck refuelling station, water bowser refilling station, security post and small office).

At the port, where the river is around 60-65 m wide, barges (approx. 15m x 50 m) are loaded to a maximum of 2,000 t. SRK understands barges are then towed by small tugboat (circa 1200HP) 11 km to the Batu Lidung River Port where they are marshalled before transport to the anchorage near Tarakan. Barges are reported to be typically loaded in 3-4 hours.

Figure 2-10: Barge berthing at the Bengaluh River port (Source: SRK, taken 21/03/2018)

Tibu Coal River Port

Constructed in 2017 and located 70 km from the mining areas, the Tibu River Port consists of a stockpile formed from truck tipping and managed and reclaimed by front end loaders (two CAT 966H are used), a 150-200m static conveyor loader (with one transfer), an open jetty structure of around 120m in length formed from steel tubular piles and protruding around 15-20 m into the river, as well as a number of back-port offices and support buildings.

The barging operation is understood to currently consists of one 8,000 t barge per day floated at high tide with one cycle taking 48 hours. At anchorage coal is transferred to Panamax vessels using a floating crane.

Figure 2-11: Tibu River Port (Source: SRK, taken 20/03/2018)

Kayan Lestari Jetty

The “Kayan Lestari Jetty” is used by Kayan Lestari for import of raw materials for the Asphalt plant located at the same location. The installation consists of the asphalt plant, stockpile area with raw material (sand, coarse aggregates). There are also industrial units and housing / accommodation under construction. The jetty comprises a simple “loading ramp” where barges (circa 1500-2500t) with ramp can be berthed. During the visit a tug and barge crew provided information, which has been used as for “sense checking” possible barging costs in advance of seeking Contractor budget quotes. A photograph of the loading ramp is shown in Figure 2-12.

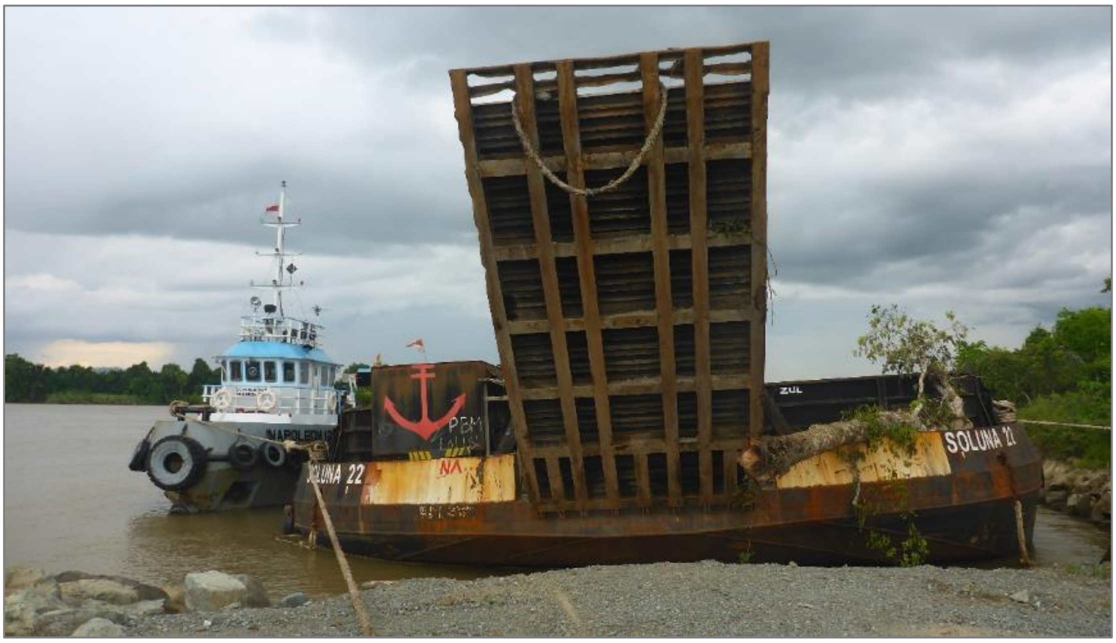


Figure 2-12: Kayan Lestari Jetty with berthed 2,500t barge and 1200HP tug (which is directly adjacent to KBK’s Jetty)

Public Jetty (Jetty TRISNO)

The public jetty ("Jetty Trisno") is located 600m upstream from Kayan Lestari jetty and consists a land area (circa 1.5 Ha), a shallow quay (100m length) and a "loading ramp". The quay is in a poor state of repair.

Figure 2-13: View of shallow Public "Jetty" and landing ramp.

Pemda Jetty

The Pemda Jetty, located approximately 200 m upstream of the Public Jetty, was identified by KBK as an available location for development of a KBK export point. The jetty and land area can be rented from the local government for a monthly fee. The Pemda Jetty comprises an enclosed parcel of land (1.5 Ha) with a 130 m long river bank frontage. The area is accessed from the mining haul road via two local roads but the access road is of limited width. Dwellings and businesses are located at the road intersection. The river bank show signs of erosion (Figure 2-14). The existing jetty appears to be a rudimentary structure to facilitate unloading of small quantities of dredged sand although historical satellite imagery (Google Earth) indicates larger quantities of gravel were stockpiled on the site in the recent past.

Figure 2-14: View of the riverbank at the Government "PEMDA" Jetty, looking eastward (Source: SRK, taken 21/03/2018)

Figure 2-15: View of the entrance to Government "PEMDA" Jetty, looking southward (Source: SRK, taken 21/03/2018)

KBK Jetty and River Port

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

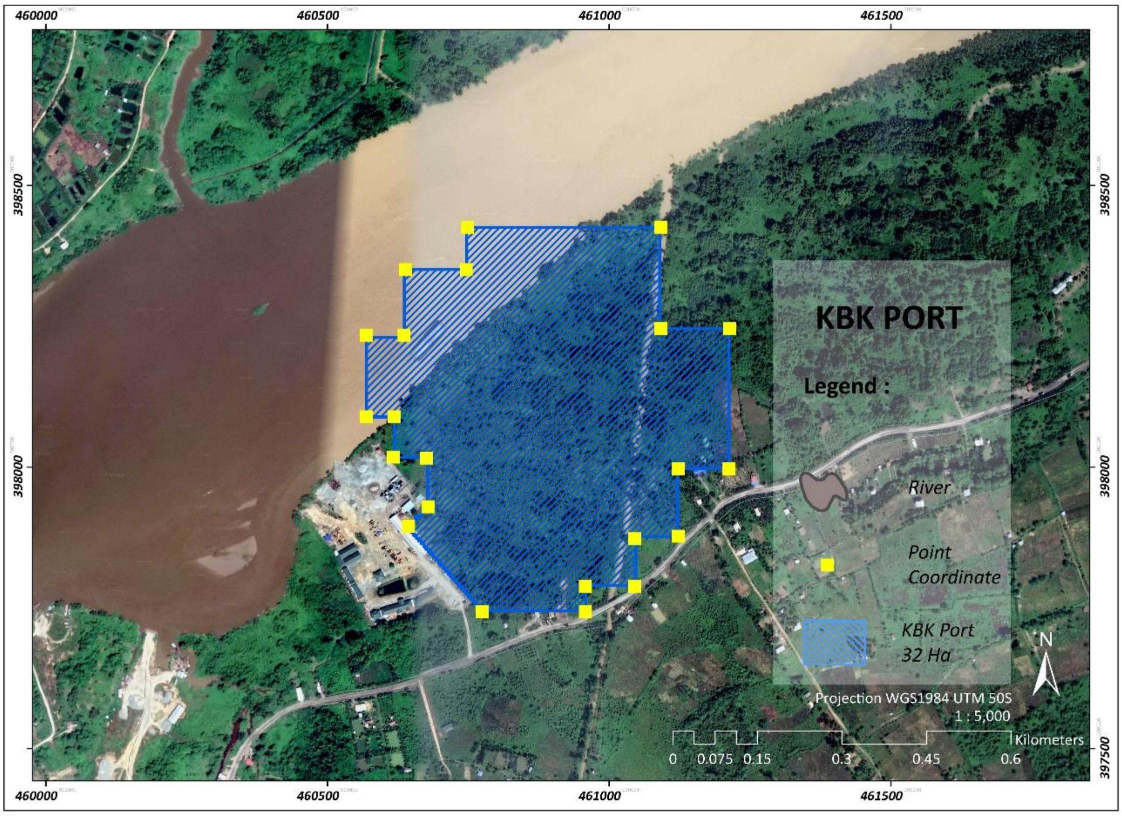


Figure 2-16: KBK Jetty Area and access road (PT KBK, October 2021)

Currently work is continuing to establish a zone of flood plain from the creek, where it is known to flood with an average of approximately 0.5m maximum on higher tides. Technical and development work conducted to date at the newly purchased port area is as follows:

- Site selection survey and land investigation;
- River bathymetric survey and sampling;
- Water quality monitoring;
- Inert material site investigations, and
- land compacting.

Figure 2-17: KBK Jetty Area construction 2020, and PT Zamindo Prima Selaras contractor conducting early stage backfill (Source: PT KBK Sept 2021)

Figure 2-18: KBK Jetty area concept design (source: SRK, Sept 2021)

Figure 2-19: KBK Export Logistics Concept [Blue=barging routes, Yellow=16km Haul road, Orange= River jetty location] (source: PT KBK, Oct 2021)

Figure 2-20: Sesayap River looking eastward from south bank PEMDA Jetty (Source: SRK, photo taken 21/03/2018)

2.4.8 Existing Nearby Operating Mines and Mineral Assets

Clause 4 of the JORC Code (Materiality) obliges the Competent Person(s) to understand and report on the potential impact of abstraction at adjacent properties.

There are five coal assets in the area and these have associated infrastructure of opportunistic interest:

- “MBA” - Mitra Bara Adiperdana Tbk
- “AMNK” - PT Arta Marth Naha Kramo
- “BDMS” - PT Bara Dinamika Muda Sukses
- “KPUC” - PT Kayan Putra Utama Coal
- PT. Indo Batu 3 (IB3)

PT. Mitra Bara Adiperdana Tbk (MBA)

MBA is a Publicly listed coal mining company currently trading on the Indonesia Stock Exchange. MBA holds a Coal Mining Permit with an area of 1,930 hectares in Malinau. The Company is part of the Baramulti Group, an integrated and world-class energy company. MBA has several subsidiaries, such as PT Baradinamika Muda Sukses, PT ENGIE Cipta Tenaga Surya, PT Malinau Hijau Lestari, PT Duta Bara Utama, PT Mitra Malinau Energi, and PT Mitra Muda Makmur. The operation is 50 kilometres from KBK.

PT. Atha Marth Naha Kramo (AMNK)

AMNK is a Coal Mining Company established on December 28, 2009. The company’s shares are owned by PT. STM Tunggal Jaya Indonesia (99%), and Mr. KIM SUNG HYUNG (1%). AMNK holds a Coal Mining Permit with area of 3,873 hectares in Malinau, with coal calories ranging from 5,100GAR to 6,100GAR (Medium Calories), with a total reserve of approximately 80 million tonnes. The operation is 50 kilometres from KBK.

PT. Bara Dinamika Mudasukses (BDMS)

Established in 1989, BDMS is engaged in the coal mining industry. The company was granted an Exploration Mining Permit in 1993 and an extension of the Production Operation Mining Business Permit (IUP) in 2017. BDMS is known for its integrated infrastructure for upstream to downstream exploration activities. MBA. is the majority shareholder of BDMS with more than 99.99% share ownership. BDMS holds a Coal Mining Permit with an area of 1,030 hectares in Malinau. The operation is 50 kilometres from KBK.

PT. Kayan Putra Utama Coal (KPUC)

KPUC is a thermal coal mine located in the Malinau regency. The mine's exploration license was approved in 2004 and forms part of a privately owned KPP Group. The mine sells most of its coal to Korea, with smaller volumes exported to Japan, Taiwan, Malaysia and India. KPUC ships its coal through the Samarinda and Tarakan ports. KPUC holds a Coal Mining Permit with an area of 4,989 hectares in Malinau. The operation is approximately 50-55 kilometres from KBK.

SRK understands that the mining areas are located circa 60 to 70 km south of the River Sesayap and coal is mined by open pit methods. The coal is then transported by road, using trucks with a capacity of up to 30 t on purpose built haul roads (see Figure 2-21). Coal is directly transported to one of three river jetties on the River Sesayap or River Bengalun, or via KPUC intermediate stockpile located at N4160455, E392069. Further information on the River Jetties is provided below.

Figure 2-21: Mining haul road in Malinau region [source: SRK, photo taken 20/03/2018]

PT. Indo Batu 3 (IB3)

IB3 is a 5,000 hectare aggregate target and the current tenement holding is a Mining Exploration Permit (IUP). The property is majority owned by PMI who is also a majority owner of the KBK jetty. The Company has plans of carrying out a drilling and detailed mapping programme in early 2022. It is planned that SRK will supervise the drilling and also conduct the structural mapping exercise. IB3 contains relatively the same geological stratigraphy as KBK.

Most importantly, the IB3 property is directly adjacent to the KBK asset, and there are likely synergies in respect to infrastructure sharing, that both IB3 and KBK properties could mutually benefit from. Infrastructure sharing including (but not limited to): water supply and hydro management facilities, access roads, crushing facilities, stockpile handling and carriage ways, port and jetties, and power installations.

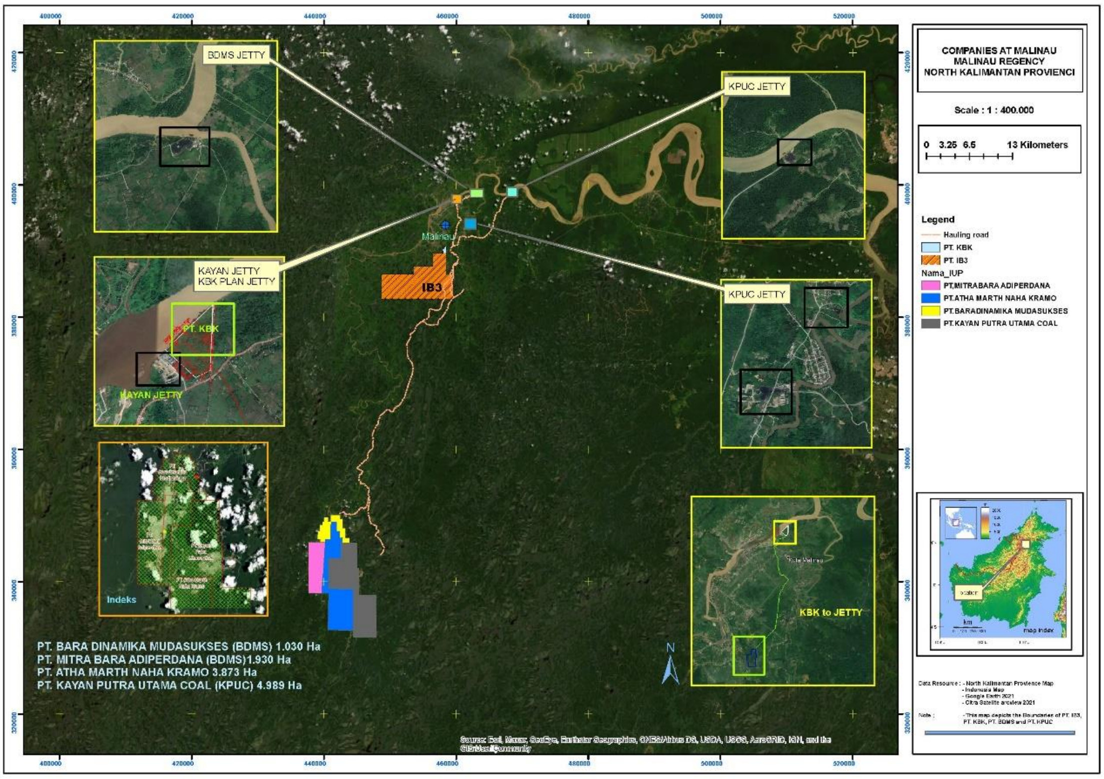


Figure 2-22: Existing nearby operating mines not related to KBK (Source: PT KBK, Sept 2021)

2.5 Geology

2.5.1 Geological Setting

The Malinau Region is comprised of a sequence of depositional sedimentary and volcanic formations and igneous intrusions comprising rhyolites, granites and tuffs overlain by quaternary sediments. In general, the sediments comprise alternating sandstones and siltstones, and more rarely slate horizons 0.2-0.5 to 3-5 m thick. In the lower part of the succession, sandstones predominate; sandstone and siltstone in the middle of the sequence is approximately equally proportioned. The upper sequence consists mainly of siltstones and slates.

The regional stratigraphy in the research area, as depicted in the regional geological map sheet for Malinau, Kalimantan (compiled by R. Heryanto, S. Supriyatna and H.Z. Abidin, 1995), is dominated by the Malinau Formation (see Figure 2-23). The Malinau Formation lithologies consist primarily of feldsphatic sandstone interbedded with siltstone or argillite which is dark grey to black in colour and having micaceous and calcareous minerology, of Middle Eocene age. It is proposed the siltstone (or argillite) was deposited in shallow marine low dynamic environment.

In terms of tectonics, the deposit is located in the north-eastern part of Kalamantan. Prominent geological structures, found in the Malinau sheet, are syncline, anticline, normal, horizontal and thrust faults. Previous studies describe tectonic activity in area, that has commenced in the Paleocene and resulted in a strongly folded sequence of sedimentary rocks purportedly of the Embaluh Group. These folds show an axes striking in North-South direction.

R. Heryanto, S. Supriyatna and H.Z. Abidin, 1995, propose that Tertiary tectonic activity has emplaced thrust faults across the region which are observed by previous explorers to be parallel to the fold axes SE-NW trending sinistral fault. During Eocene, R. Heryanto, (*Et al.*) propose that the Embaluh Group was unconformably overlain by the Malinau Formation which was interbedded with the Sembakung Formation (see Figure 2-23).

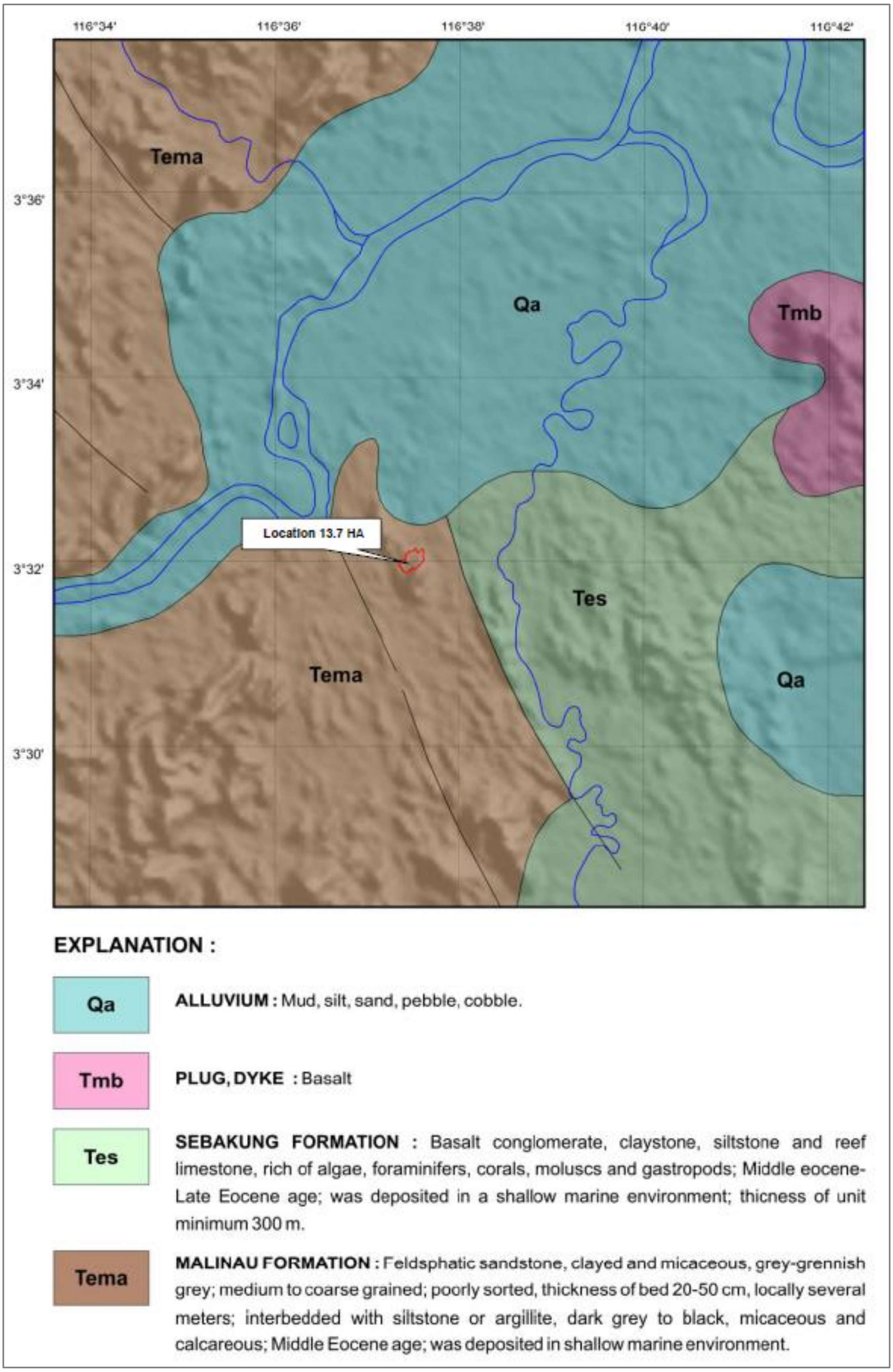


Figure 2-23: Regional Geological Map Sheet Malinau, Kalimantan by R. Heryanto, S. Supriyatna and H.Z. Abidin, 1995, with a scale of 1:250,000, published by the Geological Research and Development Center (PPPG)

2.5.2 Deposit Geology and Industrial Minerals

Previous work conducted by R. Heryanto (*Et al.)* describes the main rock types at KBK to consist of Calcarenite, a grey, hard, layered sedimentary rock with medium-fine sand grain size and a carbonate cement; however, recent petrographic studies conducted by SRK describes the main rock type as greywacke. Greywacke is a variety of sandstone generally characterized by its hardness, dark colour, and poorly sorted angular grains of quartz, feldspar, and small rock fragments or lithic fragments set in a compact, clay-fine matrix. It is an immature sedimentary rock generally found in Paleozoic strata. An example of the typical greywacke outcrop material observed at KBK is shown in Figure 2-24.

Figure 2-24: Outcrop of predominantly fine-grained greenish-grey greywacke consisting of silt-sized clasts of quartz and feldspar (both potassium-feldspar and albite) hosted in a fine-grained matrix containing chlorite, clay, calcite and rare trace iron-oxides (source: Company report)

The main geological feature at the resource is a large dome like complex comprised primarily of a fine-grained greenish-grey greywacke interspersed with thinner shale bands.

The clay (where present) is very fine-grained but likely to consist of a mixture of sericite, illite and kaolinite. There is little to no apparent sedimentary banding in the main greywacke, either viewed in hand specimens (under a hand lens), diamond drill core, or under petrographic microscope. Regular lithological contacts between greywacke (GRY) and shale (SHA) show a medium to steeply (30-60°) dipping bedding sequence within the deposit, which is observed to strike approximately north-south).

Two unweathered surface samples were submitted in April 2018 for petrographic analysis (see lab report: entitled, PetroLab Mineralogical Report OP4477 KBK Report_27_05_21.pdf, in Appendix B). Both samples appeared to be the same colour but there are some slight differences in the weathered surface. This may be due to subtle differences in the matrix mineralogy, possibly with the magnesium (Mg)/ iron (Fe) ratios within the chlorite (ClO_2). Importantly, the porosity of both samples is observed to be very low. An example of the fresh and weathered greywacke is shown in Figure 2-25.

	
Meta-sedimentary Greywacke unit	**Interbedded Shale Unit**
	
Heavily Weathered Grewacke unit	**Aggregate Examples**

Figure 2-25: Grab samples of shale and meta-sedimentary (greywacke) lithologies at exposed rock face taken within the permit

From the recent drilling conducted at site (2018/19 and 2021) the deposit is observed to be open at a depth of 100 m – 120 m below surface. Additional drilling conducted in March-April 2021 has tested the extent of the greywacke along strike and within the permit area. Two lithologies, greywacke and shale, make up over approximately 95% of the material in all drill core that was logged during the two exploration programmes.

Within the drill core observed to date, there are instances of shale bands that occur intermittently in the deposit. Originally, the Company thought these occurrences were much more prevalent as they were visible in the main dome structure which outcrops some 80-100 m AMSL; but in fact shale makes up less than 8% of all drill core. An example of the types of shale and greywacke contacts observed at KBK is shown in Figure 2-26.

(a) Sharpe contact between fine grained shale and greywacke

Figure 2-26: Example of the types of shale and greywacke contacts (source: SRK April 2021)

2.6 Exploration

2.6.1 Historical Exploration

Geological Site Investigation

In August 2016, the Company conducted a site review of the location and undertake geological mapping within the permit area and the nearby forest land spanning approximately 13 hectares. PT KBK also calculated an estimate for the main rock mass which outcrops within the permit, as shown in Figure 2-27. The rock mass was estimated by the Company using Surpac © Mining software, and a block model created representing “Hard” and “Very Hard” materials that were observed during the site inspection. PT KBK estimated at the time, the main rock outcrop (shown in Figure 2-27) has a total volume of 1.1 million m^3 of rock, consisting of 980,933 m^3 Hard material and 95,173 m^3 of Very Hard material.

Figure 2-27: Rock Mass Outcrop located at the main site access corridor within the KBK Permit

Topographical Surveys

In 2002, the local Department (Departemen Kehutanan Badan Planologi Kehutanan Tahun) produced a map of the forest land (map reference: DKBPK-2002) showing the location of the permitted area, and the regional land use boundaries as categorised by the Department.

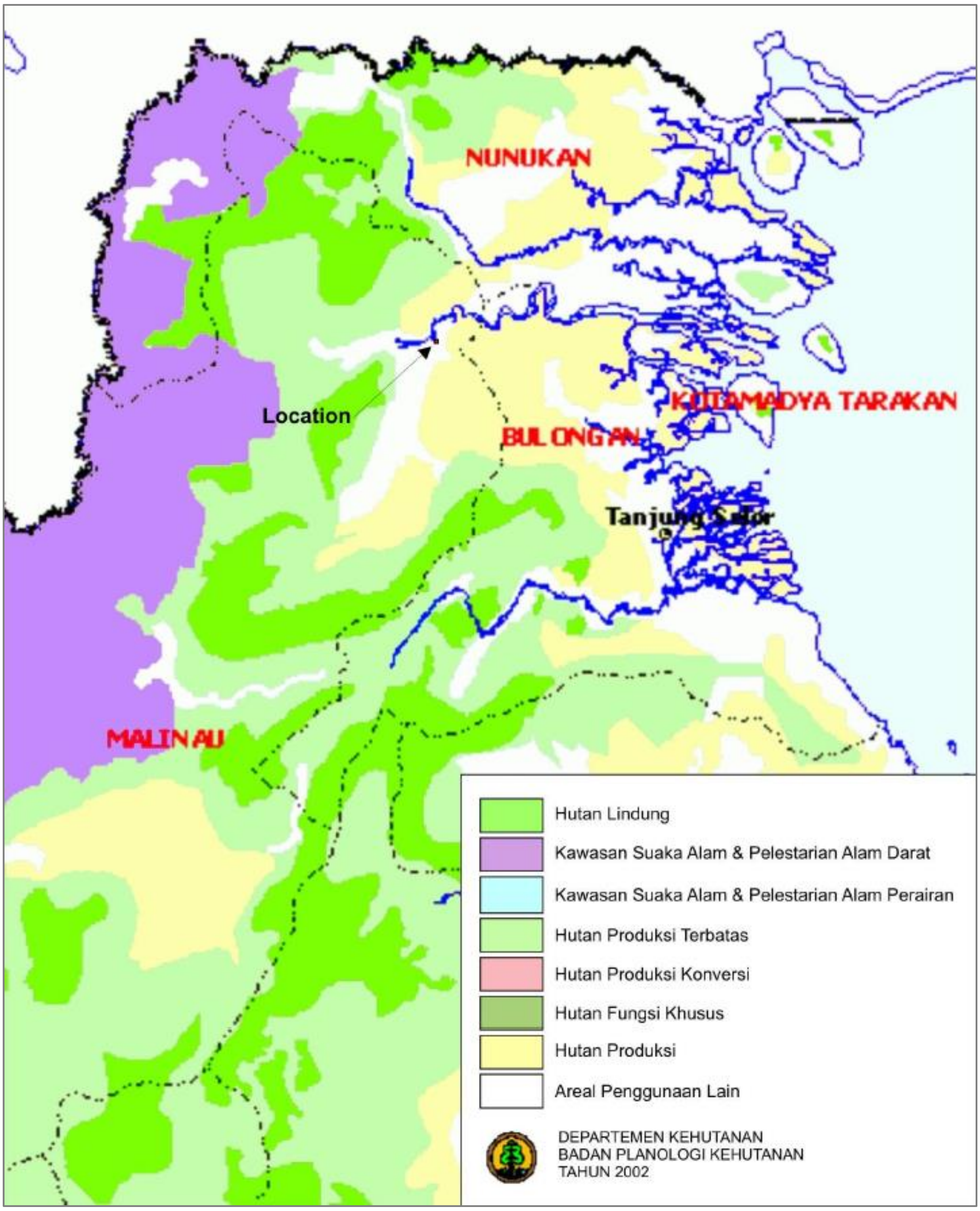


Figure 2-28: Map of forest land within the region (source; PT KBK report, map reference; DKBPK-2002)

In 2016 PT KBK conducted a land use survey (Figure 2-29) and produced topographical contour maps as part of this work. The 'Land Use Survey' compiled as part of this work, grouped the landform into the following 3 areas:

1. Swamp land, located in the central north and south of research area.
2. Secondary Forest Land, where the spread of secondary forest land is observed to occupy most of the research area with dense to sparse vegetation.

3. Mine Land, land situated in the immediate vicinity of the permit and where material has been mined in the east close to the main access road.

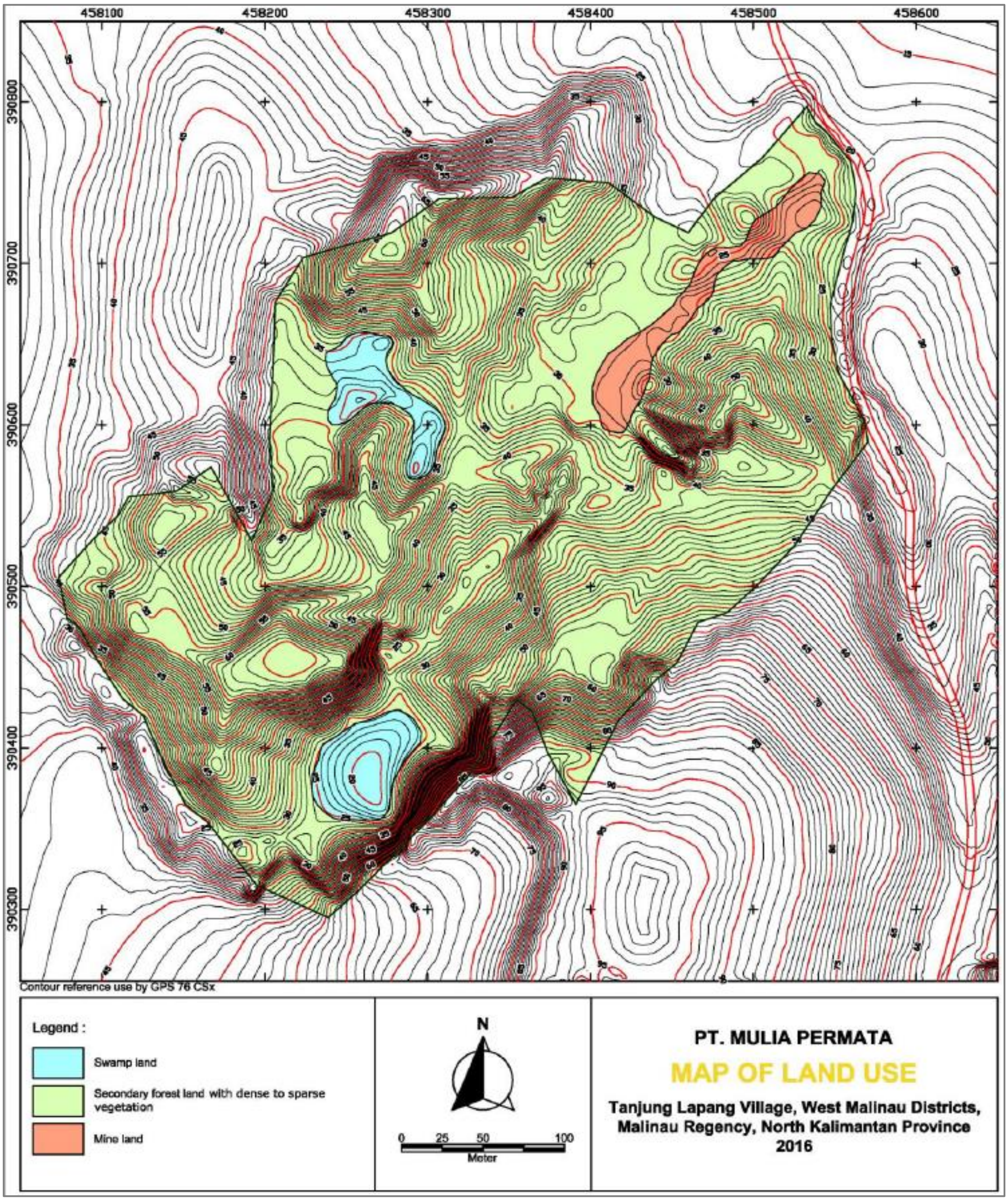


Figure 2-29: KBK Site Land Use and Topographical Survey (source: PT KBK report Sept 2021)

2.6.2 Historical Estimate Company Resource/Reserve Estimates

In 2018, the Company conducted an early stage volumetric survey and developed a block model of the aggregate horizons using Surpac © 3D modelling software. The block model was based on the land surveys, mapping and geological interpretations that have been made from the exploration work conducted at the time (Figure 2-29, Figure 2-30).

The estimated volume (m^3) as predicted by the Company for this study was as follows:

- Batuan keras (kalkarenit) = 8,557,490m³.
- Batuan sangat keras (kalsilutit) = 2,234,660m³.
- Total Volume Batuan = 10,792,150m³.

SRK has not been provided with this data and has not seen the supporting block model and estimation files for this work, and therefore is not able to comment on the work or approaches taken. Accordingly, SRK is unable to make any reasonable conclusions from the result.

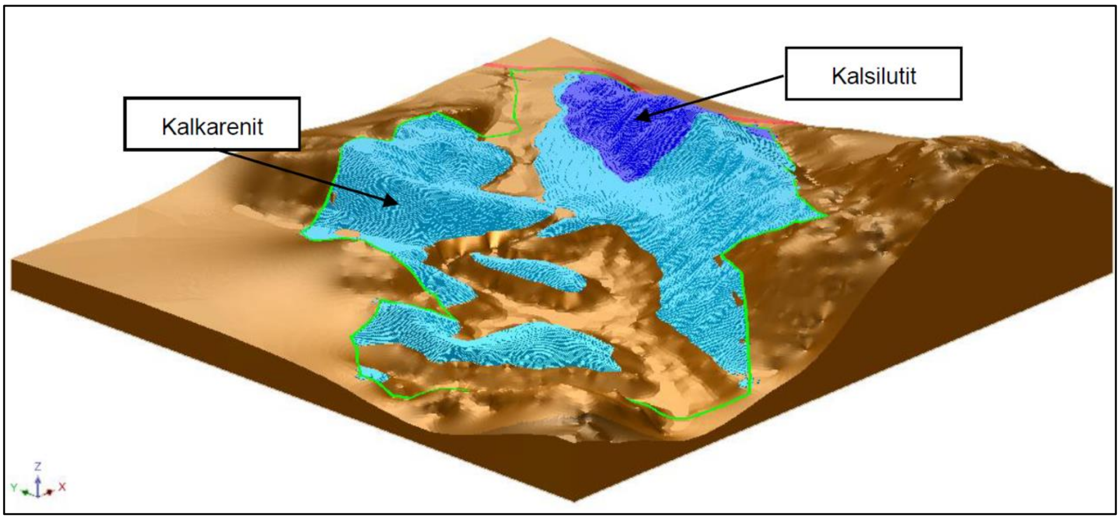


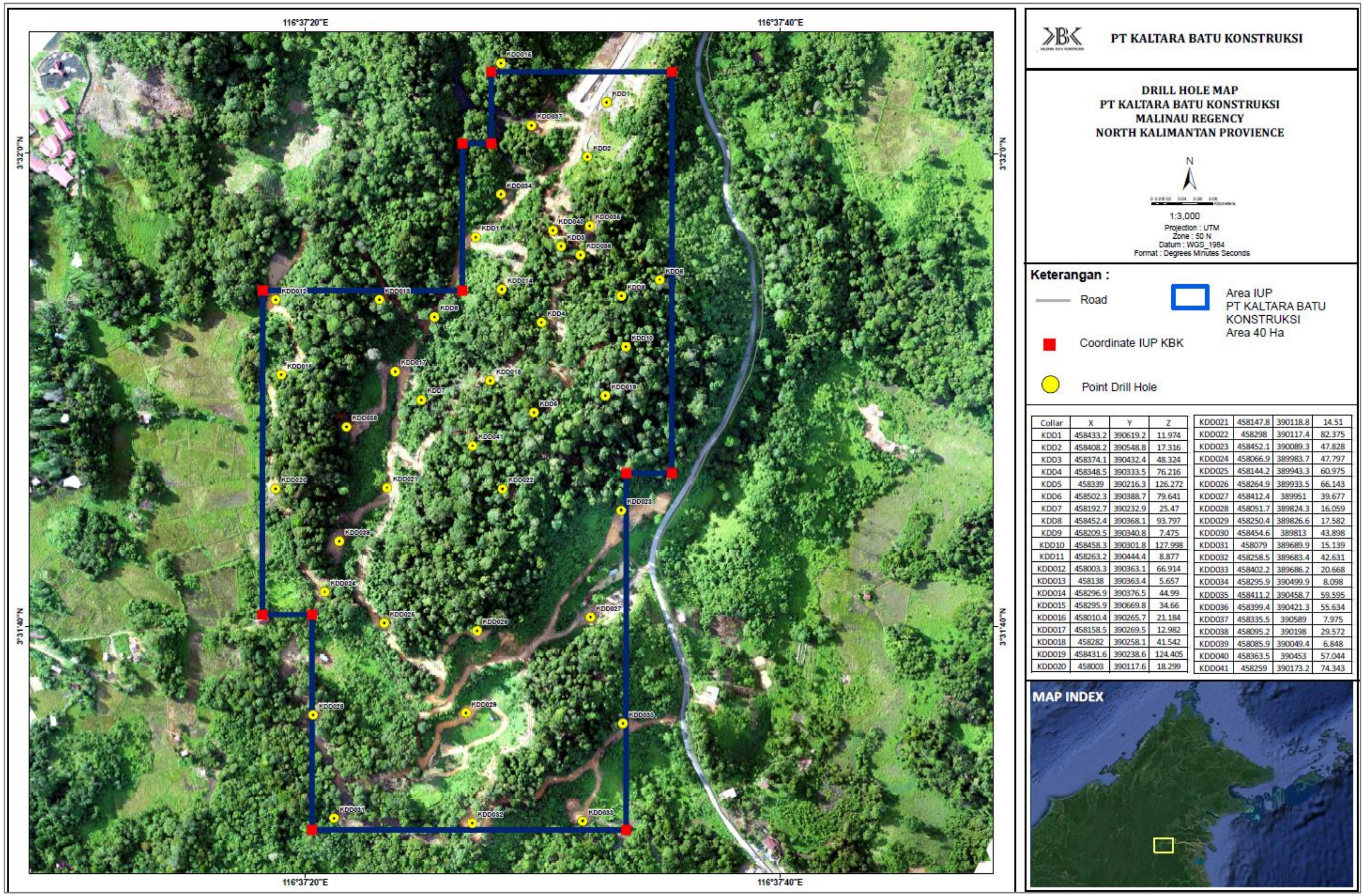
Figure 2-30: Digital terrain model showing potential mining blocks for ore and waste zones as interpreted by the Company (source: Company preliminary exploration report 2018: file ref: "Preliminary Exploration Report.pdf)

2.6.3 Recent Exploration

Since drilling commenced in 2019, a combination of vertical and inclined diamond drill holes, (some orientated) have been completed. All exploration drilling and sampling completed to date has been with HQ diameter diamond core. Table 2-2 and Figure 2-31 summarises the drilling completed to date.

Table 2-2: Summary of Drilling Methods

Programme	Method	Sequence	Type	Meters	No. Sampled metres	Proportion
2019	DD	KDD0001 - 0014	HQ	1,315	30	35.5%
2021	DD	KDD0015 - 0041	HQ	2,400	100	64.5%
		Total	**Total**	**2,730**	**130**	**100%**



Collar	X	Y	Z
KDD1	458433.2	390619.2	11.974
KDD2	458408.2	390548.8	17.316
KDD3	458374.1	390432.4	48.324
KDD4	458348.5	390333.5	76.216
KDD5	458339	390216.3	126.272
KDD6	458502.3	390388.7	79.641
KDD7	458192.7	390232.9	25.47
KDD8	458452.4	390368.1	93.797
KDD9	458209.5	390340.8	7.475
KDD10	458458.3	390301.8	127.998
KDD11	458263.2	390444.4	8.877
KDD012	458003.3	390363.1	66.914
KDD013	458138	390363.4	5.657
KDD014	458296.9	390376.5	44.99
KDD015	458295.9	390669.8	34.66
KDD016	458010.4	390265.7	21.184
KDD017	458158.5	390269.5	12.982
KDD018	458282	390258.1	41.542
KDD019	458431.6	390238.6	124.405
KDD020	458003	390117.6	18.299
KDD021	458147.8	390118.8	14.51
KDD022	458298	390117.4	82.375
KDD023	458452.1	390089.3	47.828
KDD024	458066.9	389983.7	47.797
KDD025	458144.2	389943.3	60.975
KDD026	458264.9	389933.5	66.143
KDD027	458412.4	389951	39.677
KDD028	458051.7	389824.3	16.059
KDD029	458250.4	389826.6	17.582
KDD030	458454.6	389813	43.898
KDD031	458079	389689.9	15.139
KDD032	458258.5	389683.4	42.631
KDD033	458402.2	389686.2	20.668
KDD034	458295.9	390499.9	8.098
KDD035	458411.2	390458.7	59.595
KDD036	458399.4	390421.3	55.634
KDD037	458335.5	390589	7.975
KDD038	458095.2	390198	29.572
KDD039	458085.9	390049.4	6.848
KDD040	458363.5	390453	57.044
KDD041	458259	390173.2	74.343

Figure 2-31: Plan map showing the drilling completed up to 2021 (Source: PT KBK Sept 2021)

The two drilling contractors used during the 2019 and 2020 drilling campaigns were:

- PT NORAS NUSANTARA (March – May 2019); and
- PT YEKADA MULTI ENERGI (March- June 2020).

In all cases, the requirements of KBK drilling included:

- The need to drill large diameter diamond holes up to approximately 100 m depth for geochemical and geophysical testwork.
- The need for small footprint (man-portable) drilling equipment to access areas with small drill platforms on moderate and very steep slopes.
- Platform mounted equipment was desirable with winchable/towable capability in order to access areas where roads do not exist and gradients are steep.
- Coring and orienting in predominantly competent aggregate/sedimentary rock strata using standard double tube drilling equipment.
- All drill holes are to be downhole surveyed, and core orientation implemented for all non-vertical holes using Client supplied Reflex ACT.
- Drilling contractors to provide services such as core box delivery from drilling site to core site (workshop) for core cutting using diamond saw cutter.
- Maximise core recovery, while operating to the highest standards of safety and environmental control.

Figure 2-32 shows a man-portable Jacro-200 skid mounted wire line system diamond drill rig in operation during the 2020 campaign.

Figure 2-32: Diamond drilling being conducted by PT YEKADA MULTI ENERGI in 2019 (Source: SRK 2019)

3 MINERAL RESOURCES

3.1 Introduction

During 2021 the Company completed its Maiden Mineral Resource Estimate for KBK. This work followed the two drilling campaigns that were conducted over two seasons and following a brief delay due to the COVID pandemic.

The MRE and Report (file ref: U7285_KBK_MRE_v1.0.docx) was compiled by SRK and included a volumetric assessment of the target material, in this case greywacke, and the application of product quality variables to this material. In order to determine the volume of greywacke within the license area, SRK used the KBK drillhole database which included the lithological logging data to create a 3D geological model of the main geological units and constrained this below a high resolution topographic surface. SRK then created a block model and used conventional estimation techniques to estimate density into blocks to convert volumes into tonnages.

3.2 Mineral Resource Estimate

Mineral Resource estimation for aggregate projects has two main components, a volumetric assessment of the minable volume of target material, in this case greywacke, and the application of product quality variables to this material. In order to determine the volume of greywacke within the license area, SRK used drillhole lithological logging data to create a 3D geological model of the main geological units and constrained this below a high resolution topographic surface. SRK then created a block model and used conventional estimation techniques to estimate density into blocks to convert volumes into tonnages.

In addition, sufficient data was available to estimate Uniaxial Compressive Strength ("UCS") into the blocks. A geostatistical study of the estimated variables (UCS and density) did not yield robust variograms and as a result SRK has used Inverse Distance Weighting as the main interpolation method, using lithological contacts as hard domain boundaries. The interpolation used a variable orientation large elliptical search following the dip and dip direction of the geological zones.

3.3 Mineral Resource Statement

The Mineral Resource Statement has been prepared in accordance with the JORC Code and is authored by the Competent Person Mr Peter Gleeson, MAIGS, MIMMM, Cert Eng (CP), a Principal Consultant (Resource Geology) with SRK.

The Mineral Resource has an effective date of 11 February 2020 and uses a geological model to define the volume of greywacke, restricted to blocks within the exploration license and within an optimised pit shell. In addition, SRK has applied a reduction factor to greywacke tonnages of 4% for Indicated material and 10% for Inferred material to account for the quantity of unmodelled shale waste within the greywacke that was not possible to subdomain out. Although this is a high level assumption, SRK considers this factoring to be required to attempt to account for the internal waste. Further drilling will be required to accurately define and model any internal waste within the greywacke horizons.

To report the Mineral Resource Statement for the KBK project, the following conditions were applied:

- only classified material (Inferred and Indicated) has been reported;
- only material falling inside an optimised pit shell has been reported;
- only material within the current permit boundary has been reported; and
- only greywacke tonnages have been reported.

Table 3-1: Mineral Resource Statement for greywacke material reported within an optimised pit shell and restricted to within the current mining permit (IUP), as of 30 September 2021

	Volume	Average Density	Tonnes	Water Absorption	Average UCS	LAA (500X)	LAA (100X)	Total Sulfur	MgO	Fe2O3	SiO2	Al2O3
	m3	kg/m3	(Mt)	%	Mpa	%	%	%	%	%	%	%
Indicated	8,159,000	2.56	20.9	2.48	83.76	30.20	6.23	0.10	2.50	5.02	65.37	11.92
Inferred	19,819,000	2.57	51.0	2.48	85.74	30.20	6.23	0.10	2.50	5.02	65.37	11.92
Total (Ind + Inf)	**27,978,000**	**2.57**	**71.9**	**2.48**	**85.16**	**30.20**	**6.23**	**0.10**	**2.50**	**5.02**	**65.37**	**11.92**

Notes to table:

1. The tonnages and grades presented herein are reported on a dry basis.

2. SRK has applied a reduction in tonnage of 4% to Indicated material and 10% to Inferred material to account for the anticipated tonnages of internal waste that have not been possible to resolve with 3D modelling.

3. All figures have been rounded to reflect the relative accuracy of the estimates.

4. Mineral Resources are not Ore Reserves and do not have demonstrated economic viability.

5. Optimised pit has included the following parameters for the KBK base case as follows: Production Rate – crushed rock aggregate and armourstone production of 4.5 Mtpa, Geotechnical: Footwall (Deg) 45, Hanging wall (Deg) 45, Mining Factors: Dilution (%) 0.0, Recovery (%) 100.0, Processing: Recovery (%) 99.0, Operating Costs: Mining Cost (armourstone) (USD/tore) 8.00, (USD/trock) 8.00, Mining Cost (Crushed Aggregates) (USD/tore) 5.00, (USD/trock) 5.00, Haulage (USD/t) Reference Level; (Z Elevation) 0, Processing (USD/tprod) 1.00, Infrastructure (USD/tprod) 1.45, Export & Logistics (USD/tprod) 3.87, G&A (USD/tprod) 0.50, Other Fees (USD/tprod) 0.44, Royalty % 0.10, Crushed aggregates Local Sales (USD/tprod) 2.60, armourstone Local Sales (USD/tprod) 3.17, Crushed aggregates Export Sales (USD/tprod) 3.12, Selling Cost: Crushed Aggregates Local Sales (USD/tprod) 2.60, armourstone Local Sales (USD/tprod) 3.17, Crushed Aggregates Export Sales (USD/tprod) 3.12, Aggregate Rock Prices: Local Sales (USD/t) 25.99, 0-5mm (Dust) (USD/t) 5.63, 5-10mm (USD/t) 27.11, 10-20mm (USD/t) 27.11, 20-30mm (USD/t) 27.11, 30-50mm (USD/t) 26.40, armourstone Local Sales (USD/t) 31.69, armourstone Stone (USD/t) 31.69, Export Sales (USD/t) 31.18, 0-5mm (Dust) (USD/t) 6.76, 5-10mm (USD/t) 32.53, 10-20mm (USD/t) 32.53, 20-30mm (USD/t) 32.53, 30-50mm (USD/t) 31.68, Discount Rate (%); 10, Total operating cost: Marginal Local Crushed Aggregates (USD/tore) 8.39, Marginal Export Crushed Aggregates (USD/tore) 12.26, Marginal Local Armourstone (USD/tore) 10.39, Marginal Local Crushed Aggregates (USD/tore) 15.00, Marginal Export Crushed Aggregates (USD/tore) 15.81, Marginal Local Armourstone; (USD/tore) 18.13.

3.4 Planned 2022 Drilling Programme

Further diamond drilling has been recommended in order to reach the following goals:

- Test the depth extent of the optimised open pit produced as part of the Mineral Resource estimate down to a depth of -140m rL.
- Increase the drilling density in low confidence areas of the deposit where there is minimal drilling, in particular the southern portion of the deposit.
- Provide drilling on planned drill lines to ensure more evenly spread information and not a random spread of data. Current drilling is not drilled on the planned drill lines.
- Test areas of the deposit considered as “Exploration Targets” in order to bring material into the Inferred and Indicated categories. In addition, target areas of Inferred resources to be upgraded the Indicated.
- Provide better resolution to the footwall contact between greywacke and shale in the main deposit area.
- Provide drilling data to enable the reporting of Mineral Resources in the small subsidiary hill area of the main deposit area.

All planned drilling should utilise orientated core to better define the structures within the deposit and increase confidence in the geological interpretation. This information is lacking at present. In addition to the exploration and resource upgrade programme, SRK also proposes the following:

- Commence a tight spaced drill hole programme on a 20 x 20 m grid to depths of around 24 m to create an area of Measured Mineral Resources for initial mining toward the north-east of the permit. At this nominal spacing, the intention will be to align resource infill drilling with bench and batter heights for mining drilling requirements. In addition, the 20 x 20m grid will potential “piggy-back” on the drilling convention for armourstone development drilling and production in the next phase of assessment.
- The programme should be conducted prior to the armourstone drilling development and where possible these holes can be used for the armourstone production drilling.

In total, SRK estimates that approximately 7,000 m of drilling will be required to upgrade further marginal areas of the current model to the Inferred Mineral Resource classification, with a portion of the current Inferred Mineral Resource being upgraded to Indicated. In addition to this, SRK estimates some 600 m of drilling will be required for the upgrading of a portion of the deposit to Measured Mineral Resources using the tight spaced grid described above.

A figure showing the planned exploration and Measured Resource drilling is provided in Figure 3-1. Planned drillhole collar locations as well as drilling parameters are provided in Table 3-2.

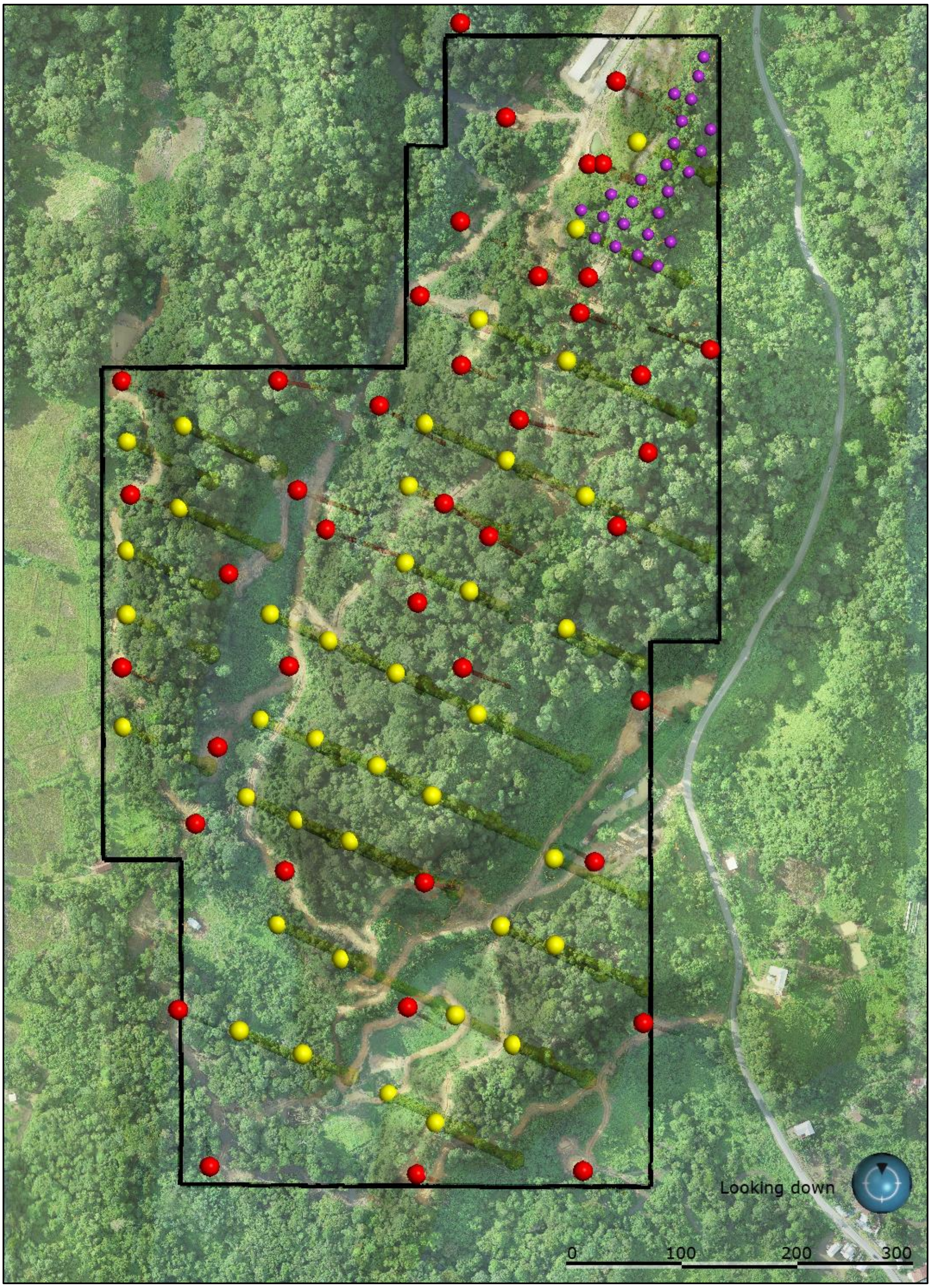


Figure 3-1: Exploration plan for further diamond drilling. Existing collars in red, proposed exploration holes in yellow and initial mining grid in purple

The Q1 Infill Drilling programme should incorporate a new high resolution topographic survey. The new topographic surface should be accurate to sub 0.5m (X,Y and Z direction) and tree cover should be accounted for via walked survey lines to understand the natural surface rather than the tree canopy which has in the past known to effect the topography that was acquired by the drone. In addition:-

- A focused Structural Mapping and Logging programme needs to accompany the Q1 Infill Programme.
- The MRE should be updated on completion of the drilling.
- A Geotechnical Assessment (4 boreholes) should be undertaken to inform a focused Mine Study for heading towards reserves development.
- A Focussed Mine Study should be completed for reserves development.

The estimated Cost of the above work is summarised below in Table 3-2.

Table 3-2: KBK Planned Infill Resource Drilling Programme for Q1 2022

Exploration method	Cost per unit (USD)	Required number of units	Programme Estimated Cost (USD)	Justification for cost
Exploration Drilling	$175/m drilled (all in cost including analysis)	7,000	1,225,000	Cost based on external contractor quote in addition to known analysis costs
Initial Mining Grid	$175/m drilled (all in cost including analysis)	576	100,800	Cost based on external contractor quote in addition to known analysis costs
Additional analysis of existing core	$30/analysis	100	30,000	Analysis costs taken from analyses undertaken in the currently completed work
Geological and Structural Mapping	$1100/mapping day	7	17,700	Cost based on typical industry standard for a consultant structural geologist for 7 days of mapping
Additional walked topographic survey	n/a	n/a	n/a	KBK to use in-house survey team
Additional Drilling For Informing the Mine Study				
Geotechnical Boreholes	$175/m drilled (all in cost including analysis)	4		No focused geotech data is currently available at KBK. At present all geotechnical logging has been basic and all orientation has not been reliable
Hydro Boreholes	$175/m drilled (all in cost including analysis)	4		No hydro (or flow) data is currently available at KBK
		Sub-total Cost:	**1,375,500**	
Further Technical Assessment				
Geotechnical Assessment		**Sub-total Cost**	**20,000**	
Hydrological & Hydrology Assessment		**Sub-total Cost**	**25,000**	
Testwork (aggregates)		**Subtotal**	**NA***	
MRE and Report Update 2022		**Sub-total Cost**	**40,000**	
Mine Study and Mine Reserves Development		**Sub-total Cost**	**65,000**	
		Total Estimated Cost	**1,525,500**	

Notes: (*) Extent of the testwork required is not yet determined and will be established following the MRE update in 2022.

4 EXPLORATION TARGET

As part of the September 2021 MRE, SRK also derived an Exploration Target ("ET"). The tonnage range for this comprised the modelled greywacke material that fell within the block model, but outside of the optimised open pit and reported Mineral Resource.

Specifically, while SRK had modelled three greywacke domains (GRY 1, GRY 2 and GRY 3), it only considered the central greywacke domain (GRY 2) to have sufficient drilling data to allow the reporting of Mineral Resources and so the Exploration Target comprised the remaining greywacke material in the GRY 1 and GRY 3 domains, as well as a small portion of the GRY 2 Domain below the optimised open pit, that fell within current license boundary.

While SRK has derived a tonnage range for the ET to reflect the uncertainty in the estimation of accurate tonnages, it is not possible at this stage to derive a range of product properties for the material due to an absence of testing. SRK has therefore assumed that product characteristics in the ET portion of the deposit will be in line with those in the reported Mineral Resource, due to the homogeneity of the rock mass and until proven otherwise.

SRK's ET derived as above is 50 Mt to 80 Mt (this shown as red in Figure 4-1).

It should be noted that this estimate is conceptual in nature, that there has been insufficient exploration to estimate a Mineral Resource and that it is uncertain if further exploration of this ET will result in the estimation of a Mineral Resource.

Notwithstanding this, this is material to the overall prospective value of the Project and has potential to increase the resource and extend the mine life.

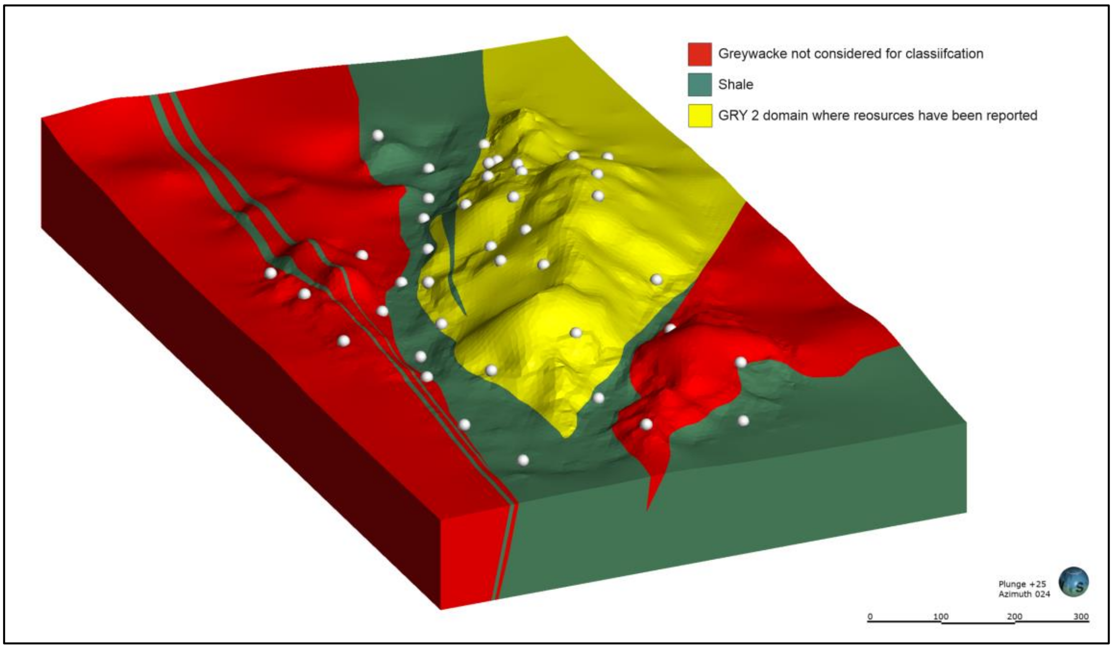


Figure 4-1: Lithological model showing the location of the GRY 2 lithological domain that has been reported as a Mineral Resource (drillhole collars shown as white points) and the ET material shown in red

It is envisaged that with minimal drilling in zones below the optimised pit shell, and in the peripheral areas to the current permit, there is potential to increase the Mineral Resource. The Company has a planned an estimated USD 1.3M drilling programme to be undertaken in Q1 of 2022 and plans are now underway to mobilise teams. Details of the planned exploration have been discussed in the KBK MRE report (file ref: U7285 KBK MRE 2021.pdf).

The Company has also made application for extension to the current permit to investigate these zones shown in blue in the unclipped Block Model in Figure 4-2.

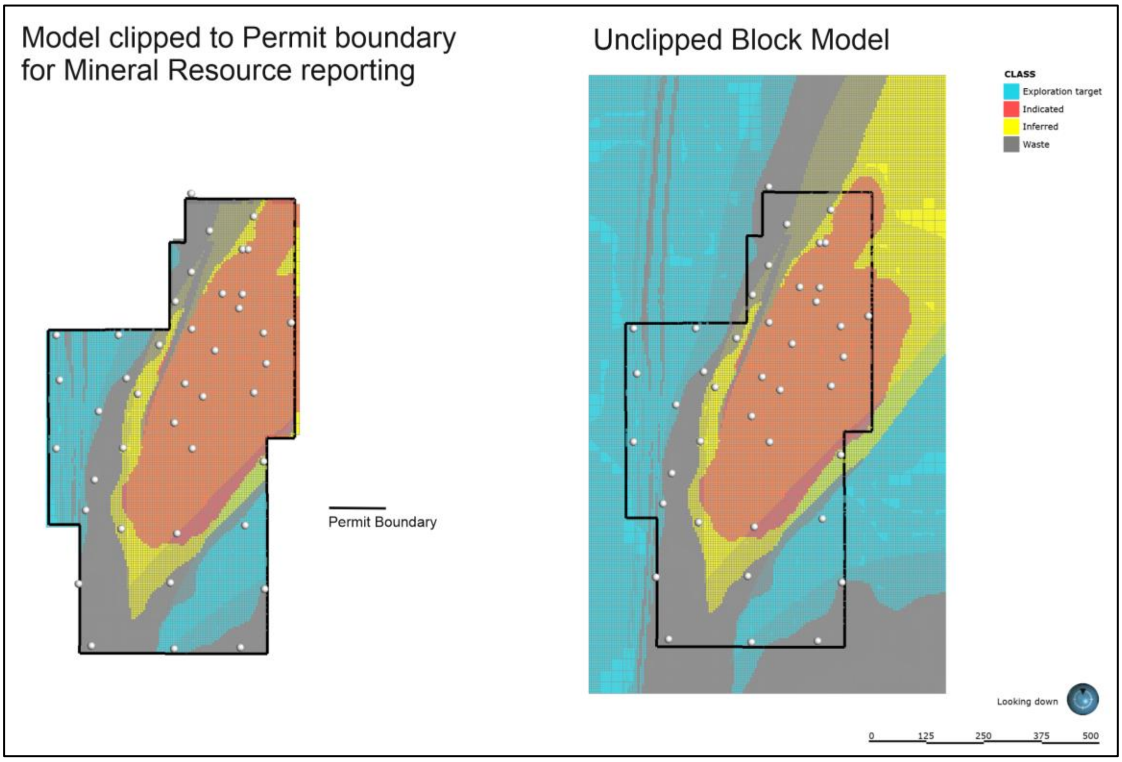


Figure 4-2: Larger area model used for pit optimisation and model clipped to permit boundary for Mineral Resource reporting purposes

It is noted that these potential extensional areas need to be tested to confirm whether (or not) greywacke (or Malinau Formation) extends beyond the current permit area and to what extent. SRK has observed in remotely sensed gravity data provided by the Company (see Figure 4-3) that a similar greywacke anomaly could exist toward the north-east of the current permit area. The bouguer gravity map below shows a sizable anomaly (approximately double the size of the dome outcropping at KBK) exists toward the northeast in a short distance beyond the current Mineral Resource. As such, this could add significant upside to the Mineral Resource if the greywacke continues in a short distance from the permit. The Company has made an application for the extension of the permit so the exploration target can be tested as part of the next drilling phase.

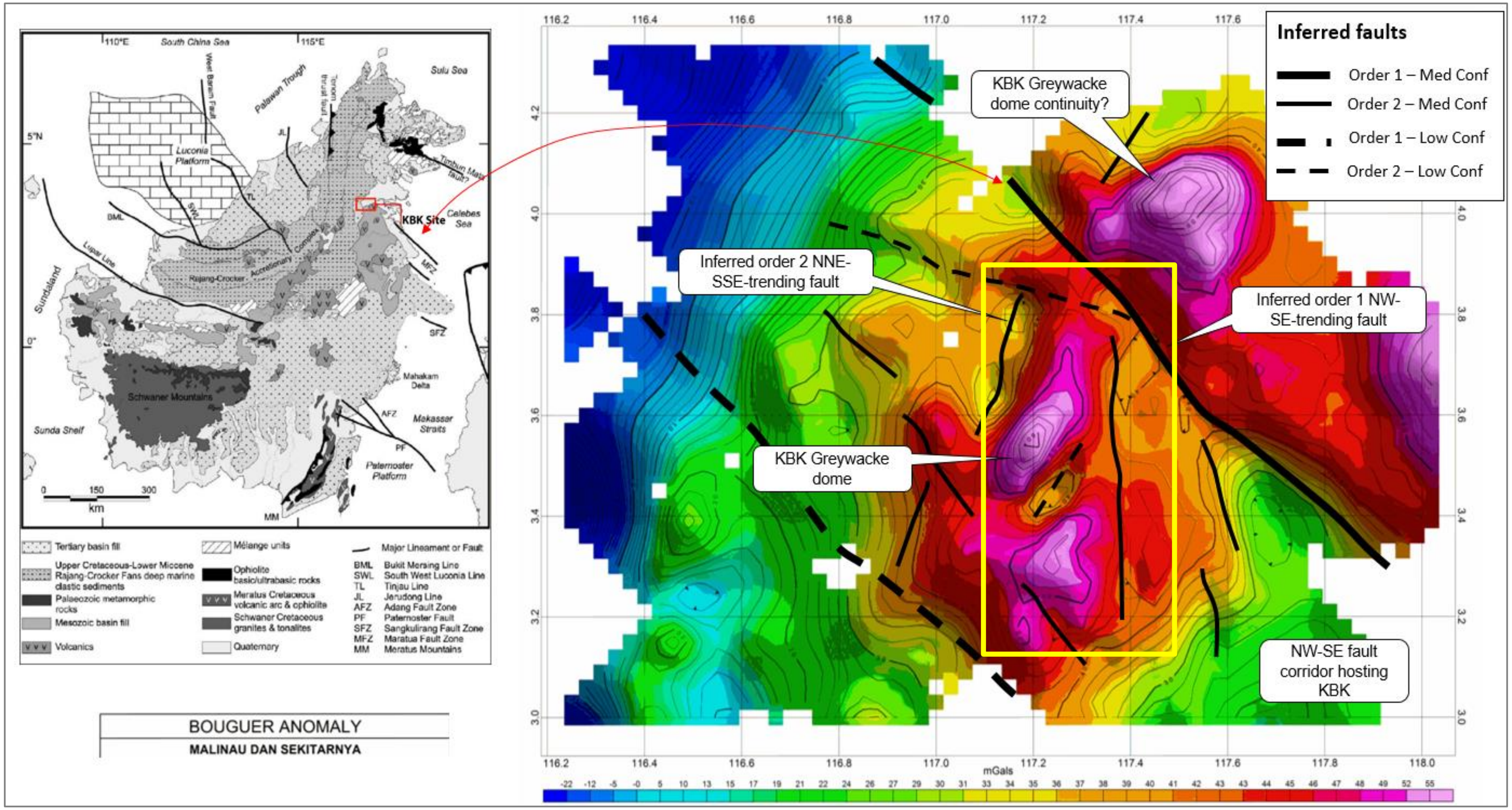


Figure 4-3: **Publicly available Bouguer anomaly map covering the broader Malinau region and showing large dome structure in centre of the map (and AOI outlined in yellow) purportedly within the KBK permit, with several cross cutting fault anomalies striking NNE-SSW and NW-SE in the centre of the map. Conceptualised interpretation of possible fault anomalies by SRK and to be confirm through further mapping and structural assessment (source: SRK and PT KBK 2021)**

5 MINING CONCEPT STUDY 2021

In 2021, the Company requested SRK to undertake a mining concept study to outline a practical and economically viable mining solution for the Project. For the purpose of this Valuation, a basic summary of the mining study produced by SRK is described throughout the following sections. The study was conducted at a scoping level of assessment and it included:

- Concept mine design;
- Pit optimisation;
- Cost model development;
- the optimisation of the pit limits based on economic margin ranking;
- a production schedule for an approximate 20-year Life of Mine (LoM);
- an assessment of potential mining methods for excavation and ore production; and
- capital and operating cost estimation assuming a Contractor Mining operation.

The mine study was based on the 2021 MRE, compiled by SRK. Additional contractor quotations were also supplied to SRK and these have formed the basis of SRK's mine concept study.

5.1 Operational Concept

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 5-1.

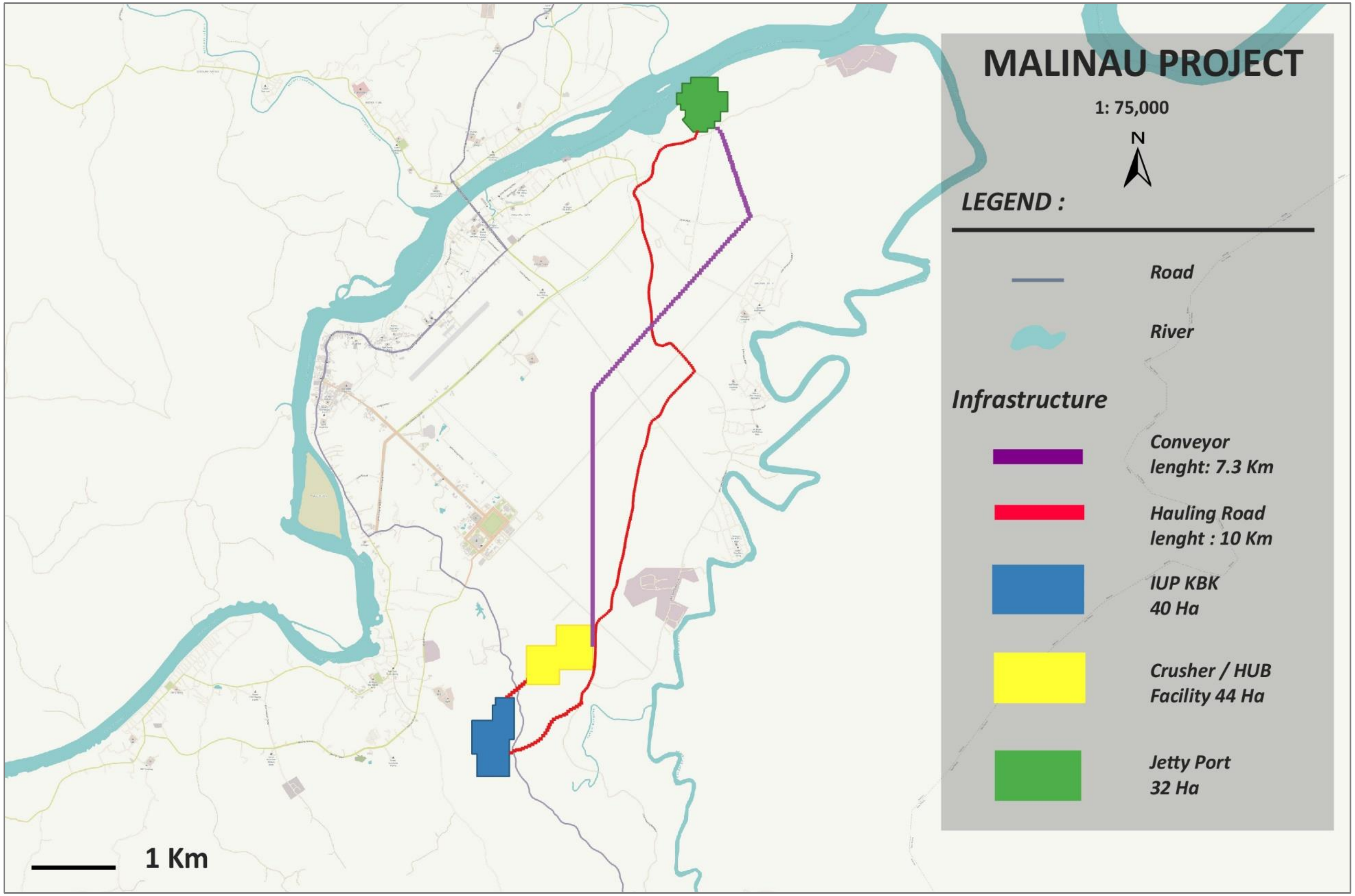


Figure 5-1: General Layout and Location of Key Existing and Proposed Infrastructure Locations (source: PT KBK Sept 2021)

5.2 Mining Method

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 D 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)

5.3 Pit Optimisation

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 as well as finding a pit shell shape with applied geometrical assumptions (ie. slope angles and offset from public road).

SRK's pit optimisation has considered the following input parameters and modifying factors which have been applied in the assessment:

- **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 considered in the material handling, human mistakes and rejects from the process (i.e. 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.

A full summary of the pit optimisation parameters are available in Appendix H.

5.4 Pit Design Concept

The quarry design is based on the pit shell's shape selected in the pit optimisation process Revenue Factor 1 (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 5-2 below show the designed pit offset to the road subsequent Figure 5-3 shows comparison with the optimised shell.

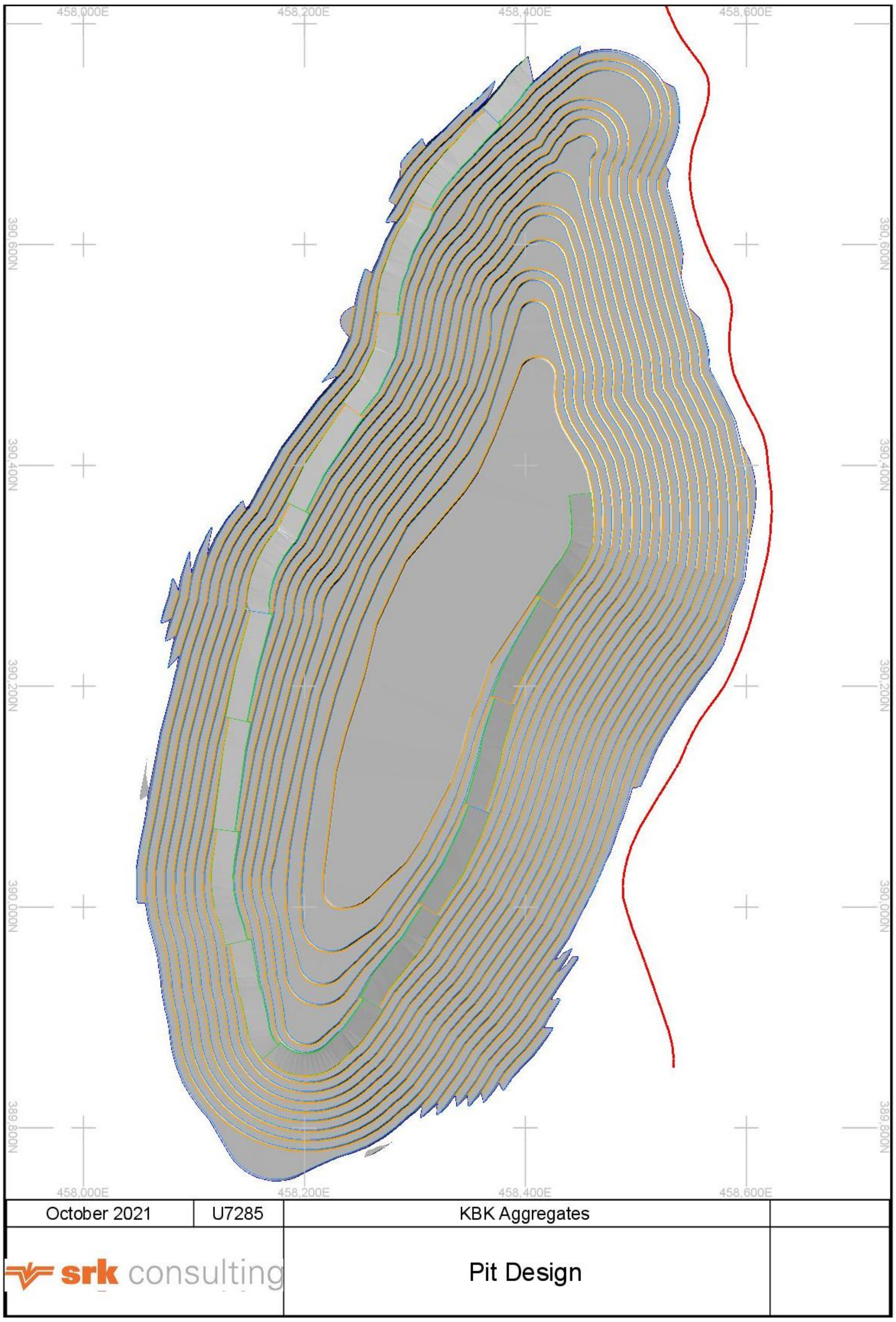


Figure 5-2: Proposed Pit Design with exit ramp to the north of the permit

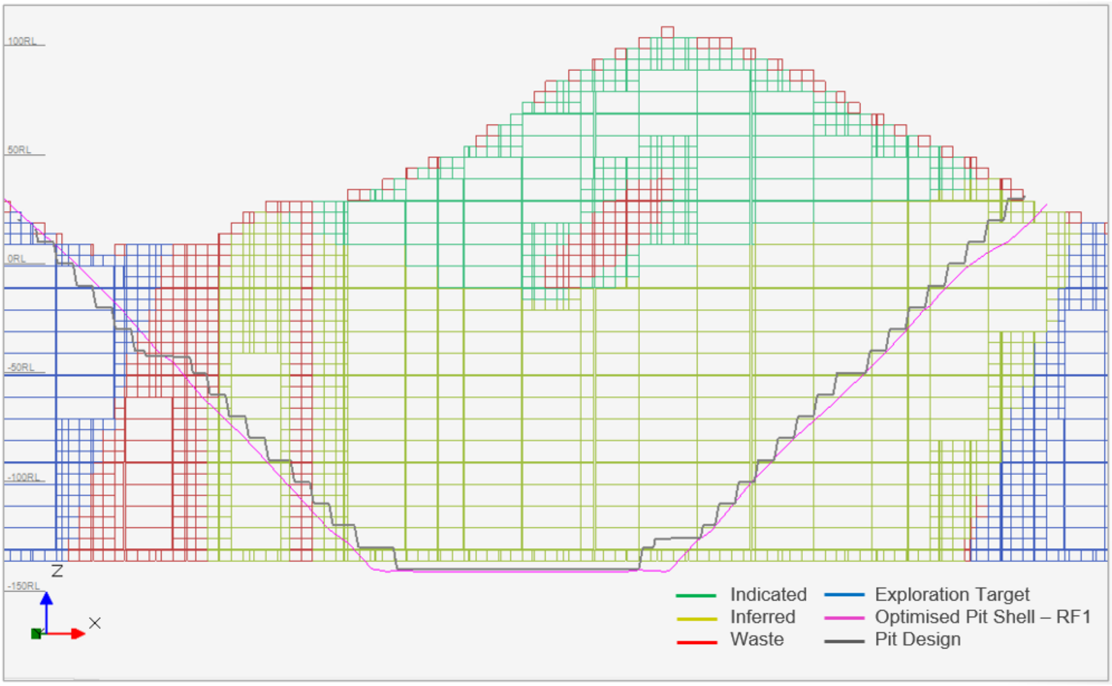


Figure 5-3: Pit Design and Pit Shell Cross-Section

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.

5.5 Mine Schedule

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. Future studies should consider economic benefits of different production rate, particularly if exploration target areas are successful.

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 5-1, Figure 5-4 and Figure 5-5 illustrate total tonnes mined each year and per material and classification as well as Strip Ratio ("SR"):

Table 5-1: 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**

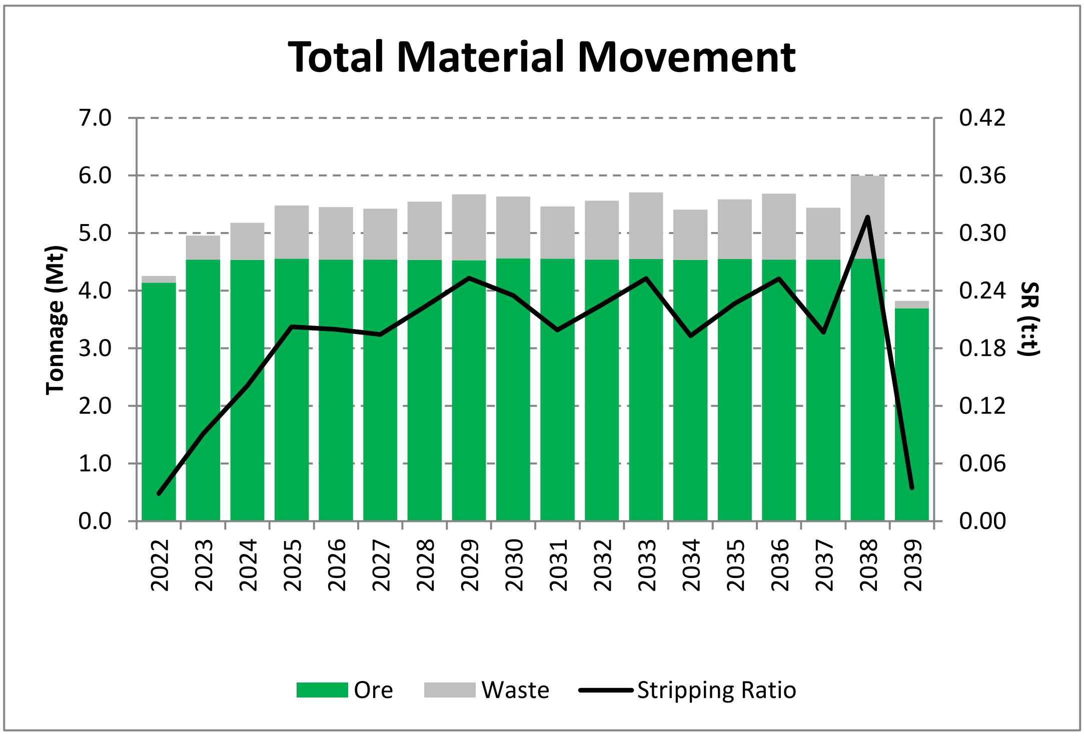


Figure 5-4: LoM Material Movement

SRK notes, the schedule results presented here represent the total block model tonnes unconstrainted by the mining permit. The mine study has taken this approach as the Company has advised the additional areas beyond the current mine permit have been applied for and the Company awaits for a response from the local authroitues for these additional areas. Notwithstanding, SRK has reduced the LoM for the purpose of this economic study to account for the uncertainty in the ET an Inferred Material. Therefore a much reduced LoM has been applied in the Technical Economic Model (see Section 10.5.11).

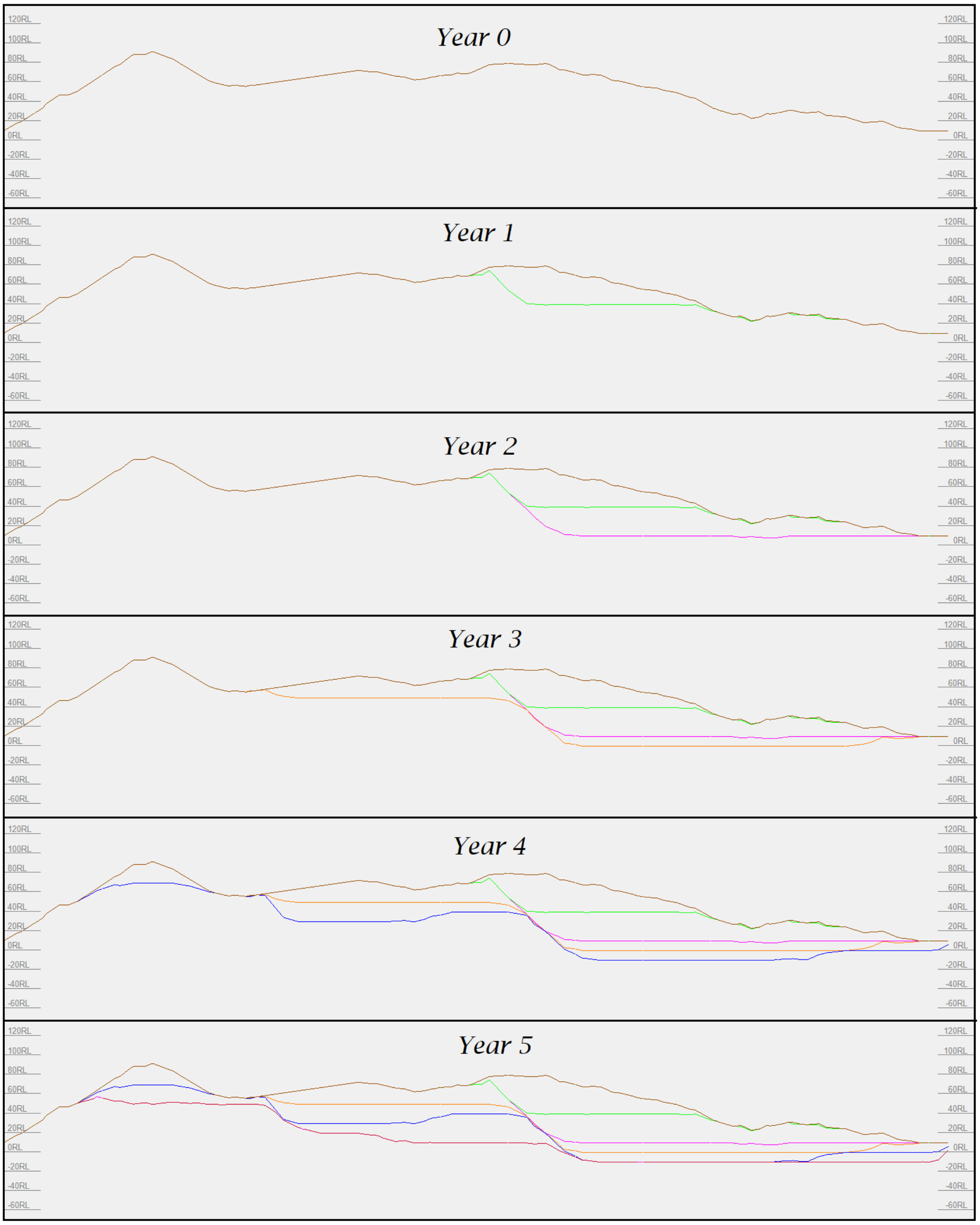


Figure 5-5: 5 year plan conceptual cross sections showing annual pit push backs years 0 – 5 (source: SRK Sept 2021, NPVS output)

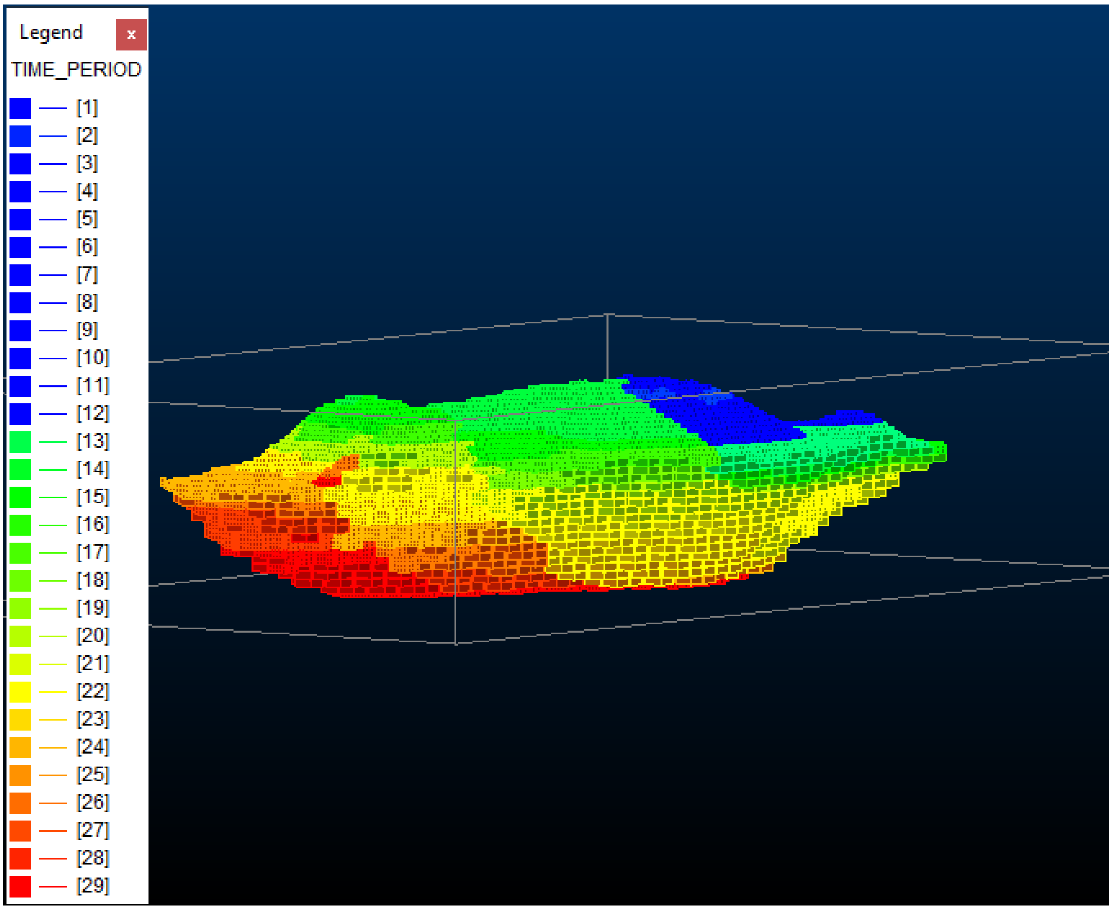


Figure 5-6: 5 year plan - 3D blocks pit sequence from NPVS outputs showing annual concept pit push backs Periods 1-12 in monthly increments (blue) and periods 13 – 29 in annual increments (green, yellow, orange and red)

5.6 Mine Study Risks and Conclusions

5.6.1 Risks to the Mine Study

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;

5.6.2 Conclusions and Recommendations

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 updated from infill drilling and targeted Measure Resource / Reserve drilling. 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.

6 ENVIRONMENTAL SOCIAL AND GOVERNANCE (ESG)

An environmental / social impact analysis (Analisa Dampak Lingkungan or 'ANDAL') for the project was submitted to the regional government (Malinau Regent, North Kalimantan Province) in late March 2019, along with an environmental management plan (Rencana Pengelolaan Lingkungan Hidup or 'RKL') and an environmental monitoring plan (Rencana Pemantauan Lingkungan Hidup or 'RPL'). Collectively, the ANDAL, the RKL and the RPL are referred to as the Analisa Mengenai Dampak Lingkungan, or 'AMDAL'. It is SRK's understanding that the AMDAL was prepared by officers in the local branch of the Ministry of Forestry and Environment, in consultation with PT KBK.

An environmental permit (Izin Lingkungan) for the project was issued for KBK on 20 May 2019 (permit number 660.5/K. 182/2019). The permit is valid for the 5-year duration of the project. SRK notes that under Article 50 of Government Regulation number 27 of 2012, environmental permits may lapse if no project activities occur within three years of the grant of the environmental permit (in this instance, by 20 May 2022). If the permit were to lapse a new approval would be required.

In April 2021, SRK conducted a preliminary review and gap analysis (file ref: "ESC Malinau AMDAL.ESIA_170521_SRK.pdf") of project documentation relating to environmental and social aspects of the proposed KBK aggregate mine. The review was undertaken to focus on the Projects work conducted to date and in respect to good international industry practice or GIIP. For the purposes of the assessment GIIP is considered to include consideration of the requirements of Equator Principles 2020 and the International Finance Corporations (IFC) Performance Standards 2012. SRK's review was prepared at the request of PT. KBK.

The Equator Principles provide a credit risk management framework for identifying, assessing and managing environmental and social risk. The framework references a set of environmental and social performance standards developed by the International Finance Corporation (IFC). The Equator Principles apply to all industry sectors and to a range of financial products, including project finance, bridging loans, project-related corporate loans and project-related refinance or acquisition finance. In this gap analysis, SRK focussed primarily on those Equator Principles and IFC standards that are relevant to projects at an early stage of implementation.

Participating financial institutions (Equator Principles Financial Institutions, or 'EPFIs') commit voluntarily to implementing the Equator Principles in their own environmental and social policies, procedures and standards for financing projects and will not provide project finance or project-related corporate loans to projects that will not, or cannot, comply with the applicable Equator Principles.

In preparing the environmental and social assessment, SRK has taken into consideration the current implementation status of the Project, as allowed for in the Equator Principles Implementation Note (2014). At the end of the gap analysis, SRK made some general recommendations regarding the way forward for KBK with respect to responsible ESG management of its quarry operations.

According to the existing documentation, KBK proposes to develop and operate a stone (C-class mineral) quarry, mainly for the production of aggregate. Previous permit references a nominal production rate of ± 1,900,000 MT/Year is forecast.

In addition to the quarry itself, the following ancillary / support infrastructure is proposed:

- An internal access road for vehicle movements between the quarry and the crusher;
- A Run of Mine (ROM) pad and product stockpiles;
- Parking and hardstand areas;
- A crusher;
- An equipment storage warehouse;
- Workshop for servicing heavy and light vehicles;
- Vehicle washdown facilities;
- Offices and staff amenities (mosque, mess, staff accommodation (type not specified), ablutions);
- Water storage for staff amenities – note, however, there is a lack of detail regarding water supply for vehicle washdown, ore processing and fire suppression;

- Power generation and bulk fuel storage infrastructure – note, however, there is limited detail on how power generation will occur and what fuel(s) will be used, and
- Site security, first aid / medical facilities – note however there is no detail regarding other support infrastructure such as telecommunications, blasting.

KBK estimates that establishment of the quarry and ancillary infrastructure within the mining licence area will require disturbance of up to 40 ha of land, currently owned by two private entities. The current status of land acquisition is not clear from the documentation.

Various other infrastructure and/or infrastructure upgrades beyond the mining licence area will be required for haulage by road or shipment by barge of stone product, but these are not addressed in the Environmental and Social Impact Assessment (ESIA).

The project as described in the 2019 AMDAL documentation would meet the definition of a low risk Category B project under the Equator Principles.

SRK understands, and as described further throughout this report, that the current project description has changed significantly since the permit was issued (i.e. a Mineral Resource (JORC 2012) has been established, a longer mine life is estimated, higher tonnage and further detail on transport corridors is now in planning) and this categorisation may need to be reviewed. The permit includes specific detail regarding the area to be disturbed, the equipment to be used, the mine planning and various conditions of approval that need to be complied with. Where the new project definition is significantly different to that in the current permit, then the permit requires any changes to be incorporated into the new description which has to be notified to the authorities.

To address this, SRK understands on the 19 August 2021, PT KBK discussed a revised plan for its AMDAL and ESIA assessments using independent consultants PT ESC Environment Indonesia (ESC). The consulting firm has been awarded a contract to conduct this work and to address the changes in the mine, the Hub and any transport corridors (including conveyors). It is assumed this will then be used to inform a revision to the current permit.

As part of its initial assessment, ESC will also will conduct a Scoping Study to conduct works associated with the Carbon Offset Planning particularly with KBK in focus for the offsets and will undertake several site visits. ESC's scope of work relates to the site visit and document review for the carbon offset application process with the following deliverables:

- Document search and concession area baseline desk study.
- Meetings with local government authorities and KBK team in Palangkaraya. Confirm zoning under regional spatial plan, conflicting claims, concession area history and concession management plans from the Forestry department, as well as identified protected areas and settlement areas within and near the concession areas.
- Meetings with KBK Team on the site with local communities, villages heads and local government representatives in Indo Carbon Concession areas 1 – 3.
- Walk-over site surveys of concession areas 1 – 3 to conduct baseline survey ground truthing, understand the existing ground conditions, land-use, habitat and bio-diversity condition, site history, level of degradation and potential of restoration, bio-mass estimation.

- Review of existing baseline data sets from previous environmental and social safeguards documents concerning baseline description (soils, forestry, peatlands, agriculture, water resources (both surface and ground), existing vegetation, road networks (including concession tracks/ roads), river transportation networks, residential and commercial areas, etc.)
- Preparation of Scoping Study GIS database. Reporting and scoping study findings and recommendations presentation.
- Preparation of recommendations for next steps FS and carbon application planning.

A map of the concession areas (1-3) that have been secured by PT Indo Carbon Group, a subsidiary of the Company are shown in Figure 6-1. The Company intends to include these permits in it carbon offset strategy and the AMDAL and ESIA which are both now underway.

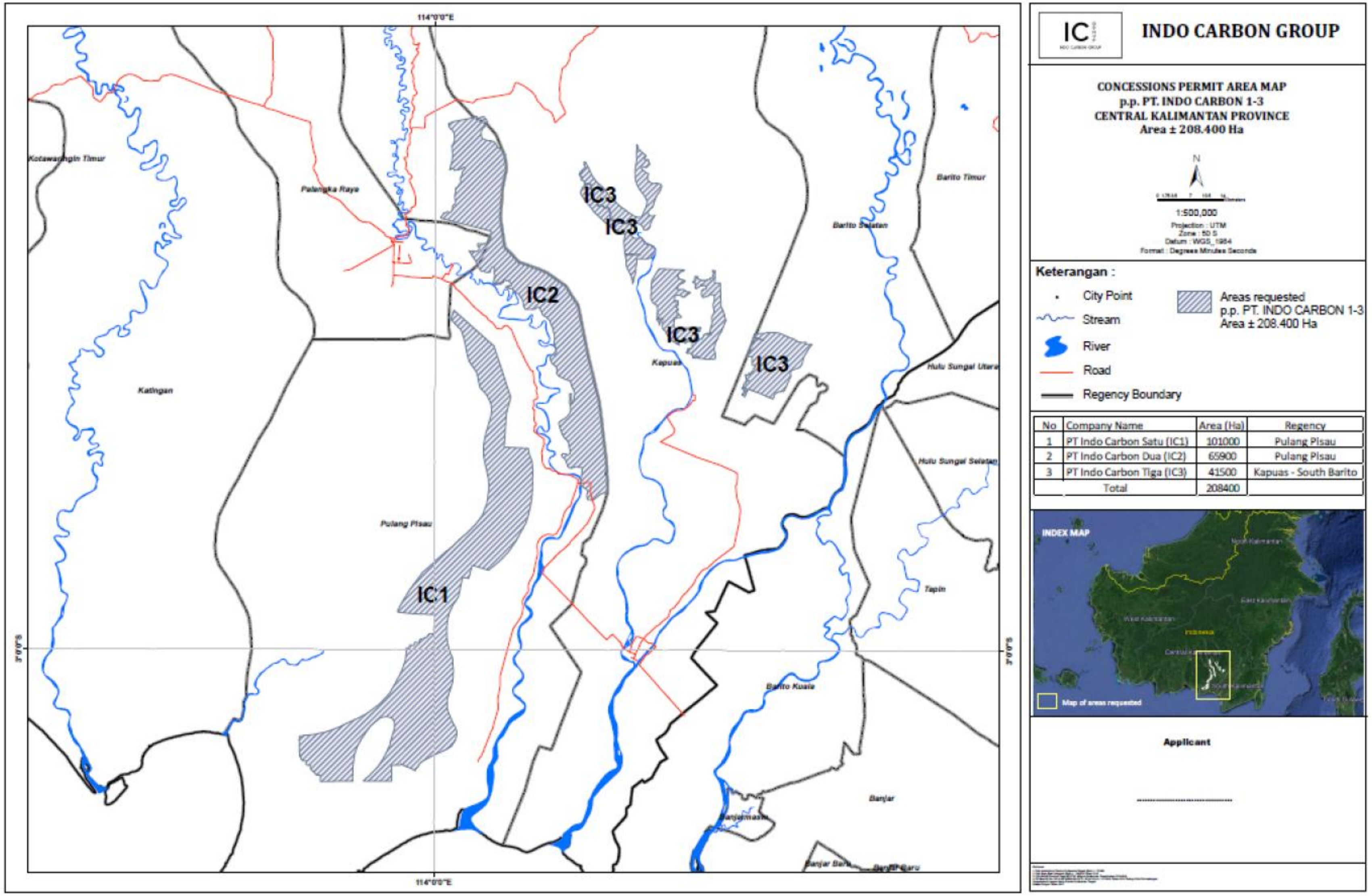


Figure 6-1: Concessions area map showing carbon offset permits 1-3 located in Central Kalimantan (source: PT KBK Oct 2021)

In addition to the above, PT KBK now have dedicated resources in-house and have employed new experienced staff to coordinate ESG matters within the Company, and to align its environment, social and governance strategy using a top down approach across all planning and operational areas going forward. This work has now commenced and due for completion in early January 2022.

7 PROCESSING AND TESTWORK

7.1 Introduction

After acquiring the license in 2016 the Company carried out verification works between 2016 and 2017 and conducted geochemical and material characterisation studies between 2017 and 2019. The results showed that the material of economic interest was conducive to aggregate type applications (see Section 4.2). The following section describes the various technical studies that have been conducted at KBK.

7.2 PT Geoservices Ltd Geochemical and Geotechnical Testwork 2017

In April 2017, the Company contracted PT. Geoservices Ltd (Geoservices) to conduct geochemical and geotechnical tests on a selected grab sample taken from site, and quantitative XRF elemental analysis was undertaken. The sample consisted of 10kg of boulder rock, which was tested for Unconfinded Compressive Strength (UCS), Physical Properties, LA Abrasion (LAA), Soundness, and sieve analysis.

Figure 7-1: 10kg Sample for Testwork 2017

Testwork Method Summary

To test the physical properties of the sample, the rock mass was subject to the following key physical tests:

- ASTM D7263 Physical Properties,
- ASTMD 7012-C-10 UCS,
- ASTM C131-06 LAA,

Testwork Results (2017)

The physical properties test results are shown in Table 7-1.

Table 7-1: Physical Properties Results (Porosity, Density, S.G, Degree of Saturation)

PT. Geoservices
Geotechnical Laboratory

WORK SHEET
PHYSICAL PROPERTIES TEST RESULT
(POROSITY, DENSITY, S.G, SATURATION DEGREE)

Sample Code	**: KBK_Peakindo_1**	**Tested By**	**: Yogi, Richi**
Sample Type	**: Rock**	**Checked By**	**: Icha**
Location	**: -**	**Test Date**	**: 12-04-2017**

No	Parameter	KBK_Peakindo_1	KBK_Peakindo_1 DUP	Average
1	Natural Mass, Wn (gr)	54.800	56.900	55.850
2	Saturated Mass, Ww (gr)	56.200	58.400	57.300
3	Submerged Mass, Ws (gr)	34.000	35.300	34.650
4	Dry Mass, Wo (gr)	54.200	56.300	55.250
5	Natural Density ρn = Wn / (Ww - Ws)	2.468	2.463	2.466
6	Saturated Density, ρs = Ww / (ww - Ws)	2.532	2.528	2.530
7	Dry Density, ρd = Wo / (Ww - Ws)	2.441	2.437	2.439
8	Apparent S.G. S.Gapp = (Wo / (Ww - Ws)) / Water Density	2.441	2.437	2.439
9	True S.G, S.Gtr = (Wo / (Wo-Ws)) / Water Density	2.683	2.681	2.682
10	Natural Water Content, W = ((Wn- Wo) / Wo) x 100 %	1.107	1.066	1.086
11	Saturated Water Content (Absorption), A = ((Ww - Wo) / Wo) x 100 %	3.690	3.730	3.710
12	Saturated Degree, S = ((Wn - Wo) / (Ww - Wo)) x 100 %	30.000	28.571	29.286
13	Porosity, n = ((Ww - Wo) /(Ww - Ws)) x 100 %	9.009	9.091	9.050
14	Void Ratio, e = n / (1 - n)	0.099	0.100	0.100

Unconfined Compressive Strength (UCS) Results

UCS test method measures the strength of intact rock core specimens in uniaxial compression and confined compression. The method applied in this standard (Method C (D2938)) requires a rock core sample to be cut to a specific length and the two opposite ends to be machined flat. The prepared specimen is then placed in a loading frame and, if required, heated to the desired test temperature. Axial load is continuously increased on the specimen until peak load and failure are obtained. The results for the test specimen are shown in Table 7-2.

Table 7-2: Unconfined Compression Strength Result

PT. Geoservices
Geotechnical Laboratory

UNCONFINED COMPRESSION STRENGTH

ASTM D7012-C10 / SNI 03-2825-1992

Request from	: **PT Kaltara Batu Konstruksi**	**Tested date**	: **02-Mei-2017**
Job ID	: **GTK.00100**	**Tested by**	: **Heri Cs.**
Sample ID	: **KBK_Peakindo_01**	**Checked by**	: **Said Saleh, BSc.**

Test Condition	: Natural				**Weight**	: 652.3	gr
Size of speciment	: **Height**	: 11.05	cm		**γ n**	: 2.503	
	Diameter	: 5.48	cm				
	Area	: 23.59	cm^2				
L/D Correction	: 1.009443423						

No.	LOAD	STRESS	DIAL READING ($X10^{-3}$)mm				STRAIN ($x10^{-4}$)	
			AXIAL		DIAMETRAL		AXIAL	DIAMETRAL
	(kg)	(kg/cm^2)	d	d.1	d	d.1	a	d + d1
1	0	0.00	0				0.00	
2	500	21.84	82				7.42	
3	1,000	43.67	158				14.30	
4	1,500	65.51	210				19.00	
5	2,000	87.34	259				23.44	
6	2,500	109.18	298				26.97	
7	3,000	131.02	342				30.95	
8	4,000	174.69	436				39.46	
9	5,000	218.36	520				47.06	
10	6,000	262.03	587				53.12	
11	7,000	305.71	675				61.09	
12	7,200	314.44	733				66.33	
13	3,000	131.02	906				81.99	

REMARK : SAMPLE FAILURE AT : **σC** = **314.440** kg/cm^2 UN-

\- **E Axial** = **4.43E+04** kg/cm^2

Los Angeles Abrasion (LAA)

LAA is a procedure for testing sizes of coarse aggregate smaller than 37.5 mm (11⁄2 inches) for resistance to degradation using the Los Angeles testing machine. The method measures degradation of aggregates resulting from a combination of abrasion, attrition, impact and grinding in rotating steel drum. The tests are completed at x100 rotations and x500 rotations. The results are shown in Table 7-3.

Table 7-3: LA Abrasion (LAA) Test Result

PT. Geoservices
Geotechnical Laboratory

PENGUJIAN DAYA TAHAN AGGREGATE
DENGAN BEJANA LOS ANGELES / ABRASION LOS ANGELES

Client Name	**: PT Kaltara Batu Konstruksi**	**Date of te**	**: 19-Apr-17**
Job ID	**: GTK.00100**	**Tested by**	**: Yogi, Richi**
Location	**: -**	**Checked I**	**: Wayne Turner**

NO.	Sieve hole		Dry weight of oven	Weight after turned around	Difference	Abrasion	/Remark
	Trough	Left behind					
	mm	mm	g	g	g	%	
1	**KBK_Peakindo_1**						
	-19	+12.5	2504.8	2196.0	308.8	12.33	x 100 Rotation
	-19	+12.5	2504.8	945.9	1558.9	62.24	x 500 Rotation
2	**KBK_Peakindo_1**						
	-12.5	+9.5	2500.8	2217.8	283	11.32	x 100 Rotation
	-12.5	+9.5	2500.8	1166.4	1334.4	53.36	x 500 Rotation

In both the 2019 and 2021 programmes, it was decided to sample quarter-core only for all samples submission. PT KBK assured quality of sample selection via cross checking the core as it was selected from core boxes and double checked as core was inserted in the sample bags that were being submitted to the laboratory.

An SRK Geotechnical Engineer (Mr Chris Mears) visited site during the 2019 drilling programme and conducted geotechnical testwork and training of site geologists. The training programme was implemented to upskill the Companies geologists and to complement the data collection on site at the time of drilling. Training completed during site visit consisted of structural geotechnical logging, basic geotechnical logging, geotechnical sampling and point load testing (PLT). All of these aspects (except PLT summaries, file reference: "KBK_PLT_SUMMARIES.xlsx") have been described in a Geotechnical Logging Manual, which was issued to all members on site, as well as a set of additional Standard Operating Procedures (SOPs), for logging, sampling, core cutting, and sample dispatch. The results of the geotechnical work were incorporated into the drillhole logging drill hole data capture worksheet and the KBK Geological Database.

7.3 PT Geoservices Ltd Geochemical and Geotechnical Testwork 2021

In response to requests from various end customers, in 2021, the Company conducted additional tests to confirm the appropriateness of the aggregate for various products types. According to the Company, in addition to the stone being cubical, strong, and clean (not containing abundance of clays), the primary parameters required by the potential customers were:

- The stone density;
- The stone strength (MPa/PSI);
- The aggregate abrasion for 100 and 500 of LAA rotation;
- The aggregate soundness of sodium sulfate;
- The aggregate soundness of magnesium sulfate; and
- The aggregate gradation.

To address the above, and as part of the 2021 Mineral Resource drilling programme, the Companies geologists randomly selected core samples for further geochemical and geophysical characterisation analysis. The primary testwork was conducted at Geoservices Laboratory in Jakarta. A secondary laboratory (PetroLab UK) was chosen to complete a round of check samples analysis to confirm the primary laboratory results which were applied in the MRE. Primary Sample Preparation (PT Geoservices Jakarta) included:

- Submission from site, 10 x ~10kg (each) composite samples (1/4 core) from HQ;
- Initial preparation:
    - Drying Samples - 105C;
    - Jaw Crush - Client Specification;
- Geotechnical Tests:
    - ASTM C136-06- Sieve analysis of fine and coarse aggregates (Gradation);

  - Aggregate Shape Test Flakiness Index (ASTM 4791);
  - Aggregate Shape Test Elongation Index;
  - ASTM C127-12- Density, Relative Density and Absorption of Coarse Aggregate;
  - Los Angeles Abrasion - Aggregate > 19mm - 1000 Revolutions;
- Include Optional Preparation:
  - Drying /Re-homogenization of pulps < 200g;
  - Rotary Division of samples;
- Include Optional Chemical Analysis including ~ 2 inserted IRM:
  - Whole Rock XRF 14 Element Suite - Al_2O_3, BaO, CaO, Cr_2O_3, Fe_2O_3, K_2O, MgO, MnO, Na_2O, P_2O_5, SiO_2, SO_3, SrO, TiO_2 + LOI;
  - LECO -Total Sulfur by Combustion Furnace;
- Include Optional Mineralogy:
- Mineralogy XRD phase determinations with Reitveld Correction

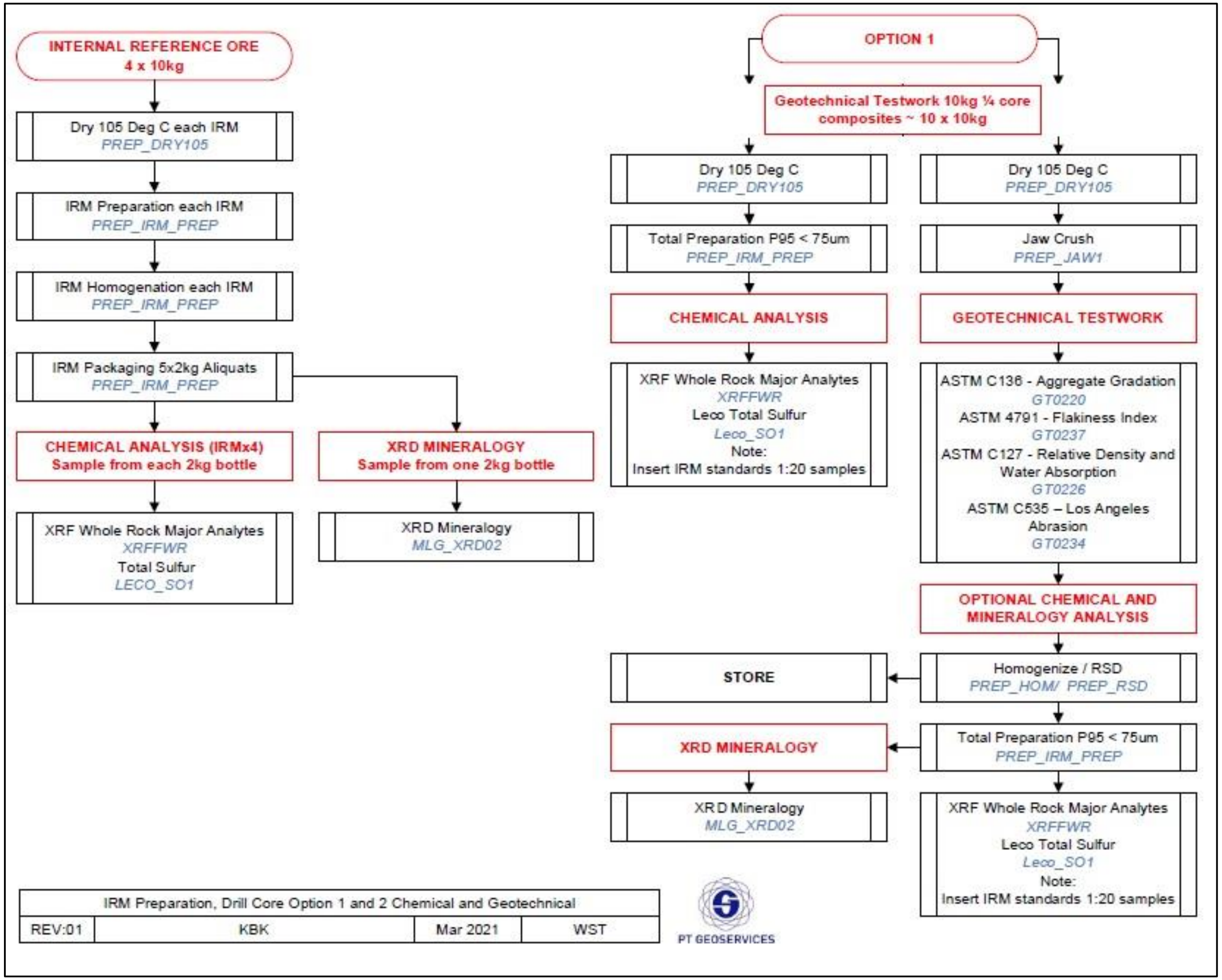


Figure 7-2: Flow Sheet for Sample Testwork 2021

7.4 Crushing Testwork and Flow Sheet

The Company has been investigating the options available for crushing onsite. In October 2021, PT KBK sent three samples to the Metso Laboratory in Finland for testing. The greywacke material was prepared and dispatched from site (pictured in Figure 7-3)

Figure 7-3: KBK greywacke sample for crushing test at Metso laboratories in Finland (source: Metso Qutotec, Oct 2021)

7.4.1 Crushing Flowsheet Options

Two options are being considered for KBK at present. These are shown in Figure 7-4 and Figure 7-5.

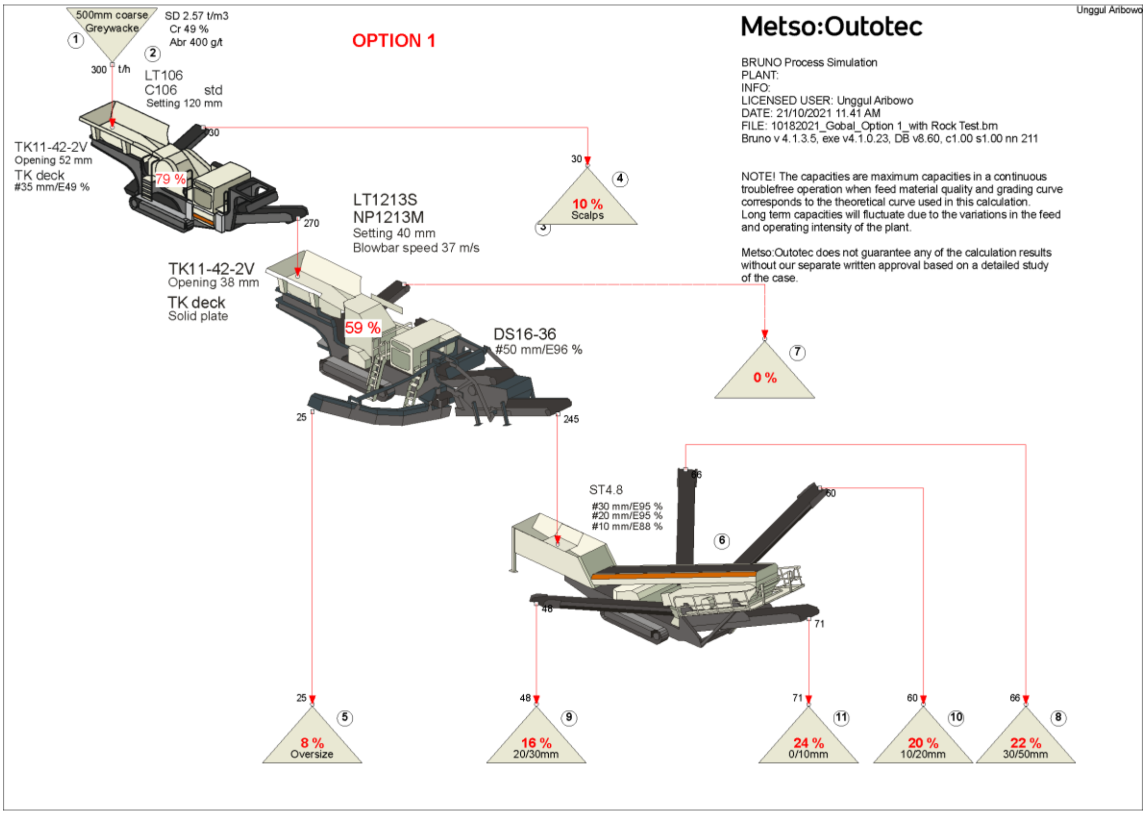


Figure 7-4: Option 1 - Flow Sheet for Crushing of greywacke ore (source: Metso Qutotec Oct, 2021)

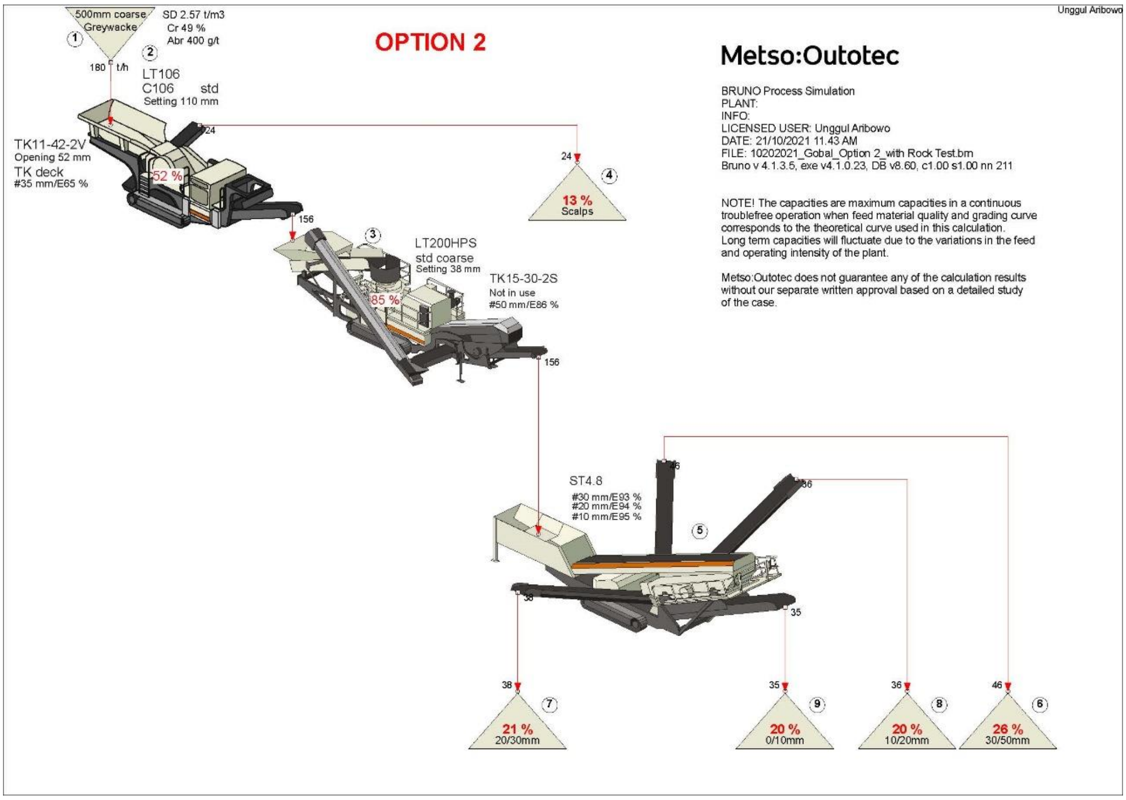


Figure 7-5: Option 2 - Flow Sheet for Crushing of greywacke ore (source: Metso Qutotec, Oct 2021)

7.4.2 Preliminary Results Options

The results received from Metso Qutotec show the material is conducive to crushing using the Metso crushing plant. Further testwork is ongoing on larger samples from KBK and to better understand the range of potential size fractions from the crusher plant with different configurations.

metso MM Rock Tests 8.02

Rock Test Report **Ready**

Metso Minerals- Mineral Research and Test Center

TRE005799

Last Updated 19.10.2021

Laboratory	Tampere
Test ID	TRE005799
Made by	PLN
Status	Ready
Sample arrived	18.10.2021
Test ready	19.10.2021

Location

Confidentiality	☐ Hide confidential information
Quarry	KBK
Material Name	Graywacke
Metso contact	Glenn Oldfield/EAG/Minerals/METSO
Customer contact	Soffian Ahmad
Customer name	Peakglobal-KBK
Country	Indonesia

Standard Tests

Solid density	2.57 t/m^3	
Crushability (French crushability standard)	49 %	easy
Abrasiveness (French abrasiveness standard)	400 g/t	slightly abrasive

8 INFRASTRUCTURE AND LOGISTICS

8.1 Introduction

There are four key areas being considered for the KBK project, these are: the Mine Site, the Retail Hub, the Conveyor Link and the Port/Jetty. The general positioning of these is shown in Figure 8-1

The following section provides a summary of the infrastructure and logistics that are being considered by PT KBK for the production of amourstone blocks and crushed aggregate.

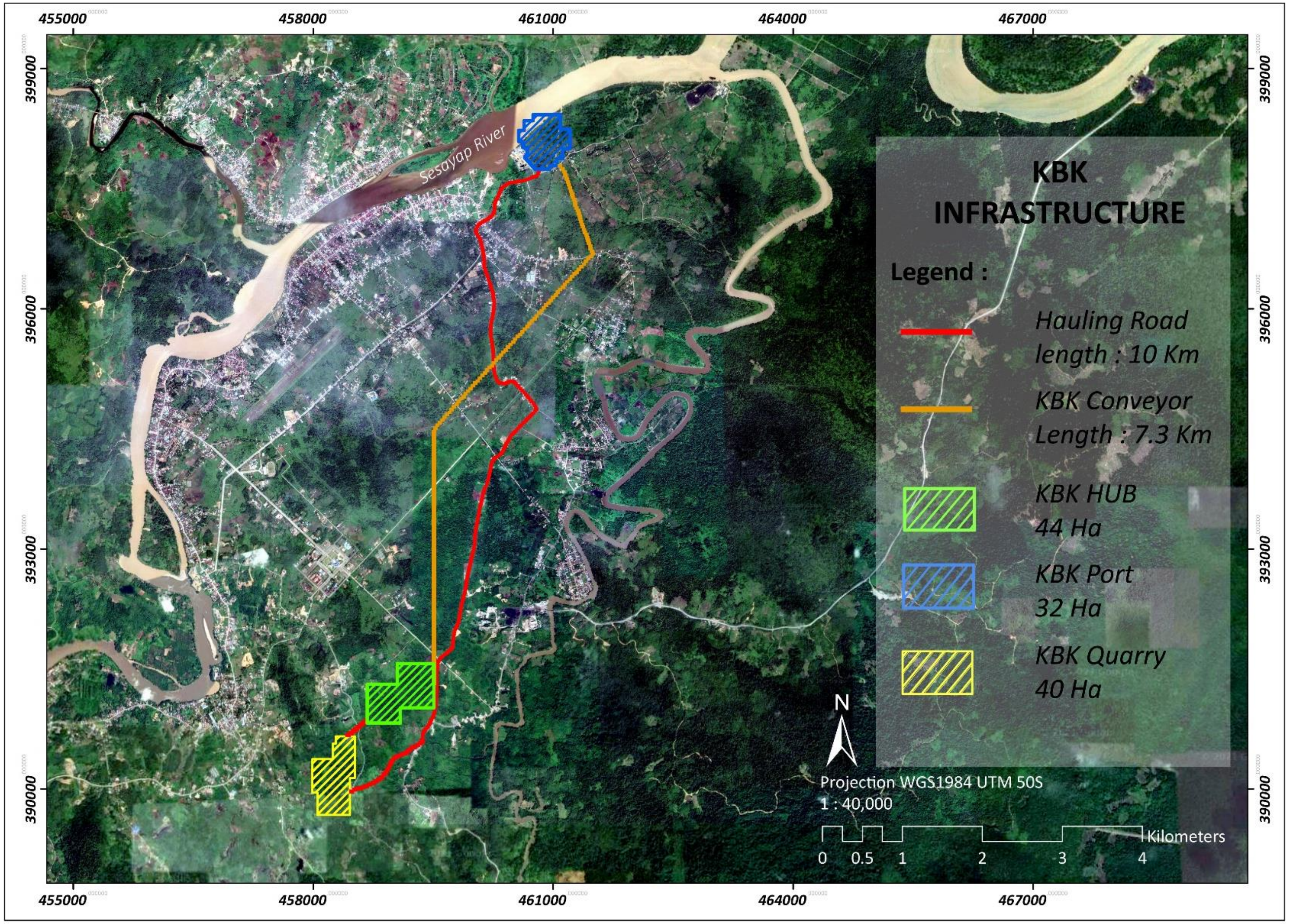


Figure 8-1: General position of the four planned operational areas at KBK

8.2 Mine Site Infrastructure (KBK Site)

8.2.1 Introduction

It is understood that PT KBK intends to utilise two Mining Contractors whose responsibilities will include stripping works, for "armourstone splitting" via use of ECOBUST© and conventional drill blast with and loading and haulage to the RETAIL HUB (see description in Section 8.3), where the crushing and screening plant is situated.

The support infrastructure required to assist the Owners Team and both Mining Contractors' operations, at the Quarry Maintenance Area (or "QMA"), is anticipated to be provided primarily by the each of the Contractors who will work within and control the QMA. KBK has designated an area for the QMA.

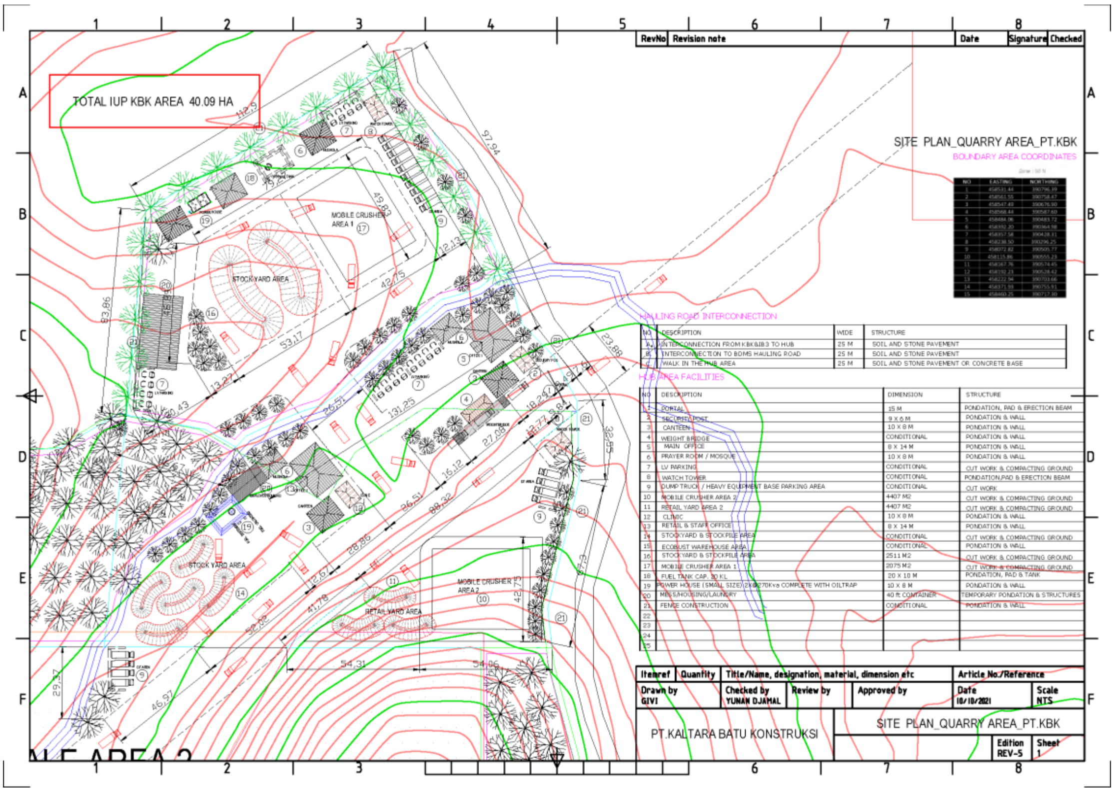


Figure 8-2: Designated QMA for Contractors Laydown and Equipment

KBK will also need to construct its own site offices, site security, a mine entrance, and an ex-pit haul road to facilitate haulage to the RETAIL HUB, as well as an explosives storage facility.

8.2.2 Quarry Maintenance Area ("QMA") Concept Description

The QMA will be supplied by the mining contractors as part of their contract obligations. 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;
- water supply and storage (potable / raw) and dispensing, wastewater collection from infrastructure;
- power generation and communications;
- security fencing, gates, lighting;
- mobile equipment parking; and
- All utilities within the at QMA and connecting to the 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.

QMA Power and Water Supply

Power and water supply will be dependent on the supply strategy employed by PT KBK for the RETAIL HUB, where power and raw water may be sourced from the RETAIL HUB to the Contractor's and the PT KBK infrastructure. It is envisaged this would require:

- A pumping station, primary raw water supply line and raw water tank at the quarry with pumping station and distribution lines around the site to the main facilities (e.g. equipment washing, dust suppression tank, fire water tank, potable water installation); and
- A LV / MV transmission line from the RETAIL HUB powerplant, substation(s) and distribution network around the site.

Explosives Storage Facilities

An explosives storage facility will be required for storage of detonators, ammonium nitrate and other proposed controlled materials (e.g. ECOBUST materials). The size and position of the storage facility and the individual buildings within will be dictated by the quantities needed to be stored. Depending on local laws, a facility to house a national guard / independent defence force is likely to be required. It is noted, the ECOBUST operation will be treated as a separate contracted operation to that of the crushed aggregate involving drill and blast (explosives). Therefore, it will be a requirement for each contractor to supply the appropriate facilities to storage and manage their own operations.

In regards to explosives and the crushed rock planned development, the Company has advised that it has recently received licensing for conducting drill and blast operations at KBK, and commencing from January 2022.

Site Office

PT KBK's main offices infrastructure will be situated at the RETAIL HUB, however, a site office will be also located at the quarry operation and is envisaged to be a prefabricated modular office connected to the QMA utilities systems (power and water supply). A main gate will be required along with the existing security post, security infrastructure. The Company will install a weigh bridge, and dispatch office. This installation will manage ingress / egress onto the site as well as site safety for visitors.

Quarry Site Water Management Infrastructure

The Contractors (ECOBUST amourstone and Crushed Aggregate Mining) will be required to manage water and run-off within the quarry area. Contact and non-contact water infrastructure will be constructed to manage run-off to a series of collection ponds prior to release to the environment (subject to on-going testing and permitting).

Haul Road Infrastructure

Based on the most recent site layout developed by PT KBK, the haul road extends from the edge of pit to the RETAIL HUB area and will be circa 1.5 to 2.0km in length subject to the final positioning of all infrastructure, location of the hopper bins ahead of crushing and screening, and the route chosen. Assuming rigid 8x4 or 6x4 trucks are used, such as those currently employed by the nearby coal mining operations, road width should be around 10.5 m excluding verges, earthworks, surface water management.

National Road Crossing

The haul road crosses a national road (see Figure 2-8) where a dedicated grade-separated crossing will be required such as an overpass (bridge) or underpass (tunnel). This aspect of the concept is at an early stage of development and critical inputs to the decision-making process will be location, topography, traffic analysis, health and safety, duration of national road closure and disruptions, and capital cost.

8.2.3 Status

A summary of the status of project development for the QMA split out by the key infrastructure items is presented below in Table 8-1.

Table 8-1: Design Status

Item	Status
Procurement of a Mining Contractor	SRK understands that KBK has held preliminary discussions with potential Mining Contractor(s) but that no formalised scope of work yet exists.
KBK Site infrastructure: - Offices - Security - Main access road - Surface water management - Power and water storage and distribution.	The KBK project team is developing various “schematic layouts” showing the potential positioning and sizing of the required facilities (see Appendix F).
Explosives Storage Facility	As above.
Haul Road	As above
Road Crossing (Underpass / overpass)	This aspect of the project is at an early stage of development and KBK is seeking quotes from local civil construction contractors for such a development.

8.2.4 Comments

The project team is progressing development of a schematic layout for infrastructure extending from the quarrying area and linking to the RETAIL HUB (see description in Section 8.3) and in the process identifying potential land requirements and key areas requiring further consideration and development.

The location of the Explosives Storage Facility should be reviewed in the context of its proximity to inhabited dwellings and national and international regulations. The most recent versions of the Canadian Explosives Material Code NFPA 495 or the Australian Standard AS 2187.1 “Explosives—Storage, transport and use Part 1: Storage should be referred to once an understanding of explosives type and quantities are known. National and local laws and legislation need to be consulted and followed. The Mining Contractor, Explosives Contractor and the relevant divisions of the police / national guard / army need to be consulted.

The potential risk of fly rock from blasting needs to be considered. Currently, the use of an “Expansive Controlled Demolition Agent” rather than blasting is anticipated in the early periods, however, the scenarios of when drill blast commences needs to be considered. Typical “preliminary stand-offs” for the purposes of project development are in the order of 250-500 m.

The intersection of the national road, haul road (with overpass / underpass), main gate etc should be considered as the existing road layout could be modified to increase safety for all stakeholders and optimise costs for the crossing.

8.2.5 Recommendations / Key Work Streams for the QMA

SRK has recommended that the Company:-

- Plans and conducts geotechnical site investigation for civil infrastructure, in particular at the haul road crossing (e.g. a borehole and trial pits);
- Develops design criteria for the project;
- Develops a “basis of design” document for each infrastructure asset / area – objectives, requirements and needs, constraints etc;
- Undertakes preliminary layout and design of buildings, civils, electrical and water distribution, surface water management design etc;
- Reviews guidelines and begin consultation with the relevant authorities in relation to the Explosives Storage Facility; and
- Discusses with the Mining Contractor the provision of mine support infrastructure and the interfaces between the Contractor and KBK.

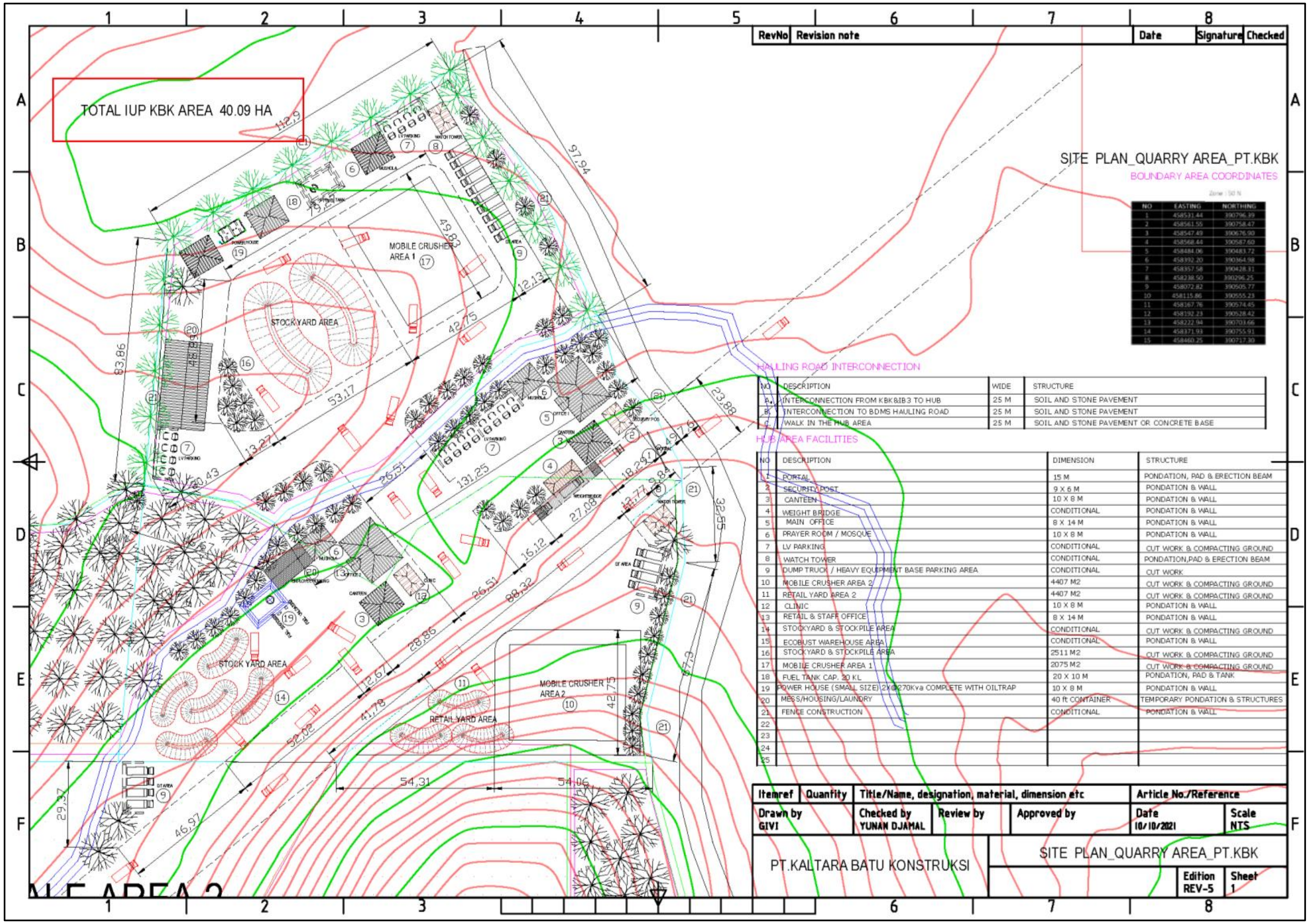


Figure 8-3: Concept drawing for the planned QMA situated to the north-eastern zone of the optimised pit (source: PT KBK Oct 2021)

8.3 The RETAIL HUB

8.3.1 Overview

KBK will control a "retail hub" developed adjacent to the KBK mining area; herein referred to as "the RETAIL HUB". The RETAIL HUB is nestled between the public road and the existing haul road link to the KBK Jetty. The RETAIL HUB will house the crushing and screening plant, product stockpiles, offices, parking, and customer loading areas.

8.3.2 Concept Description

The RETAIL HUB has two development platforms:

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

An example of the concept development undertaken by PT KBK is presented in Figure 8-4.

Figure 8-4: 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)

On observation of the Companies concept layout documents (see Appendix F) there may be up to 400,000m^2 of civil development.

8.3.3 Status

The layout and concepts are currently being developed. Site surveys at the Quarry, RETAIL HUB and Port – Jetty areas are currently underway. Planning and detailed engineering work is yet to commence.

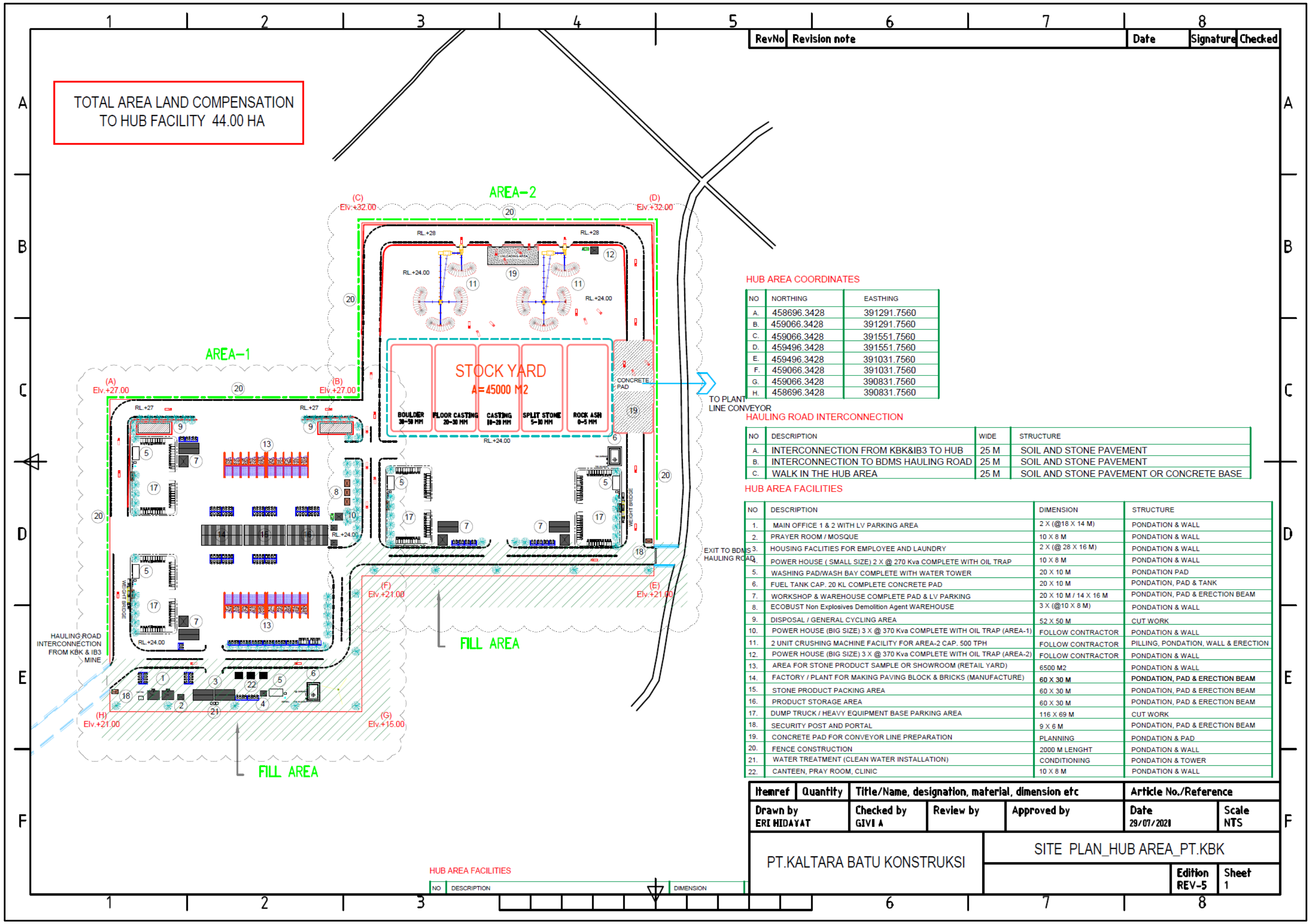


Figure 8-5: Layout plan (source: PT KBK, file ref: SITE PLAN_Hub Area_PT.KBK (REV_A).pdf, Sept 2021)

8.3.4 Comments

The concept of the RETAIL HUB seems appropriate as it provides a space needed for stockpiling, managing and load-out to customers of the range of products. Armourstone requirements are particularly project driven and therefore it is likely that suitable space is required for stockpiling prior to transport to the customer. The provided layout drawings suggest this has been provisioned for in the overall concept.

SRK conducted a high level review of the various layout documents and observed that there may be up to 440,000m^2 of civil development and land usage. The suggested capital cost for this needs review and could be higher than currently estimated in the features/installations presented in the concept drawings. At this stage it seems possible that an initial scope of work for the RETAIL HUB could be reduced to meet the anticipated budget or perhaps the RETAIL HUB can be developed in stages with an initial outlay for critical items and then further development in the subsequent years to suit production ramp up stages. Irrespective, it is suggested that an in-depth workshop style review of space and installation requirements would be prudent.

It is SRK's opinion that the location and orientation of crushers in relation to the mine and haul road and access roads needs further review, which can be conducted at the next phase of development. Real-estate for RoM stockpiles is required ahead of the crushing plant, which also needs to be considered in the next phase of planning.

At first glance, there appears to be a large number of individual buildings, which require definition and labelling. Installations such as traffic systems and vehicle management also need to be considered and presented.

A large amount of mobile equipment is shown in some of the 3D schematic drawings (see Appendix F and this will need to be considered and costed.

8.3.5 Recommendations

SRK has recommended that the Company:

- Plans and conducts geotechnical site investigation for civil infrastructure, in particular at the location for any heavy loads (stockpiles, mechanical equipment);
- Undertakes surveys to inform bulk earthworks and surface management design such as flood data and flood elevation mapping, meteorology and climatology data collection and analysis;
- Using the current concept 3D schematics as a guide, develops a proposed asset list, design criteria for the project, and a "basis of design" document for each infrastructure asset / area – objectives, requirements and needs, constraints etc;
- Using the above, procures a Design Engineer to develop the preliminary layout design and design of buildings, civils, electrical and water distribution, surface water management design and prepare tender documents and tender estimate.
- Discusses with the Mining Contractor the interfaces at the primary crusher; and
- Discusses with the Plant Engineer the interfaces between the crushing and screening plant and the wider RETAIL HUB area.

8.3.6 Capital Cost used in the Valuation

- SRK has proposed a placeholder cost. We consider the cost included in the valuation as concept / scoping (circa ±40-50%).

8.4 Crushing and Screening Plant (Retail HUB)

8.4.1 Overview

The project intends to initially produce an Armour-stone product and gradually phasing to a suite of aggregates. Armour stone is understood to be produced in the pit through the use of a specialist Mining contractor utilising an “Expansive Controlled Demolition Agent” rather than blasting; please refer to Section 5 for further comments.

Aggregate will be produced using a crushing and screening plant located at the RETAIL HUB, which is discussed in the sections below.

8.4.2 Aggregate Products

The anticipated products and corresponding gradings are presented in Table 8-2.

Table 8-2: Suite of Aggregate Products[1]

Product Name	Grading / Size Fraction
Rock Ash	0 - 5 mm
Split Stone	5 - 10 mm
Casting materials of various types of construction	10 - 20 mm
Floor Casting	20 - 30 mm
Boulder Stone	30 - 50 mm

8.4.3 Status

KBK has held preliminary discussions with a supplier of a crushing and screening plant called “CV. SAMUEL & SON ENGINEERING”[2] (herein referred to as “SSE Contractors”) around a potential future Lump Sum Turn-key Engineering, Procurement and Construction Contract (“EPC LSTK Contract”). A preliminary (indicative) budget proposal was received in May 2021 from SSE Contractors. The proposal contains valid references and SSE Contractors has provided a virtual tour of their office and fabrication / laydown yard.

KBK also continues to talk to other potential providers[3], however, for this valuation report, SRK has presented key technical facts from the SSE Contractors proposal dated May 2021 and reviewed the SSE proposal making comments.

[1] Source: “Draft Brochure Booklet IAM ver 1.4 2.pdf” supplied by KBK
[2] CV. SAMUEL & SON ENGINEERING, Jl. Raya Narogong Pangkalan 2 Bantar Gebang, Bekasi Jawa Barat Phone (+62) 8138 1314 101, Email: samuel.adinata@gmail.co
[3] A technical proposal received by KBK from M:O GROUP (INDIA) PRIVATE LIMITED was received on 21st September 2021

8.4.4 Concept Description

The crushing and screening plant proposed by SSE Contractors in response to the enquiries made directly by KBK is a 1,000 tph plant comprised of two 500 tph streams allowing modularisation to suit the requirements of the product streams required at any given time.

Assuming total operating hours of 3,300 hours per annum (i.e. a 10 hours per day, 6 days per week and with planned maintenance undertaken outside of these hours), this gives circa 1.65 Mtpa per stream for a total of 3.3 Mtpa. Notably the proposed crushing and screening plant produces four products types.

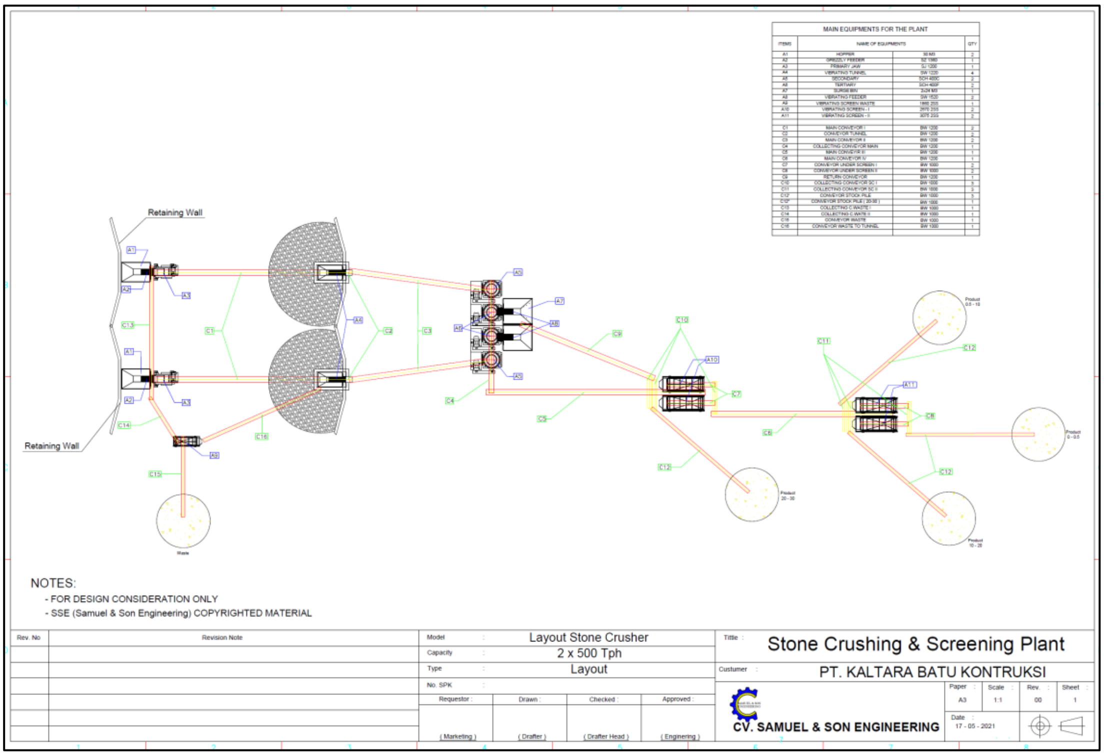


Figure 8-6: Schematic block plan for the plant.

The proposed equipment would be made by SRH in China, who are understood to be part of the METSO group.

Within the budget quote the following are noted as being excluded by SSE Contractor and will need to be provided by KBK:

Civil engineering

- Earthworks
- Vendor oversight
- Cranage
- Construction power and lighting.

8.4.5 Comments – General

The level of engineering and stage of study development is at a very early stage. The quotes received, and those received in future, by KBK require appraisal. Ideally, a suitably qualified Contractor (with a design house or similar) or an independent engineering company should be engaged "on a study basis" to develop a preliminary design with tender documents and to manage and adjudicate a competitive tender.

Given the proposed ramp-up and intention to produce Armour Stone in the initial years (as proposed in the financial model), developing the plant as two parallel 500 tph lines seems appropriate as this would introduce the option to construct in phases or reduce plant running should production switch to Armour Stone.

The crushing and screening plant will emit noise and a consideration should be given to sound proofing although the intention to run the plant for 10 hours per day (normal working hours) should mitigate impact.

8.4.6 Comments – Flow Sheet and Proposed Plant

The SRH simulation output appended to the SSE Contractor's proposal does not appear to produce the range of required products as per the KBK requirement. As part of its review, SRK created a preliminary "check" flowsheet using Metso's Bruno programme which uses information obtained from the Metso range of equipment (as the main equipment supplier has been part of the Metso organisation one can assume that the equipment included is based on the Metso equipment) that produces the range of products – see Figure 8-7. Future budget quotation provided by potential suppliers need review and analysis; ideally design is required to produce a flow sheet to be included in a tender package (where the bidder is asked to price the tender document and provide an alternative should they wish). A summary of the major equipment within check flowsheet is provided below:

- ROM HOPPER
- GRIZZLEY FEEDER
- PRIMARY CRUSHER
- CONVEYOR 100-CV-001
- SECONDARY CRUSHER SURGE BIN
- SECONDARY CRUSHER FEEDER
- SECONDARY CRUSHER
- CONVEYOR 100-CV-002
- SECONDARY SCREEN
- CONVEYOR 100-CV-003
- CONVEYOR 100-CV-009
- CONVEYOR 100-CV-010
- TERTIARY CRUSHER SURGE BIN
- TERTIARY CRUSHER FEEDER

- TERTIARY CRUSHER
- CONVEYOR 100-CV-004
- TERTIARY SCREEN
- CONVEYOR 100-CV-008
- CONVEYOR 100-CV-008A
- Structural Package
- Piping Package
- Electrical and Instrumentation Package
- Infrastructure Package
- Civil Package

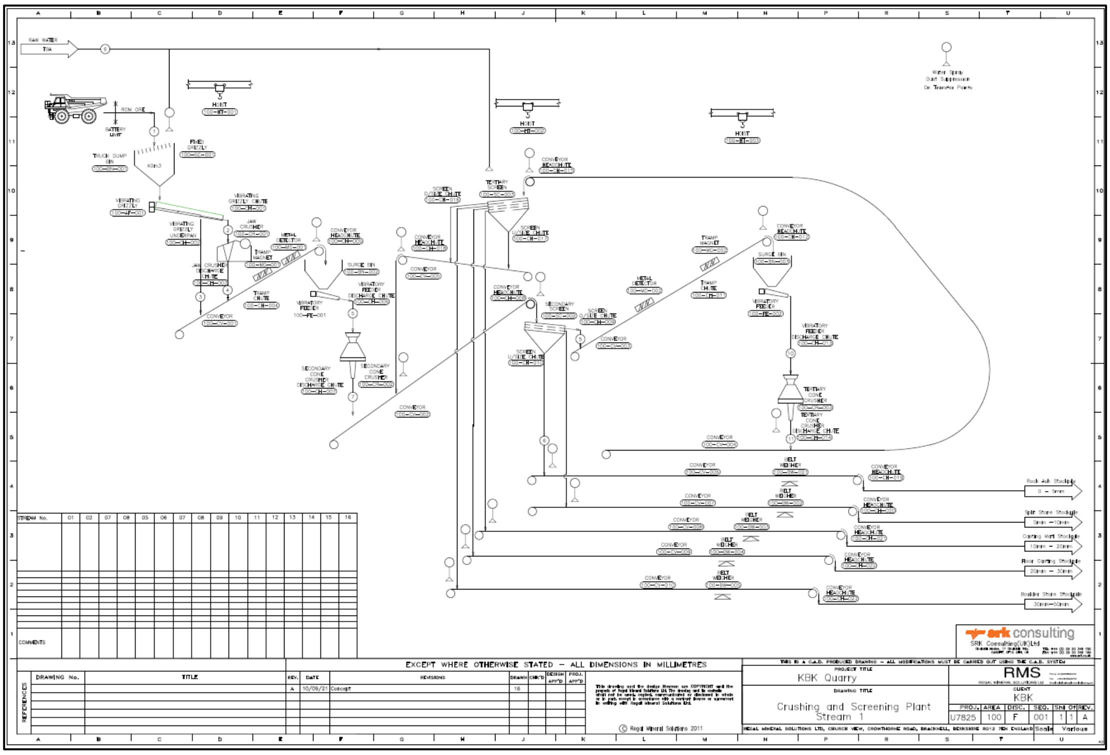


Figure 8-7: SRK created flow sheet as a check of the SSE Contractor's budget quote and to inform a cost estimate for the valuation.

8.4.7 Comments – Exclusions / Capital Costs

The quotation from the SSE Contractors has several discrepancies:

- It claims to use Metso Equipment but a comparison between the costs proposed and those from recent tenders using Metso equipment showed that the costs in the quotation were substantially lower (by approximately 50%) and so we propose that the equipment costs are adjusted by this amount for the purpose of any valuation of the project; and
- Some documents suggest installation is included in the cost and others imply the cost only includes for technical oversight (1 engineer) of an installation team to be provided by KBK. We have assumed installation is included, however, if not, this would add significant cost.

The following items which are specifically stated to be, or interpretated to be excluded should be allowed for at this early stage for budgetary purposes:-

- Installation (men, materials, and equipment);
- Electrical Equipment and lighting
- Control Room and desk
- Safety Equipment on conveyors
- Control Room, maintenance workshop and equipment, mess room, other general infrastructure;
- The two Front End Loaders necessary for plant operation;
- Spares allowance usually about 2.5% of equipment
- A contingency of at least 25%
- Civil, Structural, Layout, Electrical and Automation, Lighting design.

As the estimate is considered to be at a concept / scoping study the level of cost accuracy should be considered as ±50%.

On this basis for the purpose of our valuation we have adjusted the capital cost for purchase, installation / construction, and commissioning of the two crushing and screening systems.

8.4.8 Recommendations / Key Work Streams

SRK has recommended that the Company:

- Plans and conducts geotechnical site investigation for civil infrastructure, in particular at the location for any heavy loads (stockpiles, mechanical equipment);
- Develops project design criteria and a “basis of design” document;
- Undertakes preliminary design of and develop tender documents;
- Undertakes a tender process for a Contractor / Engineer to undertake detailed design, procurement, construction, and commissioning; and
- Ensures any budgetary quotes received adhere to a request for proposal document where the requirements of KBK are clearly stated.

8.4.9 Capital Cost used in the Valuation

Using the check flowsheet and based on the review of the SSE Contractors quotation, SRK has adjusted the SSE Contractors budget cost to include for those items noted. We consider the cost included in the valuation as concept / scoping (circa ±40-50%).

8.5 Product Logistics

8.5.1 Overview

The range of products produced by the operation are stockpiled at RETAIL HUB ready for sales and dispatch. Products are anticipated to be sold both locally (i.e. internal market in the north Kalimantan area) at the "Hub Gate" and to international / national markets, where they will be transported to the River Port for exported by barge.

For the internal market, the purchaser or KBK will arrange overland transport via road. Products will be loaded to road trucks at the RETAIL HUB by KBK. Road haulage / delivery to site will be arranged and paid for by the purchaser. Potentially, and dependant on site location, delivery can be made via the River Port and inland waterway transport along the River Sesayap.

For the international / national markets, products will be transported by road or overland conveyor to the Company's River Port on the southern bank of the River Sesayap. At the River Port, they will be stockpiled and loaded to barges. Depending on the destination, transhipment to larger vessels may be required and would be undertaken at Tarakan.

Armour-stone will need to be stockpiled and loaded to trucks.

8.5.2 Road Haulage (to KBK River Port)

The RETAIL HUB lies adjacent to an existing third-party haul road used for coal transport from various coal mining areas in the south to a dedicated river port and jetty for coal around 2 km northeast of the KBK jetty permit. An example of the third-party haul road and the typical truck is presented in Figure 2-21. The total distance would be around 8 km. Assuming a 12-hour operational day, six operational days a week, and a truck with a 30 t payload[4], the estimate of truck fleet and loads per day is presented in Table 8-3 below.

Armour-stone can only be transported by road. The size of the armour-stone will influence the method of loading (crane, excavator etc.) the maximum payload and resulting costs per tonne.

Table 8-3: Truck Haulage Parameters (assumes 30 t payload trucks)

Production Rate	Fleet Requirements	Loads Per Day
1 Mtpa	8	107
2 Mtpa	16	214
3 Mtpa	24	321

8.5.3 Overland Conveyor (RETAIL HUB to KBK River Port)

The viability of constructing a conveyor to transport products (except for the Armour-stone) from the RETAIL HUB to the KBK River Port is being investigated. A potential routing has been traced and an EPC Contractor has been contacted and has provided a preliminary budget estimate for design and build of a conveyor.

[4] 30 tonne payloads are understood to be allowed on the third-party mining haul road. National roads are limited to 20 tonnes.

The proposed routing avoids existing dwellings and minimises road crossings and is shown in Figure 8-8. The total length is around 7,250m and the elevation difference between the start and end points is circa 18m. The route would require three conveyor flights and three transfer points.

Key considerations for the conveyor are as follows:

- There are a number of potential other routes, which should be considered;
- Different products would be batched to the river port which would constrain operating times;
- Future conveyor simulations and modelling will need to take account of the constraints of all products and the transfer points would need to be well designed;
- Minimising the number of transfer points would be preferable;
- The belt would need to be covered and the run of conveyor structure suitability designed to protect the general public; and
- At road crossing points the conveyor would need to be culverted beneath the road. Given annual rainfall in the area, the road would need to be elevated over the conveyor which should remain at current ground levels.

The operating hours and specifications have yet to be developed. In the current scenario, the production rate is 3 Mtpa and so assuming similar operating hours to the crushing and screening plant (and allowing for an ample design allowance for catch-up and batching) indicates a capacity of around 1,250-1,500 tph to be a suitable target.

The budget quote obtained from a *possible* EPC Contractor ("SSE Contractors") was for a 3,500 tph conveyor belt with a 1400mm wide belt. Assuming a similar number of operating hours to the crushing facility, this would translate to a potential capacity of ~11.5 Mtpa.

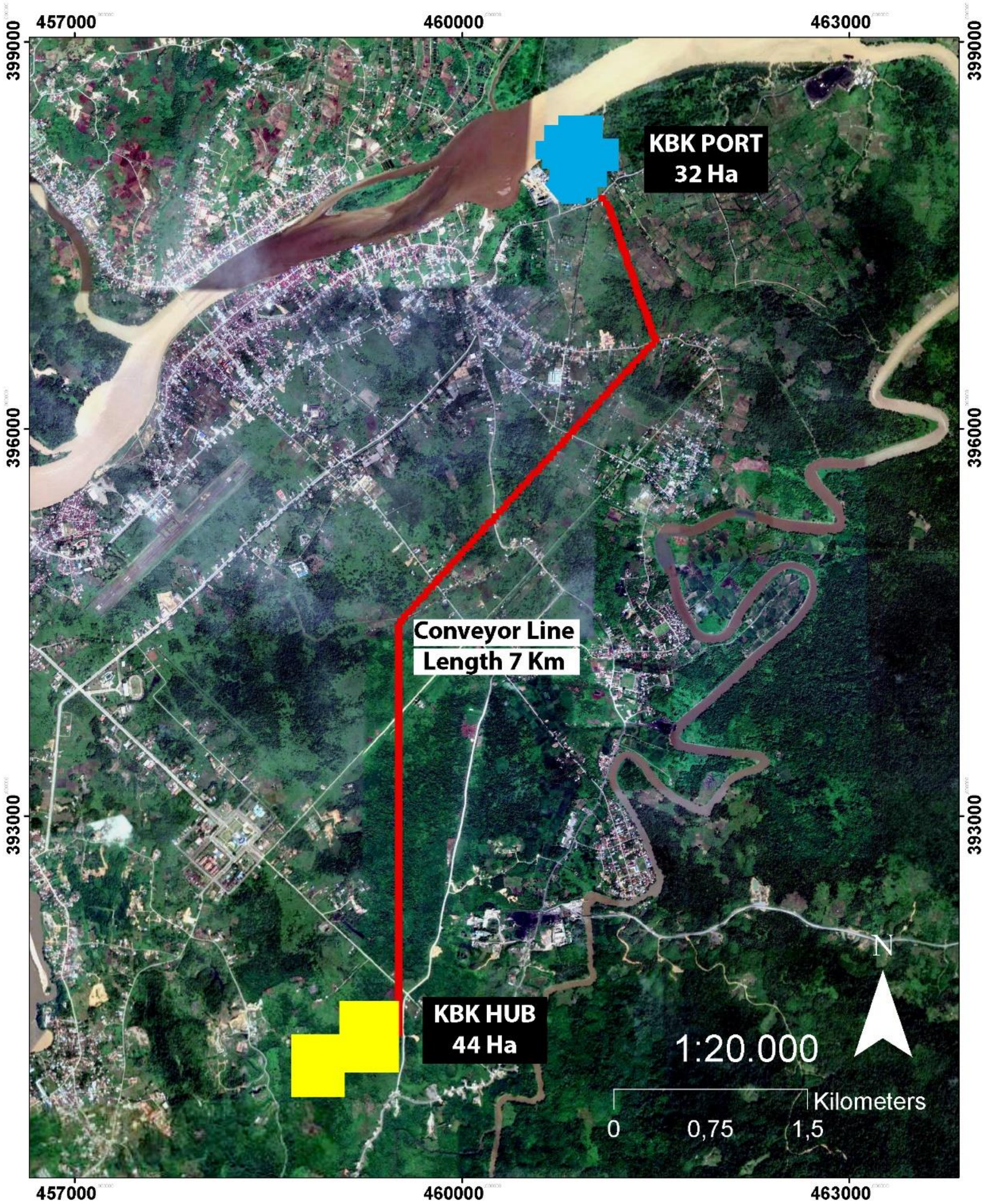


Figure 8-8: Proposed conveyor route from the RETAIL HUB to the KBK River Port (source: PT KBK , October 2021)

8.5.4 KBK River Port Permit

In December 2019, PT KBK purchased 12 hectares of river front on the Sesayap River (Figure 8-9), and work has commenced in clearing the zone for access and further development. KBK appointed PT Zamindo Prima Selaras as a contractor to conducted immediate land clearing and land filling in port area (see Figure 8-10).

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

- Site selection survey and preliminary land investigation;

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

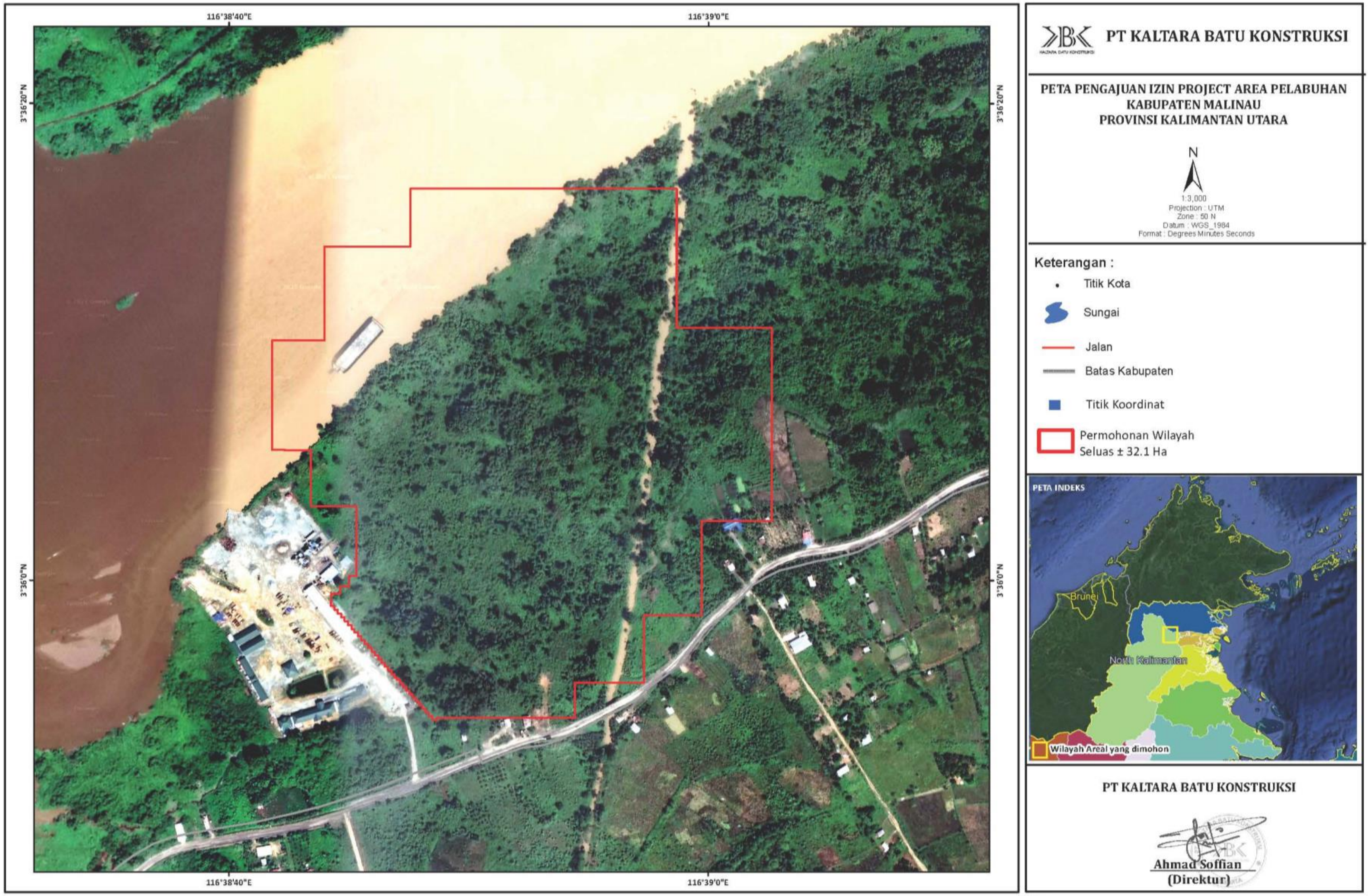


Figure 8-9: KBK Jetty Area and access road (PT KBK, October 2021)I

Figure 8-10: KBK Jetty Area construction 2020, and PT Zamindo Prima Selaras contractor conducting early stage backfill (Source: PT KBK, October 2020)

KBK is currently exploring options to develop the site into a River Port; the basic construction requirements at the port are as follows:

- Landside civil works to form a development platform for building, civil and stockpile construction;
- Marine works: loading jetty / berth / dock, erosion protection, tug berth;
- Road access, truck turning, parking, truck maintenance area;
- Stockpile areas with sufficient space and capacity for the different products and operation of mobile equipment;
- Access path for the overland conveyor and stacking equipment;
- Barging loading equipment (loading point, conveyor, barge loader);
- Note: loading or armour-stone will require either roll-on / roll-off facilities (e.g. for a front-end loader or truck) or a berth from which a mobile crane or excavator may operate; and
- Port operations offices and support infrastructure.

A number of preliminary schematics layouts have been produced by the KBK project team and work is continuing on these – see Figure 8-11 and Figure 8-12 for examples.

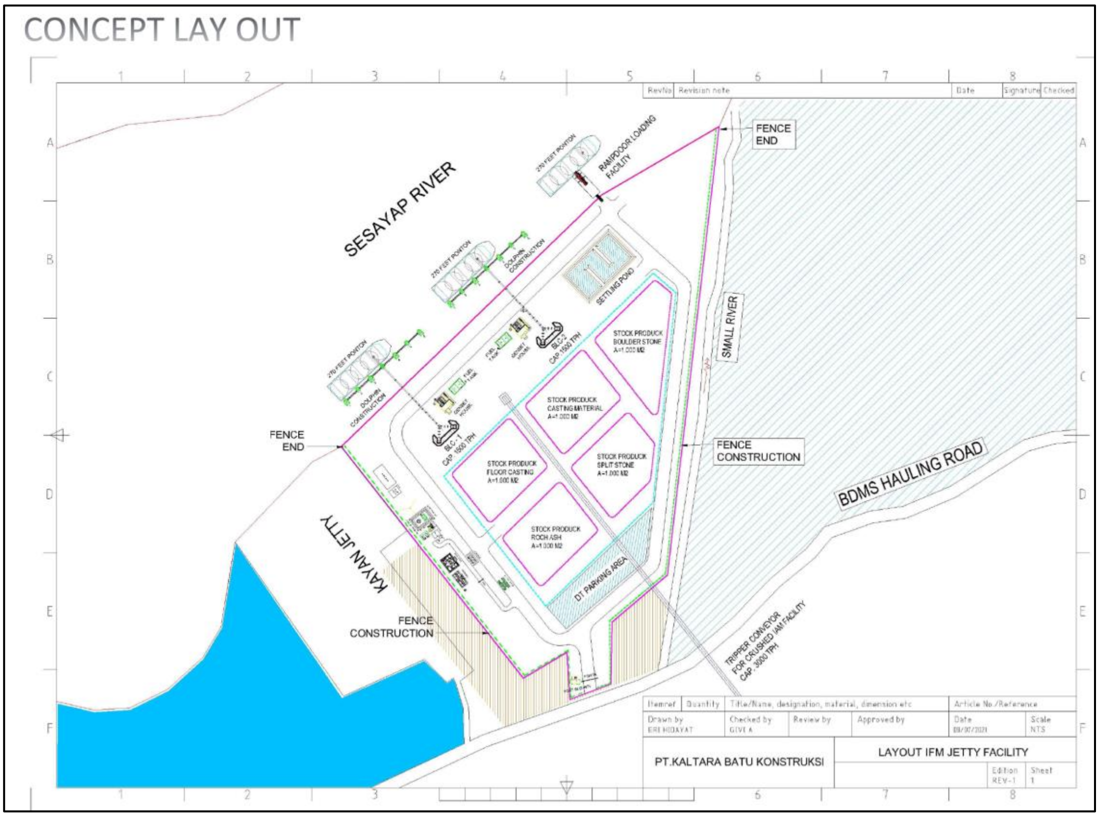


Figure 8-11: A recent schematic layout developed by the KBK Project Team.

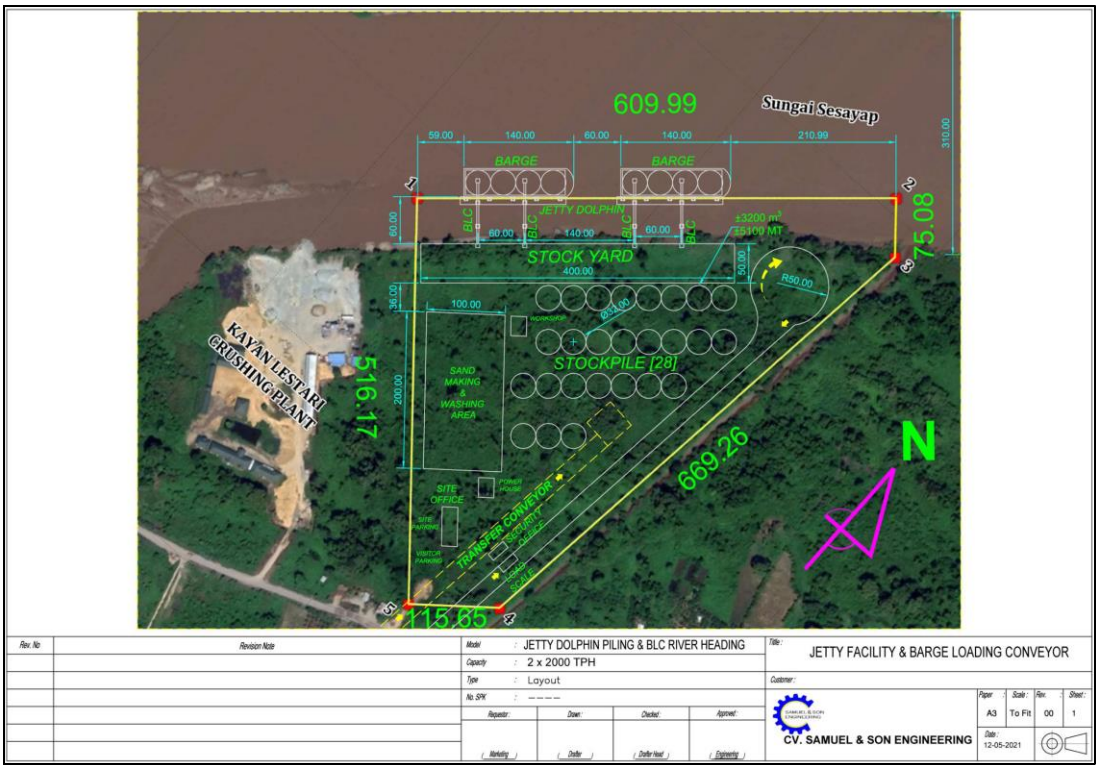


Figure 8-12: An alternative schematic layout presented by SSE Contractors to accompany their budget quotation.

KBK is in discussions with a number of consultancies for the procuring the following surveys:

- The desk and site-based surveys required to support preliminary and detailed design such a bathymetry, topography, water level and tidal data, suspended and riverbed sedimentation data, flood data and flood elevation, meteorology and climatology data, and on-shore and off-shore geotechnical works – these surveys are critical to informing design;
- Planning works for the loading jetty / berth / dock, erosion protection, tug berth including the shipping lanes and other navigation infrastructure; and
- Planning works for landside development and support infrastructure.

An EPC Contractor ("SSE Contractors") also provided a preliminary budget estimate for design and construction on a Lump Sum Turkey Basis for the River Port capable of handling up to 10 Mtpa. The potential schematic layout (Figure 8-12) was provided as part of the budget estimate.

8.5.5 Barging (River Sesayap)

Barging of goods (and river transportation in general) is a key feature of the River Sesayap. There are a number of river ports in existence for export of coal and aggregate or import of aggregate as described in Section 2.4.7.

KBK has recently made enquiries to the local market regarding the options for employing a Barging Contractor and procuring fleet for tugs and barges to facilitate delivery. The barge cost is estimated at USD 2.00 -2.50/ton from KBK's port to Anchorage Point Tarakan, as shown in Figure 8-13.

Figure 8-13: Available barge routes from KBK port to transhipment anchorage point at Tarakan.

In the vicinity of the KBK permit for the river port, the river width is around 300 m; as the river continues eastward, the width increases to >1,000m. Typically, the largest barge sizes seen on the river are around 90 x 25m (carrying up to around 5,000 tonnes) and are capable of reaching a sheltered of-shore position for transhipment.

8.5.6 Comments

General comments:

- The assumption on sales prices is that they apply at the RETAIL HUB Gate and all transport costs would reside with the purchaser. Whether this applies to material transported to the River Port needs to be established.

Comments on road haulage to the KBK River Port:

- permission to use the mining haul road needs to be confirmed – if permission isn't possible this might be "red flag" / "fatal flaw" as trucks cannot be routed through Malinau and construction of a purpose-built haul road would attract significant capital cost;
- the haulage operation will increase traffic on the third-party road, which will impact stakeholder along the route and increase degradation of the pavement;
- SRK noted standardisation of haul trucks on the mining haul road (best practise) and if permission is provided to use the mining haul road, confirmation of permitted equipment needs to be verified. This might have a bearing on capital and operating cost (for any contracting strategy); and
- the level of tariff being levied for use of the haul road needs to be investigated.

Comments on the conveyor concept:

- A conveyor will substantially reduce road haulage but ideally needs to be in regular use to gain maximum benefit;
- The concept for the conveyor is at an early stage and an appreciable amount of modelling and simulation in order to optimise the concept prior to seeking quotation; and
- The routing should be reviewed in detail and the use of a curved conveyor and / or pipe conveyor could be considered.

Note in the cost estimate, SRK has included a placeholder for a 1,500 tph conveyor.

Comments on the KBK River Port location and study:

- Tidally influenced navigable rivers in areas of high seasonal rainfall are typically highly dynamic environments (flows, currents, tides, shore stability and evolution, other marine traffic etc) and the development of a River Port needs sufficient survey, investigation, and engineering work. All of this work still needs to be carried out.
- KBK is looking at two options: design and build via an EPC lump sum turnkey or utilising an Engineer to develop a tender design and documents to then invite bids from Contractors for detailed design and construction. At this point, the latter may be preferable as a River Port project is always unique to the project and the location and in our opinion the concept, scope, surveys, and engineering need to be advanced.
- Development of the river port in phases seems prudent with an initial phase for 3 to 5 Mtpa capacity.

Comments on Barging operations:

- The River Sesayap is ideal for inland waterway transport. It may be prudent to enquire at nearby coal operations as to whether a detailed benchmarking and operational review could be carried out.
- Costs for barging are based on benchmarks and a project specific quote, or anecdotal evidence from the nearby coal operations needs to be obtained.

8.5.7 Recommendations / Key Work Streams

SRK has recommended that the Company:-

- Undertakes the range of desk and site-based surveys required to inform River Port design and in particular assess impacts on existing river users and river safety;
- Develops design criteria for the Conveyor and River Port;
- Develops a "basis of design" document for each infrastructure asset / area – objectives, requirements and needs, constraints etc;
- Undertakes preliminary layout and design of buildings, civils, electrical and water distribution, surface water management design etc. Develop tender documents and tender for a Contractor / Engineer to undertake detailed design, procurement, and construction;
- Discusses with the Third-Party road owner the possibility of using the haul road and the tariff or agreement; and
- Seeks quotations for barging and seek insight for existing river operators.

9 COMMODITY PRICES AND DEMAND

9.1 Introduction

Industrial minerals can be defined as minerals mined and processed (either from natural sources or synthetically processed) for the value of their non-metallurgical properties, which in- turn provides for their use in an extremely wide range of industrial and domestic applications. As a general rule, they can also be defined as being non-metallic, non-fuel minerals. Obvious examples of naturally occurring industrial minerals include:

- Aggregates /(including, hardstone, pre-coated, granite, high polished stone value (PSV));
- Clays;
- Sand;
- Talc;
- Limestone;
- Gypsum;
- Pumice, and
- Potash.

Other less obvious examples of naturally occurring industrial minerals include minerals that also have metallurgical (as well as non-metallurgical) value, such as:

- bauxite (aluminium metal + bauxite used in cements, abrasives, refractories & alumina source for many applications);
- chromite (chrome metal & ferrochrome alloy + foundry sand, chemicals, pigments);
- rutile (titanium metal + white pigment for paints, paper, plastics);
- zircon (zirconium metal + source of zirconia for ceramics, glass);
- manganese (manganese metal + source of manganese dioxide for batteries, pigments);
- stibnite (antimony metal + source of antimony trioxide used as flame retardant); and
- quartz (silicon metal + source of silica in glass, ceramics, fillers).

There are also synthetic industrial minerals, which are manufactured from natural minerals. Synthetic minerals are often processed owing to the inferior characteristics and/or scarcity of their natural counterparts. For example:

- Mullite does occur naturally – in small quantities on the Isle of Mull for example – but commercial grades are produced by calcining (drying) certain bauxites and/or high alumina clays.
- Corundum, is the natural mineral of alumina. Commercial grades of alumina are yielded via the Bayer processing of bauxite, and fused alumina from the electro-fusing of bauxite or alumina.
- silicon carbide – from quartz + petroleum coke.
- fused minerals – by fusing the natural varieties, eg. fused alumina, fused magnesite.
- precipitated calcium carbonate – lime + carbon dioxide.
- spinel – from magnesia (from magnesite) and alumina (from bauxite).
- soda ash – from the Solvay process, salt+limestone+coal+ammonia.

9.2 Sand, Gravel and Crushed Rock

9.2.1 Introduction

'Aggregates' including Sand, Gravel, and Crushed Rock, are three very important materials of the industrial minerals group. Natural aggregates (crushed stone, sand and gravel) are among the most abundant natural resources and they provide a major basic raw material used in construction, agriculture, and other industries employing complex chemical and metallurgical processes. Aggregates are low in cost and are a major contributor to economies across the globe.

The European Aggregates Association (UEPG) describes the Aggregates Industry main productive output consists of; Sand, Gravel, Crushed Rock, Marine (flow type aggregates), manufactured aggregates, and re-cycled.

Figure 9-1: Aggregates Industry Main Products (source: UEPG published annual review 2019-2020, public report)

9.2.2 General Specifications of Aggregates

In the United Kingdom (UK) the following analytical tests and British Standards (BS) are relevant when assessing aggregates for their various prospective end uses.

- PD6682-1:2009 (+A1:2013). Aggregates for concrete - Guidance on use of BS EN 12620.
- PD6682-3:2003 Aggregates for mortar. Guidance on the use of BS EN 13139.
- Accelerated mortar bar test (in accordance with ASTM International (formerly American Society for Testing and Materials) (ASTM) C1260) – which considers the potential for alkali-silica reaction (ASR).
- Concrete Prism test (BS812-123:1999). Long-term (52 week) tests for ASR. Greywackes aggregates are noted as strongly reactive lithologies in the UK for ASR, however, the same lithology may be unreactive elsewhere. The concrete prism test is usually conducted to confirm that a greywacke aggregate is safe to use.
- Polished stone value (PSV) test (BS812-114:1989). A measure of resistance to the polishing action of vehicle tyres.

In general, saleable aggregates are classified based on the geometrical, physical and chemical requirements of the end (or intermediate) product. Ultimately the specifications are driven by the customer, however the Standards guidance specifies that the following aggregate properties must be quantified, based on the product being investigated.

- Geometrical requirements, including:
  - General
  - Aggregate Size
  - Grading (course, fine, natural, all-in etc)
  - Shape
  - Shell Content
  - Fines Content
  - Fines Quality
- Physical Requirements, including:
  - Resistance to fragmentation of coarse aggregate
  - Resistance to wear of coarse aggregate

  - Resistance to polishing (polished stone value (PSV))
  - Resistance to surface abrasion (aggregate abrasion value (AAV))
  - Resistance to surface abrasion from studded tyres
  - Particle density and water absorption
  - Bulk density
  - Durability (freeze/thaw resistance, drying shrinkage, alkali-silica reactivity (ASR))
- Chemical Requirements, including:
  - Chlorides
  - Sulfur containing compounds
  - Other constituents (for example, affect on volume stability from air-cool furnace etc)
  - Carbonate Content
- Evaluation of Conformity, showing initial tests, factory tests and control.

Sands, gravels and crushed stone come in a variety of shapes and sizes and classification of these materials into approximate size fractions is called grading. Traditional terminology was to classify aggregates as belonging to one of three categories; all in aggregate; coarse aggregate and sand. These are defined below but it should be noted that the first two categories are not used in mortar production.

- All in aggregate: this is material composed of a mixture of coarse material and sand.
- Coarse aggregate: over 4mm material. This classification can be further divided into graded and single-size aggregates.
- A graded aggregate consists of particles of different sizes from the maximum down to the minimum.
- Sand: The European Standard uses the term fine aggregate in place of sand for material less than or equal to 4mm in size but the terms are interchangeable and the word ‘sand’ more commonly used.

9.2.3 Aggregate Product Applications

Constructing an average-sized home (2,000 ft^2 / 180 m^2) in the United States requires over 400 tonnes of aggregates. Approximately 15,000 tonnes of aggregate or more can be used in constructing a medium sized school or hospital. Aggregates make up more than 94% of asphalt and 80% of concrete pavements.

In Europe, there are four Technical Standards that govern the Aggregate Industry, these are; EN 12620 (concrete), EN 13139 (mortar), EN 13043 (asphalt) and EN 13242 (unbound and hydraulically bound). Industry bodies are currently in the process of combining these Standards into one single Standard. Furthermore, Construction Products (or ‘Intermediate Use’ and End Use’ products) (see Figure 9-1) are regulated by the Construction Products Regulation (CPR) which is directed through the European Commission. Work is currently underway to also refine the CPR.

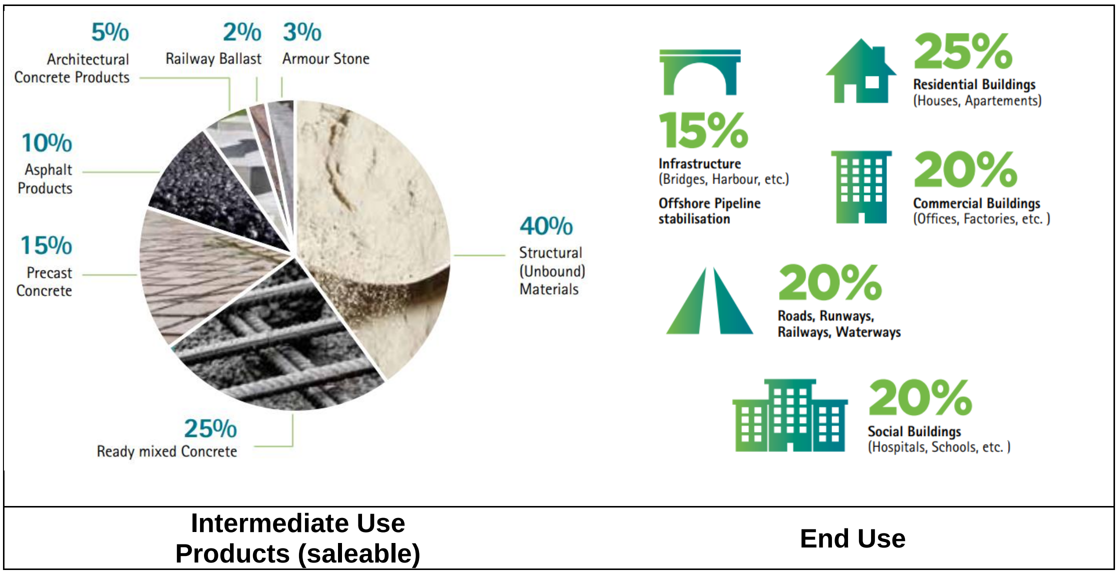


Figure 9-2: Breakdown (%) showing European Aggregate Products in 2018 applied for 'Intermediate Use' or 'End Use' (source: EUPG published annual review 2019-2020)

9.2.4 General Specifications of Sands

Historically, the specification for aggregates for use in mortars, screeds and renders (or construction sand) was covered by a number of British Standards. These have been superseded by the European standard BS EN 13139. British Standards Institution has also published. Industry bodies are currently in the process of combining these Standards into one single Standard. However, currently the European Standard 'BS EN 13139' lists the preferred sizes of aggregates for mortar, these are: 0/1mm, 0/2mm, 0/4mm, 2/4mm and 2/8mm.

9.2.5 Specifications of quartz sand for adhesives, grouts, fillers and extenders

Quartz sand in its finest forms, as micro-silica, flour or precipitated finds application in reinforcement filler and extender applications. Here the particle size and surface area of the quartz sand are two of its most important attributes. The quartz sand has to conform to a closely specified granulometry and to be free from particles of clay or schist, furthermore not more than 30% of the sand can be of limestone particles.

As a filler and extender in paint formulations quartz sand in the form of flour or tripoli serves to render the paint more resistant to chemicals because of its acid resistance and because of its hardness, scrubbing and wear resistance of surface films are also enhanced. The addition of quartz improves also durability and flow ability of the paint.

Additionally, quartz sand in these ultra fine particle sizes finds extensive applications in both silicone and industrial rubber where they are incorporated for their reinforcement qualities. In tire linings quartz sand offers superior adhesion, tear resistance and heat aging properties.

9.2.6 Sand for use in Optical Glass

According to S. Platias et al.[5], sand that is deemed suitable for use as optical glass is used in cameras, optical instruments, microscopes, and in optical fibres for telecommunications. In general, the specifications of the raw materials depend on the glass produced and the purity level of quartz sands is dominated by the iron content. The British Standard BS2975 includes recommended limits for the composition and of quartz sand for seven different grades of glass (Table 9-1).

Table 9-1: British Standard BS2975 Specifications for Sand used in Optical Glass

Grade	Product	SiO_2 %	Fe_2O_3 %	Al_2O_3 %	Cr_2O_3 %
A	Optical glass	99,7	0,013	0,2	0,00015
B	Tableware glass	99,6	0,01	0,2	0,0002
C	Borosilicate glass	99,6	0,01	0,2	0,0002
D	Colourless container	98,8	0,03	0,1	0,0005
E	Flat glass	99,0	0,1	0,5	-
F	Coloured container	97,0	0,25	0,1	-
G	Insulating fibres	94,5	0,3	3,0	-

9.3 Demand (Industrial Materials Sector)

9.3.1 Introduction

After air and water, aggregates are one of the most used materials in the world. When considering of the number of producers (or individual quarries), number of employees, and the tonnages produced, the aggregates Industry is by far the largest amongst the non-energy extractive industries.

According to a UN Environmental Programme (UNEP) report[6], sand is being extracted far more quickly than it can be renewed. While the U.S. imports only about 1% of the total sand that it uses, according to the United States Geological Survey, developing countries like China and India have had to import significantly larger quantities to meet the demand created by recent construction booms. Sand's scarcity translates to price appreciation, which makes investing in sand compelling. The UNEP estimates that demand for sand and gravel is currently standing at 40 – 50 billion tonnes per year. Shifting consumption patterns, growing populations, increasing urbanization and infrastructure development have increased demand for sand three-fold over the last two decades. Further to this, damming and extraction have reduced sediment delivery from rivers to many coastal areas, leading to reduced deposits in river deltas and accelerated beach erosion.

[5] S. Platias et al., "Suitability of quartz sands for different industrial applications", S. Platiasa, K. I. Vatalisa, G. Charalampidesa (published by Procedia Economics and Finance 14 (2014) pages 491 – 498)

[6] UNEP Sand and Sustainability Report, May 2019 (https://www.unep.org/news-and-stories/press-release/rising-demand-sand-calls-resource-governance, date: 07/05/2019)

9.3.2 European Demand

In Europe, the industry has over 15,000 registered companies, with approximately 26,000 producing sites. Over three (3) billion tonnes per year is produced and sold representing an annual estimated revenue (gross) of EUR 15-20 billion. For the 39 countries within the European Union (EU) States and the European Free Trade Association (EFTA) States, it is estimated that approximately six (6) tonnes per capita per year is required.

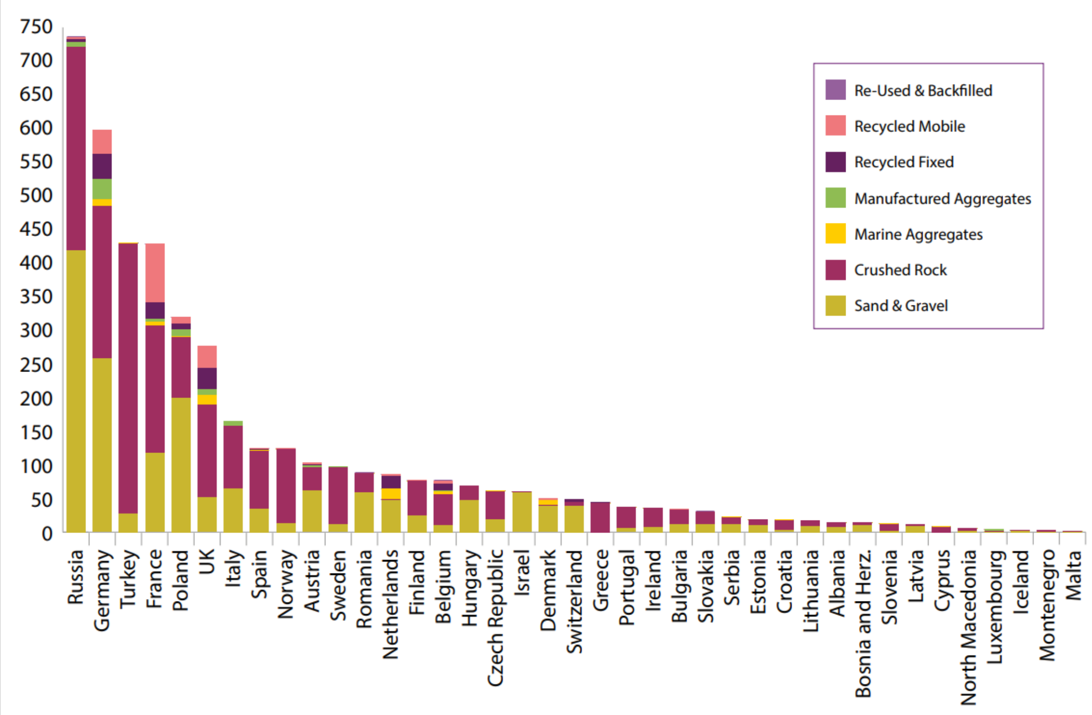


Figure 9-3: Aggregate Production by Country, millions of tonnes (2018) (Source: EFTU Annual Review 2019-2020)

9.3.3 United States of America Demand

In the U.S most top tier industrial minerals companies produce more than one product type. The chart below shows a summary of the revenue/product mix of several top aggregate focused producers.

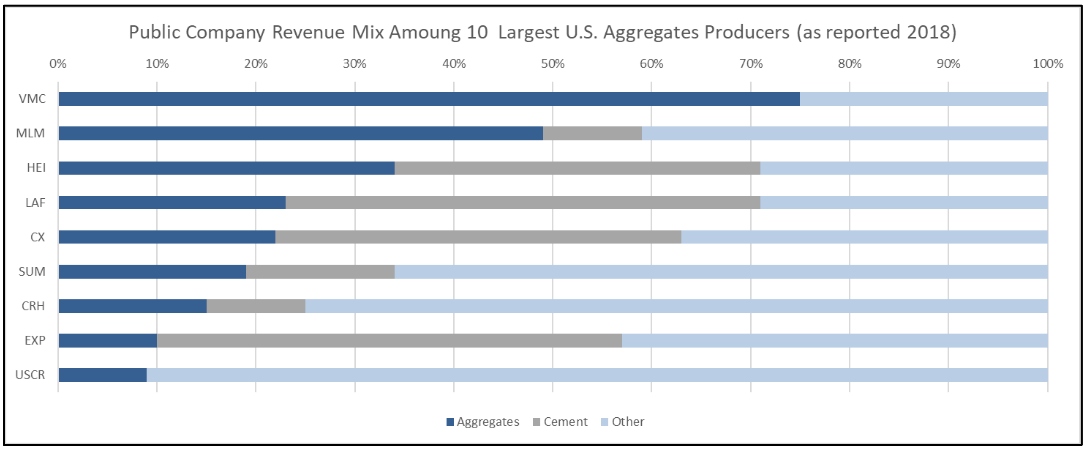


Figure 9-4: 2018 Public Company Revenue Mix (%) for the 10 Largest U.S. Aggregates Producers (as reported 2018)

9.3.4 Major Producers

Some of the major global aggregate producers are listed below.

- Vulcan Materials Co. (USA): The largest U.S. producer of construction aggregates. With 300 aggregate production and facilities in 22 states, the Bahamas and Mexico. The company has, among other sites, 173 stone quarries and 48 sand and gravel plants. The Company currently has 16 billion tonnes of aggregate reserves.
- Martin Marietta Aggregates (USA): The company has 285 quarries and distribution facilities in the United States, Bahamas and Nova Scotia.
- Tarmac (UK): UK's largest supplier of aggregates, more than 100 quarries and 40 recycling units, Tarmac produces limestone, hardstone, granite, high PSV, silica sand and china clay sand from its various geological sources.
- Oldcastle Materials (USA): Entirely operating to Central USA (42 States), the company has more than 1,400 operations with 18,000 employees.
- Aggregate Industries (UK): 200 sites and approximately 3,700 employees providing primary, secondary and recycled construction aggregates, the company delivers globally via road, rail and sea.
- Holcim (Sweden): 80,000 employees, 70 production sites across the globe. The company provides a variety of specialist products and services, but aggregates is one of its most dominate products.

9.4 Aggregate and Sand Pricing

The demand for construction sand and aggregate has increased in recent years due to growth in both the private and public construction industries. Many factors can impact the production and demand for sand and gravel, including infrastructure funding, housing starts, and weather. Similarly, industrial sand and gravel consumption has also increased in tandem with the oil and gas sector. Growth in oil and gas drilling has also led to an increase in hydraulic fracturing (fracking) sand consumption. Some new efficient fracking techniques also require the use of more sand.

In the United States, the average price of sand and aggregate was about USD 9.59 per metric tonne in 2020. Regional U.S. sand and gravel shortages have been known to occur in highly populated areas, which in turn can lead to increased prices in large urban areas. Figure 9-5 shows the steady increase of sand/aggregate prices over a ten year period. The United States is ranked as the largest producer of industrial sand and gravel in the world. As of 2020, the U.S. produced and estimated 960 million metric tonnes of sand and gravel. There is, however some difficulty in estimating the exact production data, as the definition of sand and gravel differs across nations.

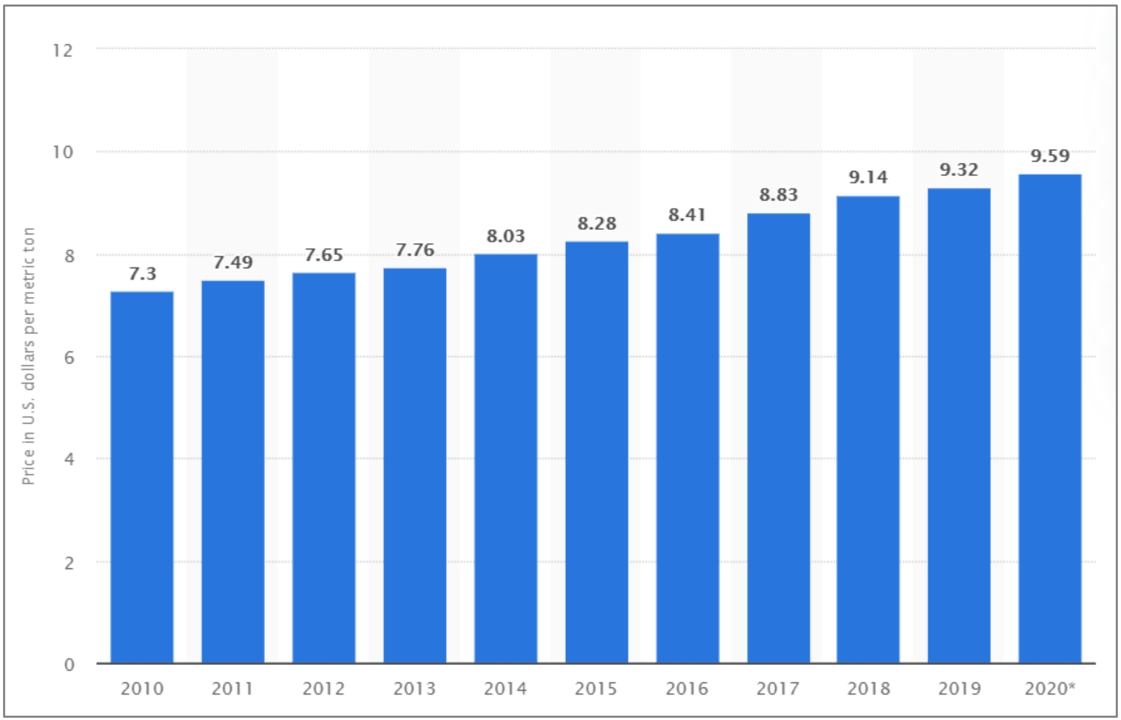


Figure 9-5: 2010 – 2020 average annual traded price for sand and aggregate (as published)

Export to Europe of pre-coated aggregates seemed to level from 2011 through to 2018, with a total reported sales of EUR 13.4 M in 2018 (Figure 9-6). Based on national data provided by the national statistical authorities, Eurostat calculated aggregates at EU level (calculated for the EU as a whole (28 countries) and depending on the domain and for the euro area which is 19 countries).

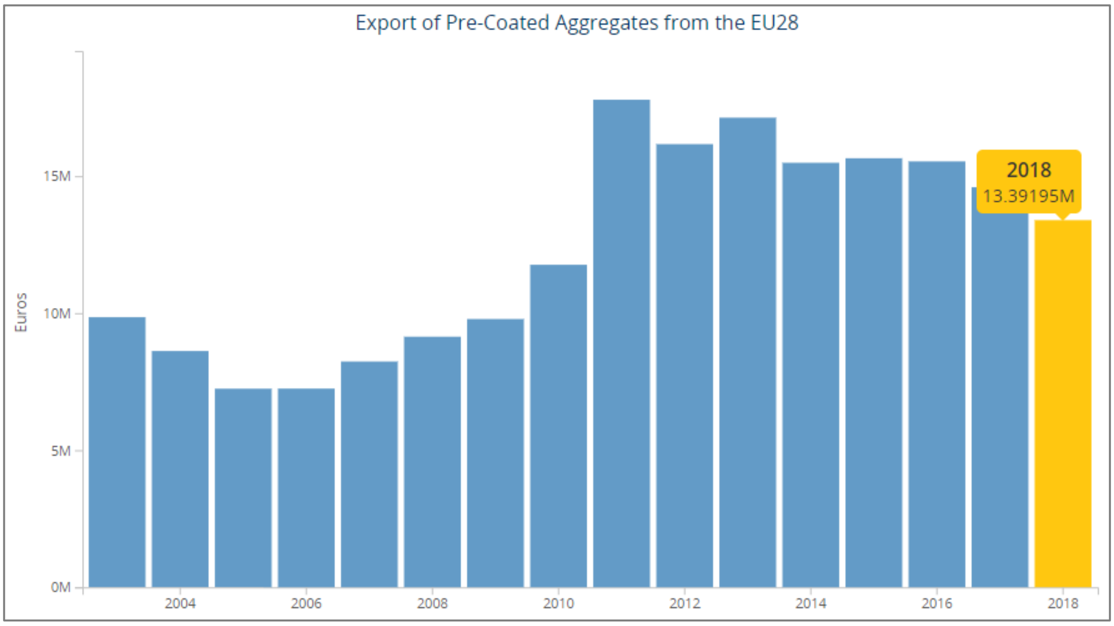


Figure 9-6: 2003 – 2018 Export Sales (EUR millions) for pre-coated aggregates sold to European destinations

The price of the river sands varies significantly according to their chemical and physical properties. The river sand is mined by the open pit method and the degree of processing is a function of the needs and specifications of various consumers. Normally after the sand is mined and stockpiled, it may be processed by screening, washing, drying and beneficiation. In Europe, the purchasing price for a tonne of river sand varies between EUR 3.00 to EUR 7.00, depending on the chemical analysis and the grain size distribution. This price is competitive if it is compared with other filler materials such as calcium carbonate which has an average purchasing price from EUR 8.00 to EUR 22.00/tonne. Due to confidentiality issue among the sand producers further economic analysis is not always available and it is difficult to predict what prices will be paid for particular countries or regions.

Potential Product Mix for KBK Aggregates summarised below in Figure 9-7.

Figure 9-7: Product End Uses and Types

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.

Rock Aggregate: Armour Stone (100-500kg/Block)
(Price: USD 31.69/Ton, Capacity: up to 3 million ton/Year)

This type of stone is often referred to as the boulder stone. Armour stone is a type of split stone that has the largest size compared to other types of split stone. Armour stone serves to hoard land or locations close to the beach. This Armour stone is usually used to make concrete breakwater, beach reclamation material, material for making small piers or most commonly used for building foundation materials.

Figure 9-8: KBK Local Product Pricing (source: company report file ref: KBK_STI_MOU_pdf)

10 KBK ASSET VALUATION

10.1 Introduction

There are many recognised methods that are used for valuing exploration and mining assets. The appropriate method in any given case is a function of; the extent to which the asset has been developed, specifically whether it would be categorised as an exploration, development or production property; the information available on the Project and the degree of confidence this gives to the plans to exploit this; the nature of the Project itself, notably the type of orebody it is, the mining and processing methods planned to be used and the extent to which these methods are tried and tested or unique; and finally the reason for the valuation itself.

Typical valuation methods used can be split into three types: cost based, market based and cash flow based methods respectively.

Cost based methods are most appropriate for exploration properties. These methods rely on the assumption that the value of the Project is a function of the money spent to date, that has added to the available information on the asset, and the money planned to be spent that is justified by information now available or that may become available. The Project must be worth at least the money planned to be spent that in the opinion of the valuer is justified (or else it would not be worth spending this money). Typically, however, the final actual value could be significantly more than this amount and therefore multiplication factors are sometimes applied to historical expenditure and future expenditure dependent upon the results of the immediately justified expenditure to arrive at a final value. Such multiplication factors typically range between 1 and 3 dependent in the case of historical expenditure, upon the value this has added, and in the case of future expenditure, on the potential of the Project in the view of the valuer. A low factor would reflect disappointing exploration results and a high factor might reflect the identification of potentially economic mineralisation, or in the case of KBK the physical properties of the greywacke. The basic tenet of this approach is that the amount of exploration expenditure justified on a property is related to its intrinsic technical value.

Market based methods are also appropriate for exploration properties but are widely used for properties at all stages of exploration and development and rely on the assumption that the value of the Project is similar to the value of other similar assets. The latter is typically determined based on prices paid for similar assets in arms length transactions for which reliable public information is available or on market/equity valuations of companies who hold similar assets to the Project being valued. The key here is ensuring that the assets used in the analysis are as similar as possible to the asset being valued.

Income based methods are most appropriate for development and production Properties where Measured and Indicated Mineral Resources and, ideally, Ore Reserves have been reported and where the various technical parameters with regards to mining, mineral processing, waste management, product transport, environmental, social and governance and also the likely capital and operating costs, are either known or reliably determinable. In such cases, the methodology typically comprises the derivation of a technical value by compiling a Discounted Cash Flow (DCF) and determining the Net Present Value (NPV) of the project. This methodology requires a discount rate to be applied to the cash flow and this is a key factor in deriving the NPV of a project.

In practice when producing a valuation, particularly given the subjective nature of some of these methodologies (or at least the key inputs), it is always preferable to use at least two methods and to then draw on the results of both of these to derive a value range rather than to produce a single value based on a single method.

Table 10-1 below is an extract from the Australian Code for Public Reporting of Technical Assessments and Valuations of Projects ("the VALMIN Code") which is an internationally accepted valuation code required to be used when valuing Projects to be listed on the Australian Stock Exchange. This sets out when the various valuation approaches set out above are suitable by referring to Exploration Projects; Pre-development Projects; Development Projects and Production Projects. For the purpose of this table these are defined as follows:-

a) **Early-stage Exploration Projects** – Tenure holdings where mineralisation may or may not have been identified, but where Mineral Resources have not been identified;

b) **Advanced Exploration Projects** – Tenure holdings where considerable exploration has been undertaken and specific targets identified that warrant further detailed evaluation, usually by drill testing, trenching or some other form of detailed geological sampling. A Mineral Resource estimate may or may not have been made, but sufficient work will have been undertaken on at least one prospect to provide both a good understanding of the type of mineralisation present and encouragement that further work will elevate one or more of the prospects to the Mineral Resources category;

c) **Pre-Development Projects** – Tenure holdings where Mineral Resources have been identified and their extent estimated (possibly incompletely), but where a decision to proceed with development has not been made. Properties at the early assessment stage, properties for which a decision has been made not to proceed with development, properties on care and maintenance and properties held on retention titles are included in this category if Mineral Resources have been identified, even if no further work is being undertaken;

d) **Development Projects –** Tenure holdings for which a decision has been made to proceed with construction or production or both, but which are not yet commissioned or operating at design levels. Economic viability of Development Projects will be proven by at least a Pre-Feasibility Study;

e) **Production Projects –** Tenure holdings – particularly mines, wellfields and processing plants – that have been commissioned and are in production;

Table 10-1: Valuation Approach: Project development stage (VALMIN 2015)

Valuation Approach	Exploration Projects	Pre-development Projects	Development Projects	Production Projects
Market	Yes	Yes	Yes	Yes
Income	No	In some cases	Yes	Yes
Cost	Yes	In some cases	No	No

10.2 Valuation Approaches Selected

SRK regards KBK as an ‘Pre-development Project’ as defined in Section 10.1 and therefore a “Market Based” approach would generally be considered the most appropriate approach to adopt in this case. However, market based methods typically rely on the amount of supplementary and ‘relevant’ market based information that is available, more specifically publicly available information. Although there are many publicly listed Industrial Mineral Producers or Pre-development industrial mineral projects that may be similar to KBK, much of the required data or information is not publicly available. Where it is available, it could be considered unreliable in terms of it being either up to date (or not), or not being entirely comparable to KBK or its peers by means of either; project scale, project location/country, product mix being targeted, or related infrastructure. Therefore, and so as to ensure that the valuation range presented herein reflects the specific nature of the KBK assets, SRK derived a set of preliminary valuations based on more than one valuation approach, and as such SRK conducted a (1) Cost Based valuation, (2) Market Based valuation and a (3) Income Based Valuation, for this assessment. The valuation assessment is then concluded (see Section 10.6) with the most preferred Valuation method deemed relevant to KBK given the available information. For this assessment, SRK has been provided with the following:

- detailed project information,
- numerous technical studies (including; geological, survey, geo-chemical and geo-physical, mining, infrastructure and logistic, environmental and social);
- contractor quotations;
- memorandum’s of understanding from potential product offtake partners;
- detailed survey and design files;
- a marketing plan for multiple product types;
- design files for conceptual layout and infrastructure installations and locations, and
- a detailed development plan and timeline.

The information provided by the Company describes both the work completed to date and the next best steps which would be required to advance the Project to the next stage of assessment.

While it is recognised that “Income Based methods” are typically used for mining projects beyond pre-development status, it is SRK’s opinion that in the case of KBK, there is a significant amount technical information available in relation to; geology, mining, ESG, processing, infrastructure and the Company’s near-term plans to further develop the asset.

In addition to the technical studies, the Company has advanced its discussions with respect to contract mining services, marketing and off-take of several product types and provided guidance on its planned sales relating to these discussions. In consideration of these factors, SRK has prepared a TEM which summarises the estimated revenue and costs associated with the Asset under a specific set of assumptions. The results of the TEM are presented as part of the valuation range estimated herein.

These three methods and SRK’s ultimate valuation range are presented in turn below.

10.3 Cost Based Valuation

In producing its cost based valuation, SRK has made an assessment of:

- The historical estimated expenditure for technical work/assessment work (drilling, sampling, mineral resource estimation, testwork and other technical studies (etc) already conducted, where data is readily available, completed and not required to be reproduced by any future owner; and
- The required, and justified, exploration expenditure(s), and further testwork to progress the Project to next stage of development/assessment (i.e. Scoping or Prefeasibility studies).

SRK's estimate of expenditure on the licence to date is largely drawn from the reports produced by the Company and the Mineral Resource report produced by SRK all of which were made available via email. Specifically, SRK has summarised the work undertaken and made an estimate of the cost that would be incurred in undertaking that work at today's prices. This assumes that if a new company were to purchase the KBK permit today, and that this historical information was available, then the work would not be required to be re-produced and so the Project must be worth at least the cost of this. SRK notes, for the purpose of this valuation, it is assumed the Company has the data and the underlying reports associated with the programmes summarised below (see Table 10-2). Should this information not be available then the value derived for the Project would be less then presented here as some of this work would need to be revisited.

The historical cost estimate includes the technical studies described in Sections 3 through to 9, and activities such as; campaign drilling (greenfield and target drilling), sampling, historical excavation, chemical and physical testwork studies, exploration mapping, field surveying tasks, database compilation, geological modelling, mineral resource estimation, environmental and social, and other technical studies (i.e, crushing and testwork or infrastructure studies).

SRK's estimate of the cost that would be incurred in replicating the expenditure completed to date is summarised below in Table 10-2. The values presented for periods 2016-2019 are taken from the Company's audited statements and the 2020-2021 values are estimates provided by the Company for activities completed during that period.

Table 10-2: Estimated Historical Expenditure Relevant to KBK Deposit

Initial Investment (circa 2016 -2017)	**USD**		**2,700,000**
Land Purchase (8.8ha)	USD	1,760,000	
Initial Exploration and Laboratory Work (1)	USD	600,000	
Enviro, Social and Governance Fees	USD	140,000	
Government Fees	USD	200,000	
Investments (circa 2017-2018)	**USD**		**3,750,000**
Government land department rezoning process from Horticulture land status to Mining land status.	USD		
Exploration activities, geological modelling above surface rock mountain Company estimated 10 million tons.	USD		
Domestic and international market research for crushed stone buyers.	USD		
Appointed Technical Project Manager.	USD		
SRK first work order site visit evaluation of mining area and infrastructure.	USD		
Government and Mayor Recommendation approval for Mining Permit process commencement	USD		
Investments (2019)	**USD**		**3,675,000**
The purchase of 6.4 hectares of land containing a mountain of rock.	USD		
The purchase of 12 hectares of river side land for KBK loading port facility.	USD		
Secured Exploration Mining Business Permit.	USD		
Sample petrography (PetroLab), and other sample tests (Jakarta) (3)	USD		
Exploration activities, phase one drilling programme 11 diamond core drill holes. (2)	USD		
SRK work order (geotech) Site training for drill team.	USD		
Site infrastructure (ie, core shed, office buildings, camp mess building)	USD		
Government contributions.	USD		
Investments (circa 2020-2021)	**USD**		**1,505,000**
Exploration activities, phase one drilling programme 25 DD holes . Definition Drilling	USD	800,000	
Technical Reporting	USD	250,000	
Sampling and Testwork (3)	USD	30,000	
Equipment Purchases	USD	100,000	
Staffing	USD	150,000	
Other……(4)	USD	175,000	
Total Historical Expenditures	**USD**		**13,658,622**

Notes to Table 10-2:

(1) Various maps and topo data were available for use in the MRE

(2) Estimated cost per meter in for contracted diamond drilling services (all in cost (ancillary, standby, tram, consumables etc) excluding sample assay and geological logging)

(3) Estimated range per accredited laboratory sample for prep and simple XRD/XRF assay and multi physical property analysis

(4) Marketing study, AMDAL/ESIA update with site visits, Independent Site Report (B.Davis), Bathymetric study;

.

Table 10-3: Estimated Planned Near Term Expenditure Relevant to KBK Deposit and Approved by PT KBK

Planned Near Term Activity/Item (2022)	Units	Low Range	High Range	Note
* The purchase of remaining 25 hectares land to complete the full 40 hectares mining land ownership.	USD	500,000	500,000	(1)
* Application process for industrial port permit.	USD	850,000	850,000	
* Secured Operation Production Mining Business Permit.	USD	1,000,000	1,000,000	
* Exploration activities, phase two drilling programme diamond inclined drill holes.	USD	1,300,000	2,000,000	(4)
* Consulting Services to oversee and conduct drilling programme supervision and training.	USD	35,000	40,000	
SRK Detail Mine Plan	USD	60,000	85,000	
Government and Social contributions.	USD	200,000	200,000	
* Technical Valuation	USD	30,000	30,000	
SIA and EIA translation and gap analysis	USD	30,000	40,000	
2021 Pre-Feasibility Study	USD	578,264	1,156,528	
Carbon Emissions Management Plan	USD	NA	NA	
MRE Update 2022 (conversion of ET and Inferred to Indicated)	USD	40,000	60,000	estimate
Consultant Detailed Structural Study	USD	25,000	30,000	estimate
HUMAN RESOURCES/EMPLOYEE				
COMPANY VEHICLES	USD	100,000	100,000	(3)
1 YEAR TRAINING PROGRAM	USD	113,793	113,793	(3)
MALINAU SITE				
SURVEY EQUIPMENT	USD	50,161	50,161	(2)
OPERATIONAL TRANSPORT	USD	91,586	91,586	(3)
KBK MESS (SAKINAH)	USD	92,152	92,152	(3)
ENVIRO & SAFETY	USD	11,996	11,996	(3)
LEGAL & ADMIN	USD	8,276	8,276	(3)
OTHERS	USD	2,138	2,138	(3)
DRILLING EQUIPMENT	USD	591,562	591,562	(3)
CONSULTANTS (MINING & ENVIRONMENT)	USD	482,759	482,759	(3)
BATHYMETRY & AREA SURVEY	USD	103,448	103,448	(3)

Planned Near Term Activity/Item (2022)	Units	Low	High	Note
		Range	Range	
LAND ACQUISITION				
PT. KBK Quarry (Area 20 Ha)	USD	689,655	689,655	(3)
RETAIL HUB RETAIL (Area 44 Ha)	USD	2,068,966	2,068,966	(3)
JETTY PORT (Area 22 Ha)	USD	1,199,532	1,199,532	(3)
CONVEYOR & HAULING (AREA 5 Ha)	USD	634,483	634,483	(3)
HEAD OFFICE COST				
MONTHLY COST	USD	109,986	109,986	(3)
OTHERS	USD	2,345	2,345	(3)
MISCELLANEOUS				
IT SYSTEM & SOFTWARE LICENSE	USD	300,000	300,000	(3)
MARKETING & BRANDING	USD	100,000	100,000	(3)
INTERNAL LITIGATION LAWYER	USD	50,000	50,000	(3)
Total Estimated Planned Expenses	**USD**	**11,451,102**	**12,794,366**	

Notes to Table 10-2:

(1) completion of 40 hectare land holding

(2) Various maps and topo data were available for use in the MRE update

(3) E:\My Documents\0U7285 - KBK Technical Support\Reps\WO8 - Valuation 2021\Copy of KBK BUDGET COMPILATION 14.08.2021.xlsx

(4), SRK Estimate based on Sept MRE recommendations

In addition to the Historical Cost (Table 10-2), the total value of the Project needs to reflect the cost of the planned and justifiable expenditure to move the Project to the next stage of development and this is summarised above in Table 10-3.

In summary, the combined sum of expenditure incurred that has progressed the project to its current level (Historical Cost Table 10-2) and expenditure that is required to advance the project to the next stage (Planned Expenditure - Table 10-3), which SRK believes to be justified, is between US$25.1 Million and US$26.5 Million this being the aggregated sum of the low and high estimates for the incurred and justified expenditures respectively.

As already commented, however, it is usual to apply a factor to this sum (which can be more or less than x1) in order to reflect the quality of work done and the prospectivity of the project being assessed. In this case, SRK considers the work done to be of a sufficient quality, and that the Project is of sufficient mineralogical character, (tonnage and size approx. 70Mt Indicated and Inferred Resource as shown in see classification summary in Table 10-4). This is in addition to the physical properties and characterisation of the rock (ore) particularly its assessed hardness, durability and non-reactivity (see more about physical properties in Section 7) of the rock to justify it being advanced to a scoping study or prefeasibility stage. Notwithstanding, the economics of the Project will only be evident on completion of that work and if the underlying data from all previous exploration work (and testwork) is available.

Given this, SRK believes a factor for the Historical Cost (Table 10-2) should be in order of x2 for the **Low** and **Middle** ranges and x3 for the **High Range** to be reasonable at this stage and representative of the possible expense another developer would need to pay to have the work done if it wasn't done already.

Similarly, SRK believes a factor for the Planned Expenditure (Table 10-3) should be in order of x3 for the **Low**, **Middle** and **High** ranges to be reasonable. This represents the potential impact of converting Inferred classified Mineral Resources and Exploration Target areas to higher confident classification.

On this basis SRK has derived a Technical Value range for the Project on a "Cost Based" method of between USD 60M and USD 80M.

Table 10-4: Historical and Planned Expenditure Summary

	Historical	Planned	Historical	Planned	Total
Estimated Value Range Historical & Planned Expenditure (WITH MULTIPLES APPLIED)	**Multiple**	**Multiple**	**USDM**	**USDM**	**USDM**
Total Estimated Value - Low Range	2.0	3.0	**27.3**	**34.4**	**60**
Total Estimated Value - Mid Range	2.0	3.0	**27.3**	**38.4**	**70**
Total Estimated Value - High Range	3.0	3.0	**41.0**	**38.4**	**80**

10.4 Market Based Valuation

This section of the report presents SRK's assessment of the value of the Project based on a "Market Based Approach" (also referred to as the Sales Comparison Based Approach). Specifically, SRK has considered the sales (or transactions) of similar or substitute Projects or properties and related market data and then established a value estimate by a process involving comparison.

The first step in this process was to compile a list of transactions involving potentially similar assets, the second was to filter the results to restrict the comparison to assets considered to be at a similar stage of development and the third to determine the price paid in these transactions. The transaction price is represented in United States Dollar millions (USDM) at the time of the purchase.

10.4.1 Comparable Asset Selection

At this stage there has not been sufficient analysis conducted to confirm that sand is (or is not) a viable commodity at KBK. However, as it is well documented most aggregate operations usually produce more than crushed rock, and typically this would include sand products (see further information in Section 9.3.4). Furthermore, it is understood the Company is currently considering evaluating nearby targets (andesite and greywacke and sand) to include these additional aggregate products in the ramp up phase of the Projects development timeline. See further details in Section 2.3.5. These targets have to date, been sampled and assayed at the Geoprospects Laboratory located in Jakarta. However, the Company is yet to conduct mineral resource studies on the sand and andesite targets at this stage, as it focuses on primary crushed rock aggregates for KBK. With this in consideration, SRK has assumed for the purpose of this Valuation exercise that aggregate properties/assets (sand and crushed rock producers/explorers) that have been bought or sold within the last 20 years are relevant in terms of being comparable assets.

Given the above, SRK believes KBK should currently be treated as a crushed rock and sand advanced exploration project, for this market based analysis.

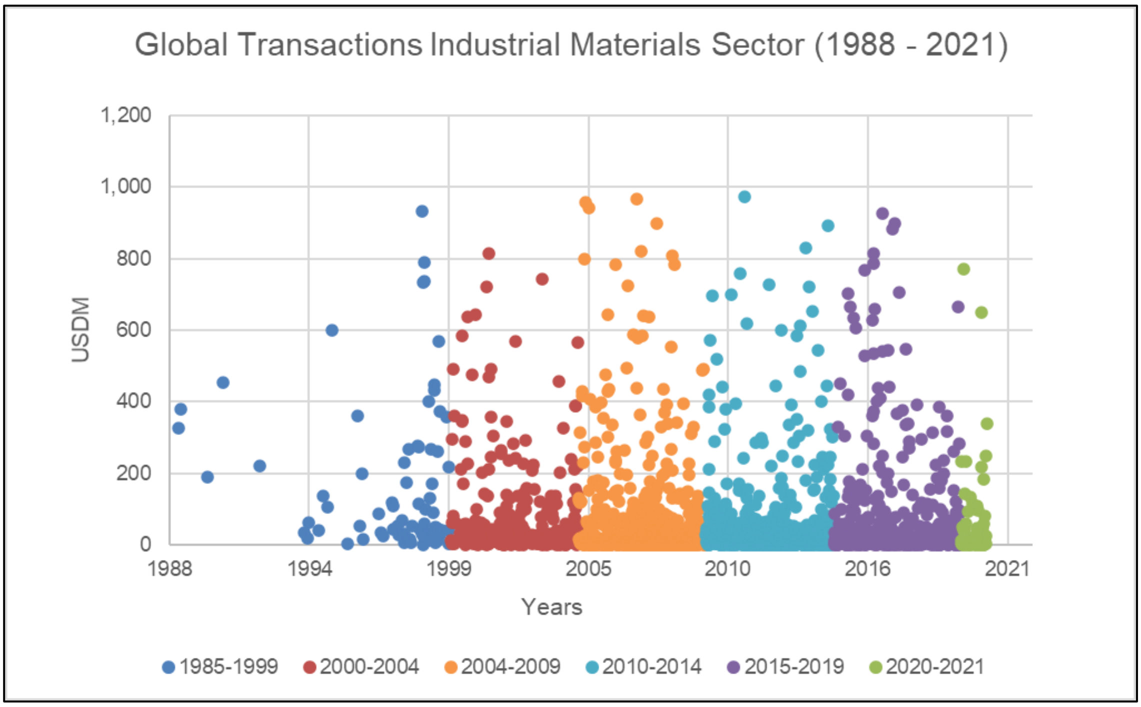


Figure 10-1: Summary of Transactions 1988-2021 (source: SRK)

Table 10-5 below shows a summary of the 2,368 aggregate projects that have been transacted around the globe between 1 January 2000 and 1 January 2021 as sourced from SRK's publicly available market database. For the purpose of this Valuation these are the potentially comparable assets.

For all of the above transaction, in the first instance SRK has (where available) tabulated the reported 2,368 aggregate transactions based on:-

- Buyer Name /Target Name;
- Date of the project/asset being purchased or acquired;
- Primary Commodity(ies) Industry to primary Aggregate producers, including either sand, clay, shale, gravel, concrete, and stone;
- Transaction Value presented in USDM and at date of announcement;
- Percent of assets acquired ("greater than 80% of consideration");

In order to refine the list to those transactions SRK considers most comparable, SRK has then applied three filters.

1. Firstly SRK limited the transactions to those where all of the above information was available and complete, and
2. Secondly, SRK has further limited the comparison to assets which were not listed at the time on any exchange.
3. A third filter was applied to show only transactions that represented "asset" purchases and not whole company buyouts which were generally observed to include other material assets /liabilities such as buildings, staff, existing debt and perhaps company infrastructure not associated with the asset itself.

Table 10-5 below shows all 2,368 aggregate specific reported transactions summarised by country. Only 4 transactions have been publicly reported/recorded in Indonesia with the largest number occurring in Saudi Arabia. Table 10-6 shows the transactions that remain (47 transactions) after the second filter.

Table 10-7 shows the final list of 19 comparable transactions that occurred between 2002 and 2021, and those that have been compiled for the purpose of the Market Based Valuation exercise herein.

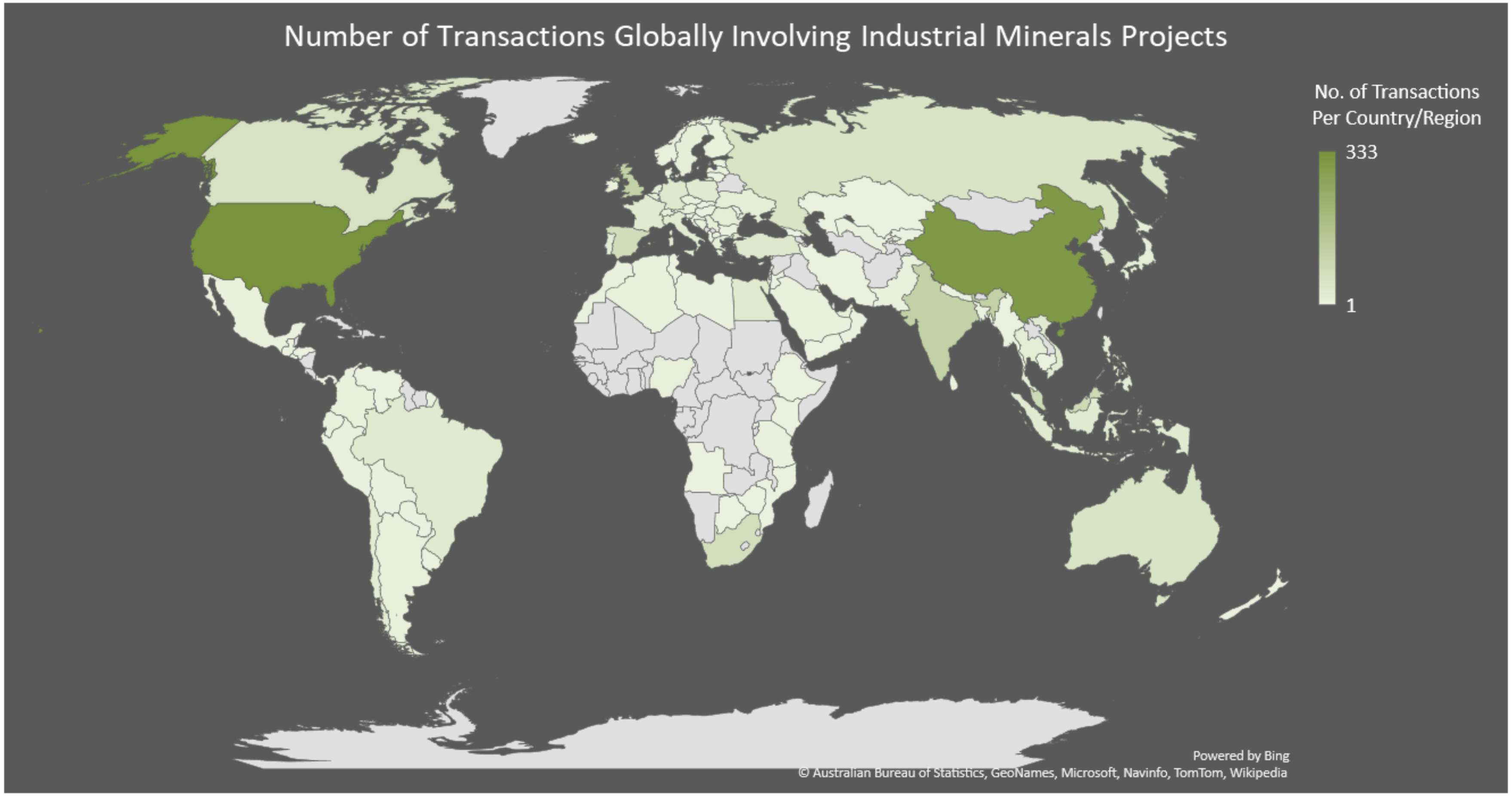


Figure 10-2: Number of Transactions recorded globally in the public domain and Involving Industrial Mineral Projects from 2000-2021 (Source: S&P Global Market Intelligence as at 1 Jan 2021)

Table 10-5: Count of Global Reported Transactions for Crushed Rock and Sand Focused Projects summarised by Country (2000-2020) (Source: S&P Global Market Intelligence (as at 1 Jan 2021)

Number of Transactions Globally Involving Industrial Mineral Projects							
Country	**Count**	**Country**	**Count**	**Country**	**Count**	**Country**	**Count**
Saudi Arabia	333	Italy	15	Indonesia	4	Venezuela	2
Rwanda	333	Sri Lanka	15	Latvia	4	Uruguay	2
China	310	North Macedonia	14	Mauritius	4	Algeria	1
Hong Kong	115	Sweden	14	Peru	4	Antigua and Barbuda	1
Serbia	113	Switzerland	13	Paraguay	4	Azerbaijan	1
Macau	83	Tanzania	13	Bahrain	3	Bermuda	1
Singapore	70	Thailand	11	Bolivia	3	Botswana	1
Slovakia	67	Norway	10	Croatia	3	Canada	1
Cambodia	56	Cyprus	8	Lebanon	3	Denmark	1
Australia	52	Argentina	7	Philippines	3	Dominica	1
Myanmar	51	Japan	7	Ukraine	3	Estonia	1
Slovenia	45	Oman	7	United Arab Emirates	3	Finland	1
South Africa	36	Trinidad and Tobago	7	Angola	2	French Guiana	1
Germany	34	Albania	6	Bangladesh	2	Georgia	1
Ecuador	31	BVI	6	Bulgaria	2	Guatemala	1
France	30	Czechia	6	El Salvador	2	Honduras	1
Brazil	29	Dem. Rep. Congo	6	Jordan	2	Ireland	1
Nepal	27	Egypt	6	Kenya	2	Iran	1
Israel	26	Ethiopia	6	Kazakhstan	2	Kuwait	1
South Korea	26	Pakistan	6	Libya	2	Kyrgyzstan	1
Hungary	25	Austria	5	Mexico	2	Lithuania	1
Spain	22	Bosnia & Herzegovina	5	Poland	2	Luxembourg	1
Chile	21	Colombia	5	Portugal	2	Morocco	1
Netherlands	21	India	5	USA	2	Mozambique	1
New Zealand	19	Malaysia	5	USA	2	Moldova	1
Belgium	17	Panama	5	United Kingdom	2	Russia	1
Iceland	17	Turkey	5	Uzbekistan	2	Romania	1
Nigeria	17	Tunisia	5			Vietnam	1
Greece	16					Zimbabwe	1
						Yemen	1

Table 10-6: Summary of Reported transactions and targets ranked by transaction size January 2000- January 2021

Rank No.#	Buyer Name/ Target Name	Transaction Industry	Transaction Type	Transaction Status	Completion Date	Total Transaction Value ($M)	Percent Acquired (%)	Target Country/ Region
1	Lone Star Americas Acquisitions, Inc./Forterra plc	Construction Materials	M&A - Asset	Completed	13/03/2015	1,400.0	100	UK
2	Vulcan Materials Company/Aggregates USA, LLC	Construction Materials	M&A - Whole	Completed	29/12/2017	900.0	100	USA
3	Cimpor - Cimentos de Portugal, SGPS, S.A./Yibitas Lafarge Orta	Construction Materials	M&A - Whole	Completed	27/02/2007	724.5	99	Turkey
4	Votorantim Cimentos S.A./St. Marys Cement Inc.	Construction Materials	M&A - Whole	Completed	02/08/2001	722.0	100	Canada
5	Cementos Argos S.A./Cement And Concrete Businesses	Construction Materials	M&A - Asset	Completed	07/03/2014	720.0	100	USA
6	The Jordan Company, L.P./Potters Borrower LP	Construction Materials	M&A - Whole	Completed	14/12/2020	650.0	100	USA
7	Summit Materials Holdings L.P./Lafarge North America Inc.,	Construction Materials	M&A - Asset	Completed	17/07/2015	450.0	100	USA
8	CSR America, Inc./FCS Holdings, Inc.	Construction Materials	M&A - Whole	Completed	31/07/2000	348.0	100	USA
9	SACCI SpA/Lafarge SA, Cement and Aggregates & Concrete	Construction Materials	M&A - Asset	Completed	31/12/2008	341.9	100	Italy
10	Panadero Aggregates /Lafarge 5 Aggregates Quarries & Related Assets	Construction Materials	M&A - Asset	Completed	12/02/2014	320.0	100	USA
11	Blue Water Industries LLC/Tennessee Assets and An Aggregates Quarry	Construction Materials	M&A - Asset	Completed	29/12/2017	290.0	100	USA
12	Holcim Ltd./Meyer Material Company, LLC	Construction Materials	M&A - Whole	Completed	21/07/2006	231.0	100	USA
13	NCI Building Systems, Inc./Environmental Materials, LLC	Construction Materials	M&A - Whole	Completed	20/02/2019	186.0	100	USA
14	Hanson Building Materials America, LLC/Better Materials Corporation	Construction Materials	M&A - Whole	Completed	18/07/2003	155.0	100	USA
15	TCC International Holdings Ltd./Sichuan Railway Group Cement	Construction Materials	M&A - Whole	Completed	31/01/2015	152.0	100	China
16	CRH plc/US Aggregates Inc. Substantially All Assets	Construction Materials	M&A - Asset	Completed	29/05/2002	140.0	100	USA
17	Investor Group/Western Aggregates LLC/Mathews Readymix LLC	Construction Materials	M&A - Whole	Completed	17/04/2020	93.5	100	USA
18	Semapa - Gestão, SGPS, S.A./Lafarge Betoes SA	Construction Materials	M&A - Asset	Completed	30/06/2011	85.2	100	Portugal
19	GTCR LLC/Monroc, Inc.	Construction Materials	M&A - Whole	Completed	05/06/1998	67.3	100	USA
20	Calderstand Ltd/Wakefield Materials, concrete business	Construction Materials	M&A - Asset	Completed	08/03/2003	66.7	100	USA
21	Calderstand Ltd/Bill Smith Sand & Gravel Co.	Construction Materials	M&A - Whole	Completed	01/03/1999	58.8	100	USA
22	Holcim Philippines, Inc./Lafarge Republic Aggregates, Inc.	Construction Materials	M&A - Whole	Completed	04/08/2015	58.6	100	Philippines
23	Trinity Industries/Texas Industries Expanded Shale and Clay Aggregates	Construction Materials	M&A - Asset	Completed	22/03/2013	54.1	100	USA
24	Anglo American plc/Mavike, S.L., Ready-Mixed Concrete Assets	Construction Materials	M&A - Asset	Completed	01/10/2002	53.5	100	Spain
25	Compagnie de Saint-Gobain S.A./Emix Industry (HK) Limited	Construction Materials	M&A - Whole	Completed	14/12/2016	53.2	80	Hong Kong
26	Breedon Aggregates Limited/Aggregate Industries Ltd., Scottish Assets	Construction Materials	M&A - Asset	Completed	30/04/2013	52.9	100	UK
27	VantaCore Partners LP/Southern Aggregates, LLC	Construction Materials	M&A - Whole	Completed	04/08/2008	50.0	100	USA
28	Silverhawk Capital/Lafarge, Aggregates, Concrete Asphalt/Paving	Construction Materials	M&A - Asset	Completed	01/04/2013	35.0	100	USA
28	Silverhawk Capital Partners, LLC/Westroc Inc.	Construction Materials	M&A - Whole	Completed	01/04/2013	35.0	100	USA
30	U.S. Concrete./Bode Concrete & Bode Gravel Company	Construction Materials	M&A - Asset	Completed	30/10/2012	31.5	100	USA
31	Lafarge S.A./Minimix Concrete Ltd.	Construction Materials	M&A - Whole	Completed	05/05/2005	28.5	100	UK
32	New Enterprise Stone/Lime/ Assets of Popple, & Pioneer Aggregates	Construction Materials	M&A - Asset	Completed	04/05/2018	22.3	100	USA
33	Calderstand Ltd/Woodhall Spa Sand & Gravel	Construction Materials	M&A - Whole	Completed	15/04/2004	18.2	100	UK
34	Global Stone Corporation/W.S. Frey Company	Construction Materials	M&A - Whole	Completed	19/03/1999	16.6	100	USA
35	Ennstone plc/Ayton Products, Asphalt and Aggregate Operations	Construction Materials	M&A - Asset	Completed	24/01/2006	15.1	100	UK
36	Lafarge Malayan Cement Berhad/Granite Indah Sdn Bhd	Construction Materials	M&A - Whole	Completed	01/07/2008	10.4	100	Malaysia
37	Cabaran Premix Sdn Bhd/Lafarge Aggregates (Ipoh) Sdn Bhd	Construction Materials	M&A - Whole	Completed	28/12/2016	7.0	100	Malaysia
38	Texas Industries Inc./CEMEX USA, Ready Mix And Aggregate Operations	Construction Materials	M&A - Asset	Completed	29/07/2011	6.1	100	USA
39	Associated Stone Industries (Kotah)/Al Rawasi Rocks & Aggregates	Construction Materials	M&A – Whole	Completed	05/11/2014	5.9	100	UAE
40	Ennstone plc/T&T Aggregates Ltd.	Construction Materials	M&A – Whole	Completed	18/06/2003	3.9	100	UK
41	Raubex Group/Aggregates & Quarries, Mining Rights & Related Properties	Construction Materials	M&A – Asset	Completed	10/03/2015	3.1	100	South Africa
42	RMR Industrials./CalX Minerals, LLC	Construction Materials	M&A – Asset	Completed	12/10/2016	2.8	100	USA
43	Virginia Properties/Aggregate Industries Mngt, Stafford Gravel Mine Site	Construction Materials	M&A – Asset	Completed	27/01/2015	1.4	100	USA
44	Breedon Aggregates Limited/Speyside Sand & Gravel Quarries	Construction Materials	M&A – Asset	Completed	16/07/2012	1.1	100	UK
45	China Kingstone Mining Holdings Limited/Beichuan Lida Mining Co.	Construction Materials	M&A – Whole	Completed	29/08/2011	0.9	100	China
46	Novex Systems International Inc./The Sta-Dri Company	Construction Materials	M&A – Whole	Completed	01/08/2000	0.20	100	USA
47	Holcim Philippines, Inc./Quimson Limestones, Inc.	Construction Materials	M&A – Whole	Completed	04/08/2015	0.02	100	Philippines

Table 10-7: Summary of Reported transactions for Asset Purchases ranked by transaction size January 2000- January 2021

Rank No.#	Buyer Name/ Target Name	Transaction Industry (MI)	Transaction Type	Transaction Status	Completion Date	Total Transaction Value ($M)	Percent of Equity Ownership Acquired (%)	Target Country/ Region
1	Summit Materials Holdings L.P./Lafarge North America Inc., Cement Assets	Cons.Materials	M&A - Asset	Completed	2015	450.0	100	USA
2	SACCI SpA/Lafarge SA, Cement and Aggregates & Concrete Activities in Italy	Cons.Materials	M&A - Asset	Completed	2008	341.9	100	Italy
3	Panadero Aggregates Holdings /Lafarge ., 5 Aggregates Quarries, & Related Assets in Maryland	Cons.Materials	M&A - Asset	Completed	2014	320.0	100	USA
4	Blue Water Industries /Tennessee Assets Aggregates Quarry in Abingdon of Aggregates USA,	Cons.Materials	M&A - Asset	Completed	2017	290.0	100	USA
5	CRH /US Aggregates Inc. Substantially All Assets	Cons.Materials	M&A - Asset	Completed	2002	140.0	100	USA
6	Semapa - Sociedade de Investimento e Gestão, SGPS, ./Lafarge Betoes SA	Cons.Materials	M&A - Asset	Completed	2011	85.2	100	Portugal
7	Calderstand Ltd/Wakefield Materials, concrete business	Cons.Materials	M&A - Asset	Completed	2003	66.7	100	USA
8	Trinity Industries, Inc./Texas Industries Inc., Expanded Shale Clay Aggregates Manufacturing Business	Cons.Materials	M&A - Asset	Completed	2013	54.1	100	USA
9	Anglo American /Mavike, S.L., Ready-Mixed Concrete Assets	Cons.Materials	M&A - Asset	Completed	2002	53.5	100	Spain
10	Breedon Aggregates Limited/Aggregate Industries Ltd., Scottish Assets	Cons.Materials	M&A - Asset	Completed	2013	52.9	100	UK
11	Silverhawk Capital, /Lafarge North America., Wichita Aggregates, Concrete Asphalt/Paving Operations	Cons.Materials	M&A - Asset	Completed	2013	35.0	100	USA
12	U.S. Concrete, Inc./Bode Concrete and Bode Gravel Company, Inc.	Cons.Materials	M&A - Asset	Completed	2012	31.5	100	USA
13	New Enterprise Stone & Lime Co., Inc. Assets of Popple Construction, Inc. Pioneer Aggregates, Inc.	Cons.Materials	M&A - Asset	Completed	2018	22.3	100	USA
14	Ennstone /Ayton Products, Asphalt and Aggregate Operations	Cons.Materials	M&A - Asset	Completed	2006	15.1	100	UK
15	Texas Industries Inc./CEMEX USA, Ready Mix And Aggregate Operations	Cons.Materials	M&A - Asset	Completed	2011	6.1	100	USA
16	Raubex Group Limited/Buildmax Aggregates Quarries, Mining Rights Related Properties	Cons.Materials	M&A - Asset	Completed	2015	3.1	100	S/Africa
17	RMR Industrials, Inc./CalX Minerals,	Cons.Materials	M&A - Asset	Completed	2016	2.8	100	USA
18	Virginia Properties, Inc./Aggregate Industries Management, Inc., Former Stafford Gravel Mine Site	Cons.Materials	M&A - Asset	Completed	2015	1.4	100	USA
19	Breedon Aggregates Limited/Speyside Sand & Gravel Quarries Limited	Cons.Materials	M&A - Asset	Completed	2012	1.1	100	UK

Table 10-8: Summary of Reported transactions for Asset Purchases ranked by transaction and additional Comparable Metrics

Rank No.#	Buyer Name/ Target Name	Date Complete	Total Transaction Value ($M)	CM 1 (is primary aggregate producer)	CM 2 (has Distribution Network Established)	CM 3 (is not in operation or generating revenue)	CM 4 (multiple permits involved in transaction)	Total CM 1-4 Score
1	Blue Water Industries /Tennessee Assets and An Aggregates Quarry Abingdon Aggregates	2017	290.0	YES	YES	YES	YES	4
2	CRH /US Aggregates Inc. Substantially All Assets	2002	140.0	YES	YES	YES	YES	4
3	Trinity Ind../Texas Ind. Expanded Shale /Clay Aggregates Manufacturing	2013	54.1	YES	YES	YES	YES	4
4	Anglo American /Mavike, S.L., Ready-Mixed Concrete Assets	2002	53.5	YES	YES	YES	YES	4
5	Summit Materials Holdings L.P./Lafarge North America Inc., Cement Assets	2015	450.0	YES	YES	NO	YES	3
6	SACCI SpA/Lafarge SA, Cement and Aggregates & Concrete Activities in Italy	2008	341.9	YES	YES	NO	YES	3
7	Panadero Aggregates /Lafarge, 5 Aggregates Quarries / Related Assets, Maryland	2014	320.0	YES	YES	NO	YES	3
8	Semapa - Sociedade de Investimento e Gestão, SGPS, ./Lafarge Betoes SA	2011	85.2	YES	YES	NO	YES	3
9	Breedon Aggregates Limited/Aggregate Industries , Scottish Assets	2013	52.9	YES	YES	NO	YES	3
10	Silverhawk Capital/Lafarge N.America Wichita Aggregates, Concrete & Asphalt/Paving	2013	35.0	YES	YES	NO	YES	3
11	New Enterprise Stone & Lime./Assets of Popple, & Pioneer Aggregates	2018	22.3	YES	YES	YES	YES	4
12	Ennstone /Ayton Products, Asphalt and Aggregate Operations	2006	15.1	YES	YES	NO	YES	3
13	Texas Industries Inc./CEMEX USA, Ready Mix And Aggregate Operations	2011	6.1	YES	YES	NO	YES	3
14	Raubex Group/Buildmax Aggregates & Quarries, Mining Right /Related Properties	2015	3.1	YES	PARTIAL	YES	YES	3
15	RMR Industrials, Inc./CalX Minerals,	2016	2.8	YES	NO	YES	YES	3
16	Virginia Properties/Aggregate Ind. Management, Former Stafford Gravel Mine Site	2015	1.4	YES	NO	YES	YES	3
17	Breedon Aggregates Limited/Speyside Sand & Gravel Quarries Limited	2012	1.1	YES	PARTIAL	YES	YES	3
18	Calderstand Ltd/Wakefield Materials, concrete business	2003	66.7	NO	YES	NO	YES	2
19	U.S. Concrete, Inc./Bode Concrete and Bode Gravel Company, Inc.	2012	31.5	NO	YES	NO	YES	2

10.4.2 Valuation (Market Based)

The transactions involving the assets considered most similar to KBK are shown in Table 10-8. These comprise the asset transactions that are:

1. Condition 1 - a primary aggregate producer;
2. Condition 2 – asset that have a Distribution Network Established (haulage, or port/jetty, or other etc);
3. Condition 3 – Are not in operation or generating revenue at time of sale, and
4. Condition 4 – may have multiple permits involved in transaction.

SRK lists the most relevant asset purchases in order of most similar (see Table 10-8 ranked 1-4) when compared with KBK. This table also gives the price paid at time of transaction, and there is noticeable large range of values overall, this being from USD 1.1M up to USD 290M.

In the less comparable transactions (shown ranked 5-19 in Table 10-8), a much larger range is also presented, from USD 1.1M up to USD 450M.

Table 10-9: Summary of Final Ranks Summary Transactions

Rank No.#	Buyer Name/ Target Name	Completion Date	Total Transaction Value ($M)	Reported tonnes (Mt)
1	Blue Water Industries / Aggregates USA,	2017	290.0	NA
2	CRH /US Aggregates Inc.	2002	140.0	6.1
3	Shale and Clay Aggregates Manufacturing	2013	54.1	NA
4	Mavike, S.L., Ready-Mixed Concrete Assets	2002	53.5	NA
5	Raubex Group/Buildmax Aggregates & Quarries, Mining Right /Related Properties	2015	3.1	NA
6	Breedon Aggregates Limited/Speyside Sand & Gravel Quarries Limited	2012	1.1	NA

Notably these “comparable” assets still yield quite a large range in values (a maximum of USD 290M and 1.1M with an average of USD 90M. Therefore, SRK has considered further details about each of the specific transactions shown in Table 10-9 to broadly quantify the extent of the asset that was being purchased in comparison to KBK.

- **2017 - Aggregates USA** purchase by Blue Water Industries whereby the company entered into a definitive agreement to acquire Tennessee assets and an aggregates quarry in Abingdon from Aggregates USA, for $290 million on December 22, 2017. This purchase was following a state ruling that ordered Vulcan Materials Company to divest its holdings, in Aggregates USA, consisting of 13 Mine Assets, 1 quarry and a distribution centre.
- **CRH /US Aggregates Inc 2002**, announced that it will divest substantially all of its assets to Oldcastle Materials Group for $140 million in cash. At the time, the assets on sale to Oldcastle was subject to approval by the US Bankruptcy Court in Nevada.

- **2013 Shale and Clay Aggregates Manufacturing:** Trinity Materials, Inc. completed the acquisition of expanded shale and clay aggregates manufacturing business from Texas Industries Inc. (NYSE:TXI) for $54.1 million on March 22, 2013. Trinity Materials paid $8.5 million in cash, 42 ready-mix concrete plants stretching from Texarkana to Beaumont in east Texas and southwestern Arkansas, two aggregate distribution facilities in Beaumont and Port Arthur, Texas valued at $45.6 million. Trinity Materials also paid $5.5 million in consideration for prepaid assets and certain expanded shale and clay manufacturing inventories.
- **2002 Mavike, S.L., Ready-Mixed Concrete Assets:** Tarmac Limited, a subsidiary of Anglo American plc reached an agreement to acquire the aggregates and ready-mixed concrete assets of Mavike, S.L. for a reported cash consideration of approximately €59 million on May 2, 2002. The assets to be acquired comprise a quarry, 26 ready-mix plants located along the Mediterranean coast, principally in Alicante and Murcia, and three ready-mix plants in Madrid.
- **March 10, 2015, Raumix (Pty.) Ltd**. exercised the option to acquire mining rights and related properties from Buildmax Aggregates and Quarries (Pty) Limited for ZAR 37 million in cash. The consideration was settled on March 10, 2015. Buildmax will use the consideration to fund the working capital requirements of the broader Group.
- **July 2012, Breedon Aggregates Scotland Limited** acquired the assets of Speyside Sand & Gravel Quarries for £0.7 million on July 16, 2012. Breedon Aggregates, the UK's largest independent aggregates business, is making its first acquisition in Scotland since it was created in September 2010. According to its website, the Dundee-based subsidiary, Breedon Aggregates Scotland Limited, has purchased the trade and assets of Speyside Sand & Gravel Quarries Limited, including its quarry at Rothes Glen near Elgin, which will add approximately 1 million tonnes of sand and gravel reserves to Breedon's existing portfolio. The acquisition will provide Breedon with its first sand & gravel quarry in the north-east of Scotland.

When considering the range of transactions that are broadly similar to that of the KBK assets, and excluding all others less relevant), a market transaction range of between USD 1.1 Million and USD 290 Million is observed. There is however limited information available on the number, size and nature of the specific assets involved in the transactions in each case and for this reason SRK does not consider this an appropriate method to use in this case and has not therefore used this in deriving its value range for the KBK assets.

10.5 Income Base Valuation

10.5.1 Introduction

As input to its income based valuation, SRK has conducted a technical assessment to evaluate the Project and to understand its development status under a specific set of criteria. The criteria that has been evaluated is as follows:

a) Tenure,

b) Regional and local geology,

c) Mineralisation (and geophysical properties), hosting potential and prospectivity,

d) Exploration and production history,

e) Mineral Resources, and Exploration Targets,

f) Extraction methods and design,

g) Processing methods, flowsheets and recoveries,

h) Infrastructure availability and requirements,

i) Estimated capital and operating costs,

j) Actual and projected, or forward estimate, production,

k) Environmental, social and heritage impacts,

l) JORC Code Modifying Factors and other aspects that could reasonably be expected to impact on the economic potential, and

m) Product pricing and revenue factors.

TEM Production Scenarios

In order to generate a valuation range, SRK has tested three conceptual operating scenarios. The modelled scenarios are described as follows:

- **Scenario 1 - Medium Case (SRK Base Case):** 3Mtpa KBK Production (approx. 20 years LoM) with a approximately 50% reduction Inferred Resource adjustment (in accordance with Valmin 2015), contracted mining, 1Mtpa Armourstone + 2Mtpa Crushed Aggregates, 3Mtpa installed crusher capacity (owned and operated), jetty upgrade, truck haulage direct from mine site or retail hub, sales both domestic and export via upgraded jetty/marine port, and land conveyor phase 2 for export.
- **Scenario 2 - High Case:** 4Mtpa (approx. 20 year LoM) no Inferred Adjustment (i.e. full Inferred Resource is assumed in schedule), with 2Mtpa Armourstone, + 1Mtpa local Crushed Rock, 1Mtpa Export Crushed Rock), contracted mining, 3Mtpa installed crusher capacity (owned and operated), jetty rental and contracted services and upgrade to marine port, with barging of export materials via land conveyor.
- **Scenario 3 - Low Case** = 3Mtpa KBK Production (approx. 20 years LoM) with a approximately 50% reduction Inferred Resource adjustment (in accordance with Valmin 2015) (1Mtpa local crushed rock sales, 1Mtpa export crushed rock, 1Mtpa Armourstone), contract mining, 3Mtpa Crusher (owned and operated) with **washing of ore** included, land conveyor (owned and operated), jetty rental and port develop year 2 onward, and contracted services, barging of export.

The above criteria have been further discussed throughout the following sections.

Table 10-10: List of Technical Assessment Criteria considered in the Valuation of KBK and SRK's opinion of current status

Criteria	Assumed Development Status (refer to Section 4)	Status
Tenure	c) Pre-Development Project	✓
Regional and local geology	c) Pre-Development Project	✓
Mineralisation (and geophysical properties), hosting potential and prospectivity	b) Advanced Exploration Project	✓
Exploration and production history	b) Advanced Exploration Project	✓
Mineral Resources, Ore Reserves, Exploration Results and Exploration Targets	b) Advanced Exploration Project	✓
Extraction methods and design	b) Advanced Exploration Project	✓
Processing methods, flowsheets and recoveries	c) Pre-Development Project	✓
Infrastructure availability and requirements	c) Pre-Development Project	✓
Estimated capital and operating costs	c) Pre-Development Project	✓
Actual and projected, or forward estimate, production	b) Advanced Exploration Project	!
Environmental, social and heritage impacts	b) Advanced Exploration Project	✗
Modifying Factors, other aspects that could reasonably be expected to impact economic potential	b) Advanced Exploration Project	!
Product pricing and revenue factors	c) Pre-Development Project	✓

Key to table:	Status
Criteria status is Material and has been observed/achieved/verified	✓
Criteria status is Material and is currently unknown or detail has not been provided/verified	!
Criteria status is Material and has not been achieved or provided/verified	✗

10.5.2 Tenure

SRK was provided with a "Declaration of Mining Permit and Land Ownership" status document (file ref: "KBK Declaration of Ownership,pdf" and "[English]_SK IUP OP KBK.pdf"), the details of which are summarised below.

- Status: Production Operation Permit (locally known as a "IUP Operation" permit);
- Number: 38/ 1 / IUP / PMA / 2020;
- Issue Date: 02 September 2020;
- Ownership: 60% PT. Puncak Mineral Investasi, 40% Ozindo Investments Pty Ltd;
- Total Area: 40.9 Hectares (circa 400,000 m2);
- Datum: DGN 95;
- Permit Validation: 15 Years (5 x 5 x 5); and
- Permit Extension: 15 years x 15 years.

A description of the WUIP and IUP approval process is provided in Figure 2 4.

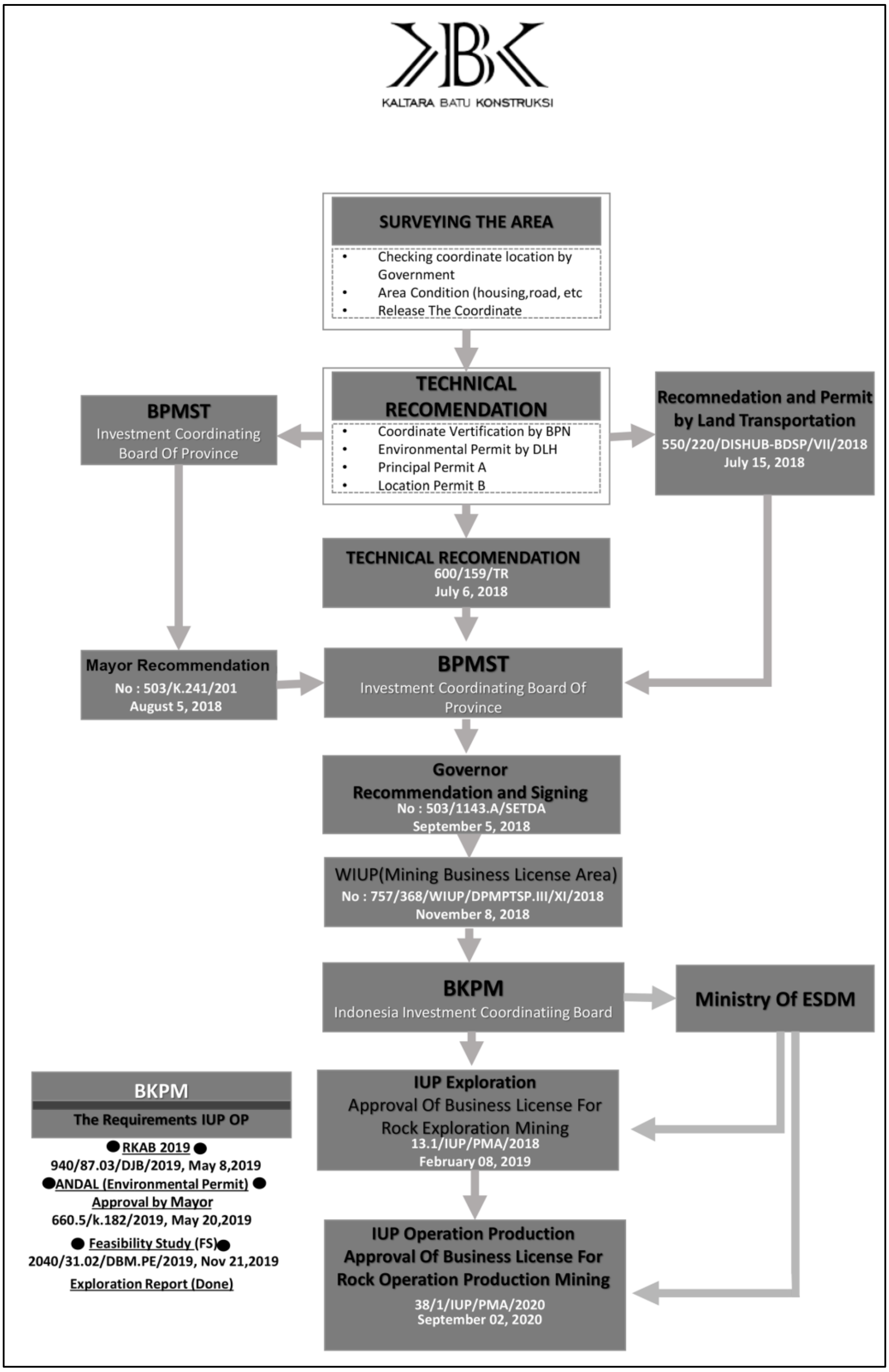


Figure 10-3: WUIP and IUP approvals process translated to English from Bahasa (source: Company reports)

Ownership of the property currently held by PT. Puncak Mineral Investasi and Ozindo Investments Pty Ltd is a total 40 hectares and it consists of an active Mining Operation Production Permit (IUP). The active mining permit has the following proof of ownership:

1. Certificate of rights for Buildings / Plants On State Land in Kuala Lapang Village Number: 590 / 025 / Pem / 2017 date 7 November 2017.

2. Certificate of Right of Buildings / Plants On State Land Kuala Lapang Village Number: 590 026 / Pem / 2017 dated 7 November 2017.

3. The coordinates of the license are provided in Section 2.3.2 and the permit covers a total area of 104.2 km^2 as shown in Figure 2-1.

A copy of the current permit is provided in Appendix C.

10.5.3 Regional and Local Geology

Both regional and local geological assessments have been conducted over several campaigns and the results have been summarised in the projects initial MRE report (Sept 2021). While SRK has recommended infill drilling and confirmatory drilling to better understand the structural nature of the deposit, the regional and local geology is generally understood from the public source documents available and given the drilling conducted to date.

The Company has planned near term drilling and assigned a budget (see Section 3.4) to conduct infill drilling in order to upgrade geological confidence in currently reported Exploration Target and Inferred Mineral Resource. A large part of this work is to undertake detailed structural logging for all new drilling and produce detailed logs of structural and geotechnical information to determine the location of potentially significant structures across the deposit. Geological interpretation to date relies heavily on the drilling intercept and dip surfaces of the topographic surfaces that have been captured in high resolution.

10.5.4 Industrial Mineralisation (and Geophysical Properties), Hosting Potential and Prospectivity

The drilling and sampling was independently verified by SRK following the completion of the 2021 drilling programe. All geological modelling and 3D interpretation has been completed by SRK as part of the JORC 2012 MRE for September 2021.

All previous testwork has resulted in relatively homogenous petrographic results (2017, 2018, 2019) for the greywacke material. All results from Geoservices present as having little variation in respect to mineralogical composition, and the resultant geophysical properties also proved to be approximately similar with respect to key geophysical properties (LLA, UCS, density).

Greywackes are described in general to have a high polished stone value (PSV), which makes them highly prospective as potential sources for roadstone product. The samples analysed present with a low porosity and no significant risk (total sulphur <0.1%) of alkali-silica reaction (ASR) [7] implications when used in concrete or mortar[8]. Laboratory analysis has suggested that, subject to confirmatory additional physical specific end use testing, the Company may be able to determine the suitability of the material for other end uses.

[7] Alkali-silica reaction (ASR) – The reaction between the alkalis (sodium and potassium) in Portland cement binder, moisture and certain siliceous rocks or minerals, such as opaline chert, microcrystalline quartz, and acidic volcanic glass, present in some aggregates; the products of the reaction may cause abnormal expansion and cracking of concrete in service.

[8] BS EN 12620:2013 Aggregates for concrete. BS EN 13139:2013 Aggregates for mortar

Adjacent Properties have been discussed in earlier sections within this report (see Section 2.3.4). These properties, partly owned by existing Directors of the KBK Project, offer significant synergistic opportunities for future development. These properties have similar geology, and are also known to have previous illegal historical quarrying operations for the production of aggregate material. It is understood the Company will continue to develop these properties particularly focusing on greywacke, sand and andesite aggregates. These activities are unrelated to this KBK valuation.

Industrial Mineralisation (as well as the geophysical properties) of the KBK orebody have been analysed at two independent laboratories, Geoservices Jakarta, and PetroLab UK. The properties of the main ore type are observed to have rock properties suitable for aggregate production. All greywacke samples submitted are observed as fine-grained greenish-grey greywackes consisting of silt-sized clasts of quartz and feldspar (both potassium-feldspar and albite) hosted in a fine-grained matrix containing chlorite, clay, calcite and rare trace iron-oxides. The clay mineralogy is very fine-grained but likely to consist of a mixture of sericite, illite and kaolinite. There is no apparent sedimentary banding to all samples to date. This is confirmed viewed under a hand lens, and under the petrographic microscope.

10.5.5 Exploration and Production History

The Project has been explored by numerous groups over several decades, however the most recent campaigns have been undertaken exclusively by PT KBK.

The Company understands that a small area (less than 30 cubic meters) has been illegally mined from the within the Project by previous land owners, it is thought. There is evidence of aggregate being mined in an area located to the lower south east portion of the permit. SRK believes this is immaterial and represents an insignificant amount of production.

To its knowledge, no other significant mining has been conducted at the site.

10.5.6 Mineral Resources and Exploration Targets

A summary of the Mineral Resources as classified on 30 September 2021, is provided in Section 3.3. In total, the KBK project has a reported JORC compliant Mineral Resource of 71.9 Mt at a grade of 5.02% Fe, 65.37% SiO2, 11.92% Al2O3, and an average UCS of 85 Mpa. Some 29% of this has been reported as Indicated and 71% as Inferred.

An Exploration Target of between 50 and 80Mt has also been identified and is adjacent to the existing Mineral Resource. SRK has recommended additional drilling to increase the level of geological confidence of this which has potential to increase the reported Mineral Resource.

SRK visited the site on numerous occasions from 2019, 2020, and 2021 during the most recent drilling programme to observe the drilling and sampling practices whilst these were underway. Overall, SRK observed that the style, size and occurrence of main industrial minerals present (Greywacke) which is consistent with that reported by the MRE.

Logging, and sampling and QA-QC of samples is carried out (field duplicates, and lab duplicates, umpire lab check samples, and data verification of field data included in the final database). No Certified Reference Material (CRM) is used in the sampling stream, as it is deemed not relevant given the nature of the sampling being assessed (only 10 x 10 meter composites) and it is intended for an industrial mineral deposit evaluation which is not dependant on mineral grade. There are no industry standard CRM's for greywacke / aggregate deposits. Notwithstanding, in general the sampling and logging is conducted to industry acceptable standards, although detailed structural logging could be improved in next phases of drilling.

The Company has advised that it intends to purchase its own drilling equipment to promote improvements in these areas in the next phases. The Company is also in the process of recruiting its own team of geologists and experienced drilling personnel to increase the capacities in-house. In the Companies past experience in the local region, contracted staff and services were finding ground conditions difficult, and it was evident international best practices were not fully understood.

Core handling at the drill site was seen to be fit for purpose. Core recoveries are reasonable, at best, but improvements can be made. The Company is investigating smaller diameter drill core to BWL (46mm inside diameter). All pervious drilling was HQ (76mm inside diameter).

The income based valuation presented in this section is based on the mining of both the Inferred and Indicated Mineral Resource but assumes no production from the Exploration Target.

For two of these scenarios, SRK has made an adjustment for the Inferred classified material, and only approximately 50% of Inferred material has been included in the production profile for generating sales forecast estimates. SRK believes this is reasonable and fit for purpose. However, following the next Mineral Resource update, it is recommended the Company re-address the TEM assumptions and include any upgraded material (i.e. Exploration Targets, Inferred Resources) if/where applicable.

10.5.7 Extraction Methods and Design

A summary of the extraction methods proposed for the operation is provided in Section 5.

The following Table 10-11 outlines the items and the status of each which have been considered as part of this valuation.

Table 10-11: Matters considered in respect to Production Targets, and where forward-looking statements have been made for material proposed to be extracted and where it must meet the reasonable grounds requirement

In respect to Production Targets, and where forward-looking statements have been made, material proposed to be extracted must meet the reasonable grounds requirement. Therefore, SRK has considered the following items:	Assumed Development Status (refer to Section 4)	Status	Basis
(i) mining and processing methods,	c) Pre-Development Project	✔	Contractor Quotations
(ii) grade control, mining loss and dilution,	b) Advanced Exploration Project	!	no detail supplied
(iii) geotechnical, hydrological and climatic conditions,	b) Advanced Exploration Project	✖	only regional data/detail supplied
(iv) mineralogical and metallurgical factors likely to affect process recovery,	b) Advanced Exploration Project	✔	
(v) flow sheet design,	b) Advanced Exploration Project	✔	Dual process flow sheet (Amourstone and Crushed Rock product) concept has been provided
(vi) variability of the mineralised body’s physical and chemical properties,	c) Pre-Development Project	✔	Not well defined
(vii) metallurgical recoveries and performance,	c) Pre-Development Project	NA	no metallurgical processing requiredost crushing
(viii) tailings and waste disposal,	c) Pre-Development Project	NA	no waste material as all material to be stockpiled as inventory (including shale)
(ix) quantity and quality of final and intermediate products and waste,	b) Advanced Exploration Project	✔	MOU and Contractor Quotations have been supplied
(x) labour sources, requirements and productivity,	b) Advanced Exploration Project	✔	Contractor Quotations have been supplied
(xi) operating practices and technologies employed or to be employed;	b) Advanced Exploration Project	✔	SOPs and reporting requirements for mining operations currently being developed
(xii) equipment availability, utilisation and performance,	c) Pre-Development Project	✔	Contractor Quotations
(xiii) energy and water sources,	c) Pre-Development Project	✔	Contractor Quotations
(xiv) recent trial mining and treatment data (for proposed operations),	c) Pre-Development Project	✔	Trail mining pits and testing completed. Stockpiled crushed rock onsite
(xv) construction and commissioning schedules,	c) Pre-Development Project	!	Not well defined, currently underway or being developed internally
(xvi) marketability of products, revenue factors, commodity prices and exchange rates,	c) Pre-Development Project	✔	Well defined and MOU(s) supplied
(xvii) product transport and realisation issues,	c) Pre-Development Project	!	ESIA and AMDEL update currently underway. (2019 Environmental Scan and Amdel already awarded)
(xviii) environmental, legal, statutory and social constraints and commitments, and	c) Pre-Development Project	!	ESIA and AMDEL update currently underway. (2019 Environmental Scan and Amdel already awarded)
(xix) closure and post-closure activities and schedules.	c) Pre-Development Project	!	Currently being developed

10.5.8 Processing Methods, Flowsheets and Recoveries

This proposed aggregate operation requires two very simple processing routes, including production of armourstone using ECOBUST© and production of crushed rock aggregate via simple crushing and screening process. The Company has sourced contractor rates for both these processes and equipment prices that describe the simple crush production. A diagram showing the proposed two process routes is shown in Figure 10-4.

Amourstone is produced via a process using ECOBUST© which is a proprietary product that or otherwise described as an “expansive demolition agent” for breaking all rock or concrete without the use of explosives or jackhammering. It's suitable to work on all rock mass at KBK, and the product is reliable, safe, eco-friendly and completely silent. The contractor that has been engaged by PT KBK has a proven track record with existing operations of its own in Indonesia. The Company has advised that 4 tonnes of RoM material will produce 3 tonnes of amourstone blocks ready for sale. All RoM material that is not recovered in the ECOBUST process (i.e. sold as armourstone blocks), will be transferred to the crushed rock production stream for crushing and screening as simple aggregate. Further details are provided in Section 5.

Three schematic concept drawings showing the intended material and activity flows for the overall operations and each production stream (Amourstone and Crushed Rock Aggregate) has been provided by the Company (see Appendix D).

An important aspect of the production planning at KBK involves the upcycling of the shale (waste rock) from the mining operations. In response to local community investigations, the Company has planned to mine and stockpile all shale material. PT KBK advises that shale has a potential use as decorative stone for walk ways and driveways, and as such is being investigated so it may be sold as a by-product of mining process in addition to the greywacke aggregate stone saleable material (primary product).

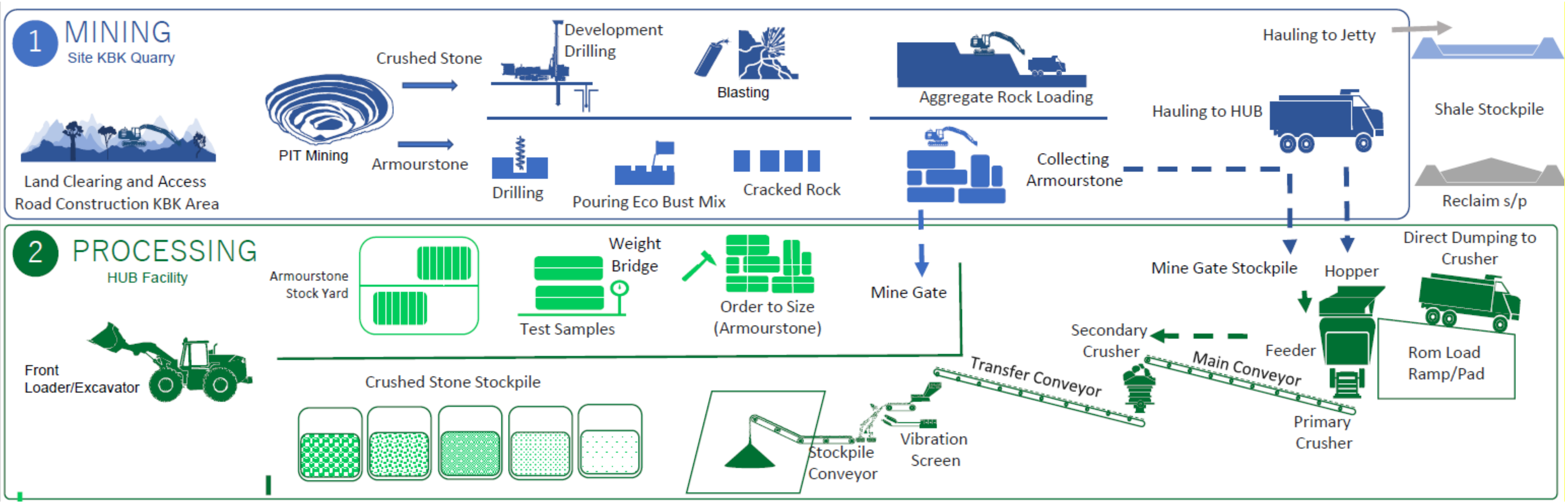


Figure 10-4: KBK Mining and Processing Sequence for production of armourstone and crushed rock aggregates (source: PT KBK 2021)

10.5.9 Infrastructure Availability and Requirements

The Company proposes to utilise a hybrid of existing infrastructures and new, including a new quarry, Retail Hub, port and Jetty, existing haul road, conveyor link, and barge facilities. A summary of the infrastructure required and that is proposed for the operation is provided in Section 2.4 and Section 8.3.

10.5.10 Estimated Capital and Operating Costs

The Capital and operational costs as estimated in the TEM for the LoM are summarised in Table 10-13. SRK has provided three scenarios with the preferred operating scenario being the Mid Case.

Table 10-12: Capital Cost Estimates (Mid Case, High Case, and Low Case)

CAPEX	UNITS	Mid Case (Base Case)	High Case	Low Case
Project Capital				
Mining	USDM	5.6	6.6	5.6
Processing	USDM	12.1	12.1	12.1
Infrastructure	USDM	9.8	2.5	9.8
Export & Logistics	USDM	42.0	51.8	42.0
Other	USDM	13.2	19.0	13.2
Contingency	USDM	12.8	13.3	12.8
Sustaining Capital	USDM	12.8	13.9	12.8
Total Estimated Capital	**USDM**	**107.7**	**118.7**	**107.7**

These estimates have been obtained by the Company from a combination of contractor quotations and publicly available data sources for similar operating mines or quarries in Indonesia. SRK believes these are realistic and achievable as described in the base case scenario. Two alternate scenarios are also provided to show the low and high cases.

Table 10-13: Operational Unit Cost Estimates (High, Mid, Low Cases)

CAPEX	UNITS	Mid Case (Base Case)	High Case	Low Case
Project Opex				
Mining	USD/t	4.66	5.27	4.66
Processing (all material)	USD/t	0.65	0.50	0.98
Infrastructure	USD/t	2.00	1.95	2.00
Export & Logistics	USD/t	3.30	2.50	3.27
Other	USD/t	1.00	1.00	1.00
Contingency	USD/t	0.57	0.55	0.61
Sustaining Capital	USD/t	2.96	3.01	2.96
Total Estimated Capital	**USD/t**	**15.15**	**14.78**	**15.48**

Table 10-14: Operational Cost Estimates (High, Mid, Low Cases)

OPEX SUMMARY	UNITS	Mid Case (Base Case)	High Case	Low Case
Mining	USDM	255.9	378.8	255.9
Processing	USDM	35.8	35.8	53.7
Infrastructure	USDM	109.8	140.2	109.8
Export & Logistics	USDM	181.3	179.9	179.3
G&A	USDM	54.9	71.9	54.9
Other	USDM	31.4	39.5	33.4
Extraction Tax	USDM	162.7	216.5	162.7
Total Cost Operations	**USDM**	**831.7**	**1,062.6**	**849.6**

10.5.11 Actual and Projected, or Forward Estimate of Production

The production schedule contained in this Report is not a summary of actuals or historical fact. The production schedule is a "forward-looking statement" that has been developed to provide a profile of physical volumes/tonnes for use in a TEM and reflects SRK's opinion on what is reasonably achievable should the Company continue to develop towards operations at KBK.

SRK has applied an estimated production rate for the life of the mine. The production is based on the corporate requirements of PT KBK to provide a low cost capital solution, and to deplete the Indicated and Inferred Mineral Resources. The entire Resource (71.9Mt) has been included in Scenario 2 (High Case) to show the potential upside of the operation. Should the Company complete the planned infill drilling in Q1 2022 (see description Section 3.4) there is potential for some of the exploration target material and Inferred material to be converted into the Indicated or Measured categories.

The Forward-Looking Estimate of Production and the desired mining methods have been summarised in Section 5. SRK believes all scenarios present reasonable potential mining solutions, however production rates and volumes for both Scenario 1 and 3 have been reduced to account for the uncertainty of the Inferred material.

SRK notes that that forward-looking statements are merely predictions and therefore inherently subject to uncertainties and other factors and involve known and unknown risks that could cause the actual results, performance, levels of activity, to be materially different from any future results, performance, levels of activity, achievements, or industry results, expressed or implied by such forward-looking statements. Furthermore, the production profile developed for the purpose of this valuation is based on Mineral Resources which are not Mineral Reserves and do not have demonstrated economic viability. As such, SRK has reduced the available Inferred classified material to just 50% (approx. 30Mt) of what has been classified in the most recent MRE to adjust for uncertainty in the Resources which form the basis of the potential production profile. A summary of the production schedule is shown in Table 10-15.

Table 10-15: Conceptual Production Schedule (High Case, Mid Case, Low Case)

Scenario 1 - Mid Case		Date/Period	12/21	12/22	12/23	12/24	12/25	12/26	12/27	12/28	12/29	12/30	12/31	12/32	12/33	12/34	12/35	12/36	12/37	12/38	12/39	12/40
PRODUCTION	UNITS	AVE/TOTALS																				
Total Production																						
Production Armour Stone Local Sales	Mt	19.1	0.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Production Rock Local Sales	Mt	18.3	0.1	0.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Production Rock Export Sales	Mt	17.5			0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total RoM Production	Mt	54.9	0.2	1.2	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Cumulative Tonnes	Mt tot	54.9	0.2	1.4	3.9	6.9	9.9	12.9	15.9	18.9	21.9	24.9	27.9	30.9	33.9	36.9	39.9	42.9	45.9	48.9	51.9	54.9

Scenario 2 - High Case																						
PRODUCTION	UNITS	AVE/TOTALS																				
Total Production																						
Production Armour Stone Local Sales	Mt	36.1	0.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Production Rock Local Sales	Mt	18.4	0.1	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9
Production Rock Export Sales	Mt	17.4			0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9
Total RoM Production	Mt	71.9	0.2	2.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	1.7
Cumulative Tonnes	Mt tot	71.9	0.2	2.7	6.2	10.2	14.2	18.2	22.2	26.2	30.2	34.2	38.2	42.2	46.2	50.2	54.2	58.2	62.2	66.2	70.2	71.9

Scenario 3 - Low Case		Date/Period	12/21	12/22	12/23	12/24	12/25	12/26	12/27	12/28	12/29	12/30	12/31	12/32	12/33	12/34	12/35	12/36	12/37	12/38	12/39	12/40
PRODUCTION	UNITS	AVE/TOTALS																				
Total Production																						
Production Armour Stone Local Sales	Mt	19.1	0.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Production Rock Local Sales	Mt	18.3	0.1	0.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Production Rock Export Sales	Mt	17.5			0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total RoM Production	Mt	54.9	0.2	1.2	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Cumulative Tonnes	Mt tot	54.9	0.2	1.4	3.9	6.9	9.9	12.9	15.9	18.9	21.9	24.9	27.9	30.9	33.9	36.9	39.9	42.9	45.9	48.9	51.9	54.9

10.5.12 Environmental, Social and Heritage Impacts

In April 2021,SRK conducted a preliminary review and gap analysis (file ref: "ESC Malinau AMDAL.ESIA_170521_SRK.pdf") of project documentation relating to environmental and social aspects of the proposed KBK aggregate mine. The review was undertaken to focus on the work conducted to date at site and in respect to good international industry practice or GIIP. At the time of the gap analysis, it was understood by both SRK and the Company that the existing AMDAL and associated environment and social studies did not match the revised project description. As such the Company has engaged an international environmental consultancy (ESC) to update both the AMDAL and conduct an international level ESIA. This work has now commenced. The Company has advised all recommendations provided by SRK in its review have been included in the scope of work which is now underway. In particular, where there were significant gaps in respect to Environment, Social and Heritage Impacts, ESC are now collecting the relevant data to understand the risks specific to the project under the revised description. Baseline data including secondary data collection, environmental baseline data, biodiversity baseline, and socio-economic baseline data will be obtained as part of the ESC work. The Company will also conduct environmental modelling associated with the jetty development (see Section 5.6), and include carbon emissions footprint studies as part of the work. This work is planned to be concluded in quarter 1 of 2022.

10.5.13 JORC Code Modifying Factors and Other Aspects That Could Reasonably Be Expected to Impact On The Economic Potential

This valuation includes a financial analysis based on reasonable assumptions for several Modifying Factors (see Section 5) and the evaluation of several other relevant factors that are sufficient for SRK to reasonably, to determine if all or part of the Mineral Resources may be converted to an Ore Reserve at the time of reporting. A Scoping study and a Pre-Feasibility Study are both at a lower confidence level than a Feasibility Study, therefore Modifying Factors have been limited to, zero losses (i.e. mining recovery equals 100%). Given that the Company intend mine all rock and process all rock (whether via ECOBUST or crush and screen) SRK has assumed a 99% Processing Recovery.

The following other factors have been implemented as part of the MRE, Resource Classification, and Optimised Pit Shell.

- SRK has constrained the Mineral Resource within the IUP mining permit and restricted it to an optimised pit shell, with the following key parameters:
  - 20m buffer/stand-off at the public road proximity (eastern zones of the Current Permit).
  - Berm width: 7m.
  - Bench height: 10 m.
  - Bench angle: 80 degrees.
  - Overall Slope Angle: 45 degrees.

A summary of the optimisation parameters of the mining operations has been provided in Section 5.

10.5.14 Product Pricing and Revenue Factors

Commodity prices and demand for the intended products at KBK have been discussed in Section 9. For the purpose of the economic valuation, SRK has applied the following commodity prices as provided by the Company.

Table 10-16: Product Pricing

Product	Units	2021	2022	2023	2024	2025	2026	2027	LTP
Local Aggregate Rock Sales Price									
0-5mm (Dust)	USD/t	5.63	5.63	5.63	5.63	5.63	5.63	5.63	5.63
5-10mm	USD/t	27.11	27.11	27.11	27.11	27.11	27.11	27.11	27.11
10-20mm	USD/t	27.11	27.11	27.11	27.11	27.11	27.11	27.11	27.11
20-30mm	USD/t	27.11	27.11	27.11	27.11	27.11	27.11	27.11	27.11
30-50mm	USD/t	26.40	26.40	26.40	26.40	26.40	26.40	26.40	26.40
Export Aggregate Rock Sales Price									
0-5mm (Dust)	USD/t	6.76	6.76	6.76	6.76	6.76	6.76	6.76	6.76
5-10mm	USD/t	32.53	32.53	32.53	32.53	32.53	32.53	32.53	32.53
10-20mm	USD/t	32.53	32.53	32.53	32.53	32.53	32.53	32.53	32.53
20-30mm	USD/t	32.53	32.53	32.53	32.53	32.53	32.53	32.53	32.53
30-50mm	USD/t	31.68	31.68	31.68	31.68	31.68	31.68	31.68	31.68
Armour Stone Price									
Amour Stone Local Sale 1t (per piece) price	IDR/t	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Amour Stone Local Sale 1t (per piece) price	USD/t	31.69	31.69	31.69	31.69	31.69	31.69	31.69	31.69

The Company has engaged several potential offtake partners and has a formalised memorandum of understanding (2 August 2021) for offtake of Amourstone and crushed rock between 1-3 Mtpa from one customer for the delivery Free on Board (FOB). All prices applied in the TEM have been represented in United States Dollars (USD). The application of a 20% uplift for export is assumed by the Company and is for the extra cost to deliver the crushed stone from port to mother vessel anchorage point to meet the International buyers FOB MV Requirement.

10.5.15 Estimated Cashflows

		Notes	Base Case Medium **Scenario 1**	High **Scenario 2**	Low **Scenario 3**
PRODUCTION					
Production Armourstone Local Sale	Mt		19.1	36.1	19.1
Production Crushed Rock Local Sale	Mt		18.3	18.4	18.3
Production Crushed Rock Export Sale	Mt		17.5	17.4	17.5
Total RoM Production	Mt		54.9	71.9	54.9
SALES/REVENUE					
Total Assumed Available RoM	Mt	(1)	54.9	71.9	54.9
Sub-total Local Sales Revenue	USDM		1,080.8	1,622.8	1,080.8
Sub-total Export Sales Revenue	USDM		545.7	541.8	545.7
Total Revenue	USDM		1,626.5	2,164.6	1,626.5
Export/LOCAL Sales %	L:E %		53%	39%	53%
Local Sales	Mt		37.4	54.5	37.4
Export Sales	Mt		17.5	17.4	17.5
Average Local Sales Prices	USD/t prod		28.90	29.77	28.90
Average Export Sales Prices	USD/t prod		31.18	31.18	31.18
OPEX SUMMARY					
Mining	USDM	(2)	255.9	378.8	255.9
Processing	USDM		35.8	35.8	53.7
Infrastructure	USDM	(3)	109.8	140.2	109.8
Export & Logistics	USDM	(4)	181.3	179.9	179.3
G&A	USDM		54.9	71.9	54.9
Other	USDM	(5)	31.4	39.5	33.4
Extraction Tax	USDM		162.7	216.5	162.7
Total Estimated Cost Operations	USDM		831.7	1,062.6	849.6
EBITDA	USDM		794.9	1,102.0	776.9
CAPEX					
Project Capital					
Mining	USDM	(2)	5.6	6.6	5.6
Processing	USDM		12.1	12.1	12.1
Infrastructure	USDM	(3)	9.8	2.5	9.8
Export & Logistics	USDM	(4)	42.0	51.8	42.0
Other	USDM	(5)	13.2	19.0	13.2
Contingency	USDM	(6)	12.8	13.3	12.8
Sustaining Capital	USDM	(7)	12.8	13.9	12.8
Total Estimated Capital	**USDM**		107.7	118.7	107.7
CASHFLOWS					
Revenue	USDM		1,627	2,165	1,627
Opex	USDM		832	1,063	850
Capex	USDM		108	119	108
Net Profit Before Tax	USDM		687	983	669
Tax	USDM		173	247	169
Cashflow	USDM		514	736	500
NPV (@15%) Post Tax	USDM		116	186	113

Notes to table:

(1) According to the Valmin Code (2015) is generally acceptable to use all Proved and Probable Ore Reserves in the Income Approach. It may sometimes be appropriate to include other classifications, but these must, subject to the Reasonableness Test. Therefore, this economic assessment has not included Exploration Target material and where Inferred material is included in the production profile, in the preferred valuation scenario SRK has assumed the Indicated Material should be mined and processed (crushed) before the Inferred. SRK has included suitable Modifying Factors (see Section 3.3 and Section 5) along with a description of their level of certainty relative to those of a Pre-Feasibility Study; and SRK has also discounted Inferred Material in a manner that is commensurate with the increased uncertainty. For the base case economic option (Scenario 2 – Mid Case) and the Low Case (Scenario 3), SRK has adjusted the Inferred tonnage down by approx. 50% to represent a reduce level of uncertainty (i/e. only 34Mt of Inferred material has been included in the schedule representing only 47% of the overall resource).

(2) All mining is assumed to be contracted operations, both armourstone and crushed rock productions. Mining contracted rate shown is a weighted average of all production based on the contract rates provided by the Company (USD 8.00/t armourstone, and USD 4.00/t crushed rock (includes drill and blast)
(3) Infrastructure costs and capital includes: Accommodation Camp, Facilities & Utilities, Stockpiles Operation, Medical, Security, Retail Hub.
(4) Export and Logistics costs and capital includes: Conveyor Line, Road Haulage, Barging & Transhipment, Port;
(5) Other fees includes; Land Development Fund, Surface Fees, Fixed Title Fees, Exploration, ESG
(6) Contingency of 20% is applied to all project capital items excluding mining.
(7) Sustaining capital includes a 1% sustaining capital estimate applied to project capital items retained by the company and at full production (excludes all mining as these are assumed to be contracted services).

10.5.16 Net Present Value Summary and Sensitivity Ranges

For the three modelled scenarios, the post tax NPV results are summarised in Table 10-17. The cumulative annual forecast summaries for 2021 – 2040 and for each scenario are shown in Figure 10-5 through to Figure 10-7.

Table 10-17: Post tax NPV summary results (High, Mid, Low Cases)

Discount Rate	Units	Base Case (mid range)	High Case	Low Case
%		**Scenario 1**	**Scenario 2**	**Scenario 3**
0%	USDM (2021)	514	736	500
5%	USDM (2021)	297	440	289
10%	USDM (2021)	182	280	177
15%	USDM (2021)	120	190	116
20%	USDM (2021)	76	128	74
25%	USDM (2021)	51	89	49
30%	USDM (2021)	33	63	32
IRR% (1)	%	51%	59%	50%

Notes: (1) IRR is a discount rate that makes the net present value (NPV) of all estimated cash flows equal to zero in a discounted cash flow analysis. It is the annual return that makes the NPV equal to zero.

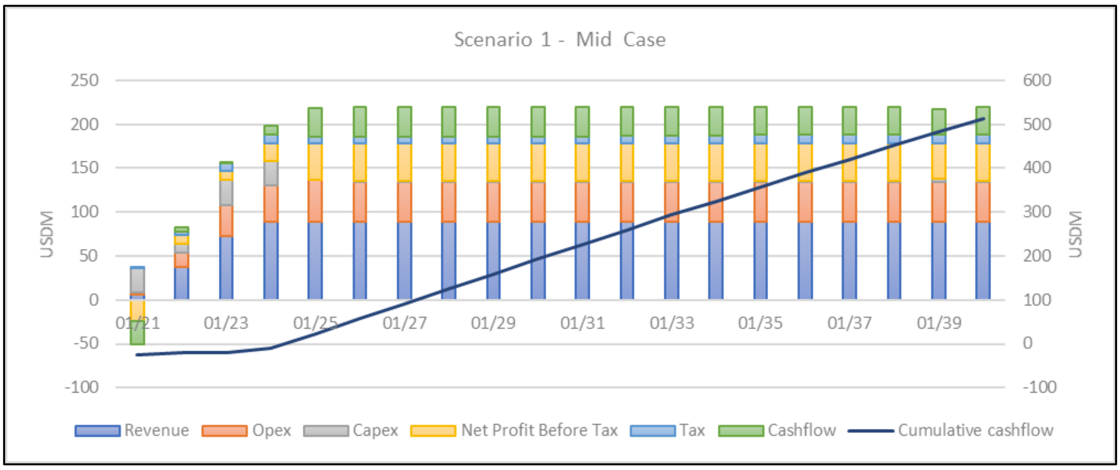


Figure 10-5: Scenario 1 - Cumulative annual cashflow summary 2021 – 2040 (Mid Range SRK Base Case)

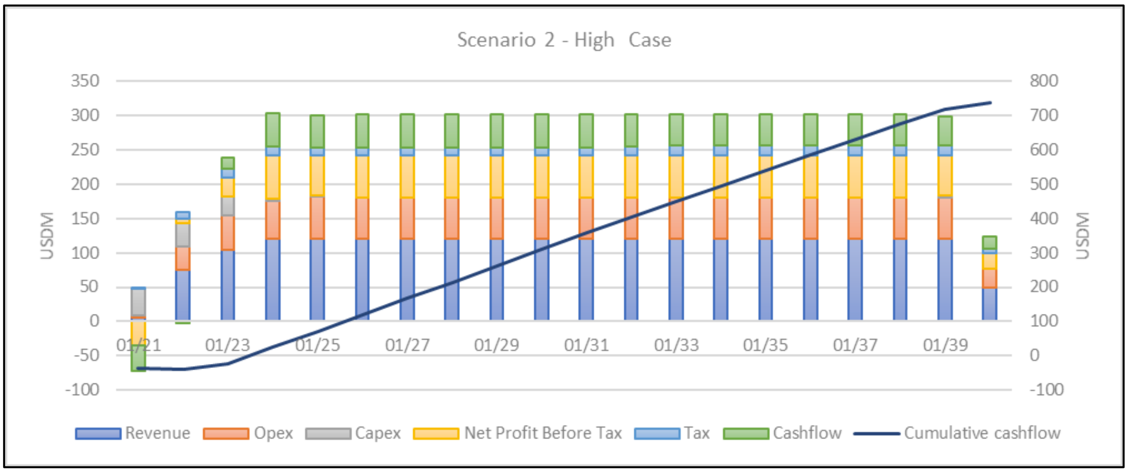


Figure 10-6: Scenario 2 - Cumulative annual cashflow summary 2021 – 2040 (High Range)

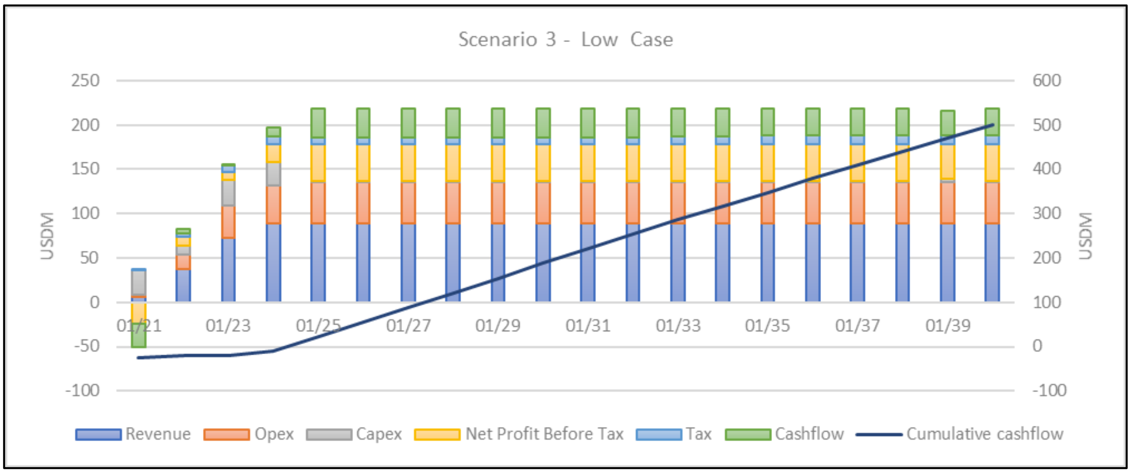


Figure 10-7: Scenario 3 - Cumulative annual cashflow summary 2021 – 2040 (Low Range)

The post tax NPV sensitivities for each scenario showing incremental changes in the discount and the key cost drivers, Capex, Sales Price, Opex and Production are provided in Table 10-18 through Table 10-20 and Figure 10-8 to Figure 10-10.

Table 10-18: Scenario 1 – (Mid Case) Post tax NPV Base Case (mid range) sensitivity for NPV (USDM) for the life of the mine and for Capex, Sales Price, Opex and Production represented at different discount rates

CAPEX

DISCOUNT 116	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%
0%	539	535	530	526	522	518	514	510	506	501	497	493	489
5%	320	316	312	309	305	301	297	293	289	285	281	278	274
10%	204	200	196	193	189	185	182	178	175	171	167	164	160
15%	137	134	130	127	123	120	116	113	109	106	102	99	95
20%	96	93	90	86	83	80	76	73	70	66	63	60	56
25%	70	67	63	60	57	54	51	47	44	41	38	35	31
30%	52	49	46	43	40	37	33	30	27	24	21	18	15

SALES PRICE

DISCOUNT 116	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%
0%	184	239	294	349	404	459	514	569	624	679	734	788	843
5%	91	125	160	194	228	263	297	331	366	400	434	469	503
10%	42	65	89	112	135	159	182	205	228	252	275	298	321
15%	15	32	49	66	82	99	116	133	150	167	184	201	218
20%	-1	12	25	38	50	63	76	89	102	115	128	141	154
25%	-11	-1	9	20	30	40	51	61	71	82	92	102	113
30%	-18	-9	-1	8	16	25	33	42	50	59	67	76	84

OPEX

DISCOUNT 116	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%
0%	664	639	614	589	564	539	514	489	464	439	413	388	363
5%	391	375	359	344	328	313	297	281	266	250	235	219	203
10%	245	234	224	213	203	192	182	171	161	150	140	129	119
15%	162	154	147	139	131	124	116	109	101	93	86	78	71
20%	111	105	99	94	88	82	76	71	65	59	53	47	42
25%	78	74	69	64	60	55	51	46	42	37	32	28	23
30%	56	52	48	45	41	37	33	30	26	22	18	15	11

PRODUCTION

DISCOUNT 116	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%
0%	335	365	395	424	454	484	514	544	573	603	633	663	693
5%	185	204	223	241	260	278	297	316	334	353	372	391	409
10%	106	119	131	144	156	169	182	195	207	220	233	246	258
15%	61	70	79	88	98	107	116	125	135	144	153	163	172
20%	34	41	48	55	62	69	76	83	91	98	105	112	119
25%	17	22	28	33	39	45	51	56	62	68	74	79	85
30%	5	10	15	19	24	29	33	38	43	48	52	57	62

Table 10-19: Scenario 2 – (High Case) Post tax NPV Base Case (mid range) sensitivity for NPV (USDM) for the life of the mine and for Capex, Sales Price, Opex and Production represented at different discount rates

CAPEX

DISCOUNT	186	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%
	0%	763	759	754	750	745	741	736	731	727	722	718	713	709
	5%	467	462	458	454	449	445	440	436	432	427	423	418	414
	10%	306	301	297	293	288	284	280	276	271	267	263	258	254
	15%	211	207	203	199	194	190	186	182	178	173	169	165	161
	20%	152	148	144	140	136	132	128	124	119	115	111	107	103
	25%	113	109	105	101	97	93	89	85	81	77	73	69	65
	30%	87	83	79	75	71	67	63	59	55	51	47	43	39

SALES PRICE

DISCOUNT	186	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%
	0%	297	371	444	517	590	663	736	809	882	955	1,028	1,101	1,175
	5%	161	208	254	301	347	394	440	487	533	580	626	673	720
	10%	88	120	152	184	216	248	280	312	344	376	408	440	472
	15%	45	68	92	115	139	162	186	210	233	257	280	304	327
	20%	18	37	55	73	91	109	128	146	164	182	200	219	237
	25%	1	16	31	45	60	75	89	104	119	133	148	163	177
	30%	-10	2	14	26	39	51	63	75	87	99	112	124	136

OPEX

DISCOUNT	186	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%
	0%	926	895	863	831	800	768	736	704	673	641	609	577	546
	5%	561	541	521	501	481	461	440	420	400	380	360	340	320
	10%	362	349	335	321	307	294	280	266	252	239	225	211	197
	15%	246	236	226	216	206	196	186	176	166	156	146	136	126
	20%	174	166	159	151	143	135	128	120	112	104	97	89	81
	25%	126	120	114	108	102	95	89	83	77	71	65	58	52
	30%	94	88	83	78	73	68	63	58	53	48	42	37	32

PRODUCTION

DISCOUNT	186	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%
	0%	491	532	573	613	654	695	736	777	818	858	899	940	980
	5%	285	311	337	363	389	415	440	466	492	518	544	570	596
	10%	173	191	209	226	244	262	280	298	315	333	351	369	387
	15%	108	121	134	147	160	173	186	199	212	225	238	251	264
	20%	68	78	88	97	107	118	128	138	148	158	168	178	188
	25%	41	49	57	65	73	81	89	97	105	114	122	130	138
	30%	23	30	37	43	49	56	63	70	76	83	90	96	103

Table 10-20: Scenario 3 – (Low Case) Post tax NPV Base Case (mid range) sensitivity for NPV (USDM) for the life of the mine and for Capex, Sales Price, Opex and Production represented at different discount rates

CAPEX

DISCOUNT	113	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%
	0%	525	521	517	513	509	505	500	496	492	488	484	480	476
	5%	312	308	304	301	297	293	289	285	281	277	273	270	266
	10%	199	195	191	188	184	180	177	173	169	166	162	158	155
	15%	134	130	127	123	120	116	113	109	106	102	99	95	92
	20%	94	90	87	84	80	77	74	70	67	64	60	57	54
	25%	68	65	61	58	55	52	49	45	42	39	36	33	29
	30%	50	47	44	41	38	35	32	29	26	23	20	16	13

SALES PRICE

DISCOUNT	113	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%
	0%	171	226	281	336	391	445	500	555	610	665	720	775	830
	5%	83	117	152	186	220	255	289	323	358	392	426	461	495
	10%	37	60	84	107	130	153	177	200	223	247	270	293	316
	15%	11	28	45	62	79	96	113	130	146	163	180	197	214
	20%	-4	9	22	35	48	61	74	87	100	112	125	138	151
	25%	-13	-3	7	18	28	38	49	59	69	80	90	100	111
	30%	-19	-11	-2	6	15	23	32	40	49	57	66	74	83

OPEX

DISCOUNT	113	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%
	0%	655	629	603	578	552	526	500	475	449	423	397	372	346
	5%	385	369	353	337	321	305	289	273	257	241	225	209	193
	10%	241	231	220	209	198	187	177	166	155	144	134	123	112
	15%	159	151	144	136	128	120	113	105	97	89	82	74	66
	20%	109	103	97	91	85	80	74	68	62	56	50	44	38
	25%	77	72	67	63	58	53	49	44	39	35	30	25	21
	30%	55	51	47	43	39	36	32	28	24	20	17	13	9

PRODUCTION

DISCOUNT	113	-30%	-25%	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%	25%	30%
	0%	326	355	384	413	442	471	500	530	559	588	617	646	675
	5%	180	198	216	234	252	271	289	307	326	344	362	380	399
	10%	102	115	127	139	152	164	177	189	202	214	227	239	252
	15%	58	67	77	85	94	104	113	122	131	140	149	158	167
	20%	32	39	46	53	60	67	74	81	88	95	102	109	116
	25%	15	21	27	32	37	43	49	54	60	66	71	77	82
	30%	4	9	14	18	22	27	32	36	41	46	50	55	60

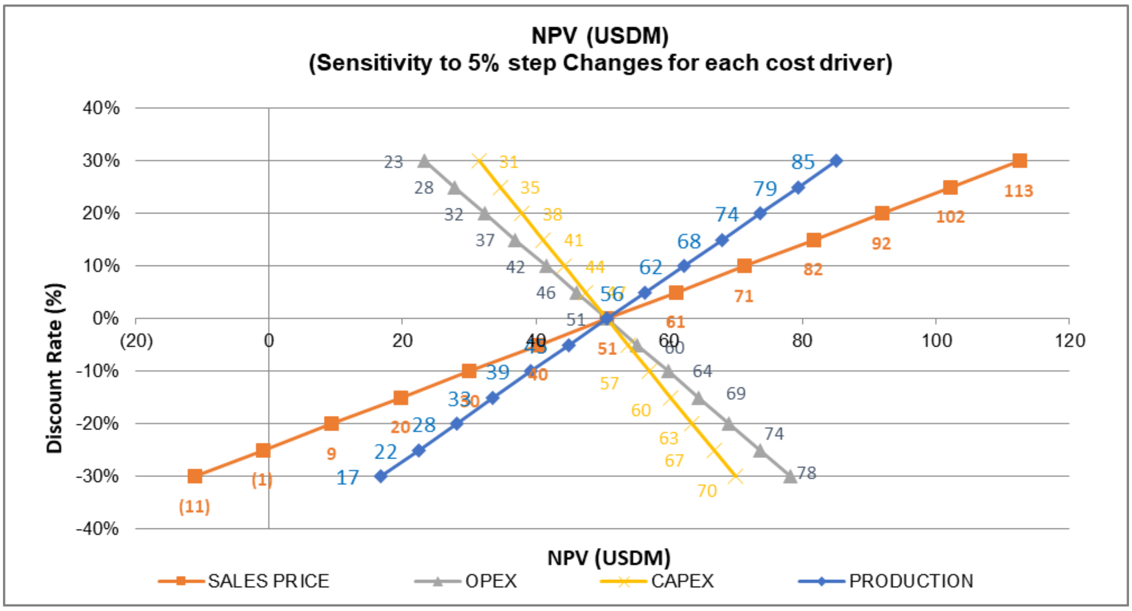


Figure 10-8: Scenario 1 (Mid Case) NPV summary for the middle range case, showing the sensitivity of the project for each cost driver and at 5% incremental changes in discount rate

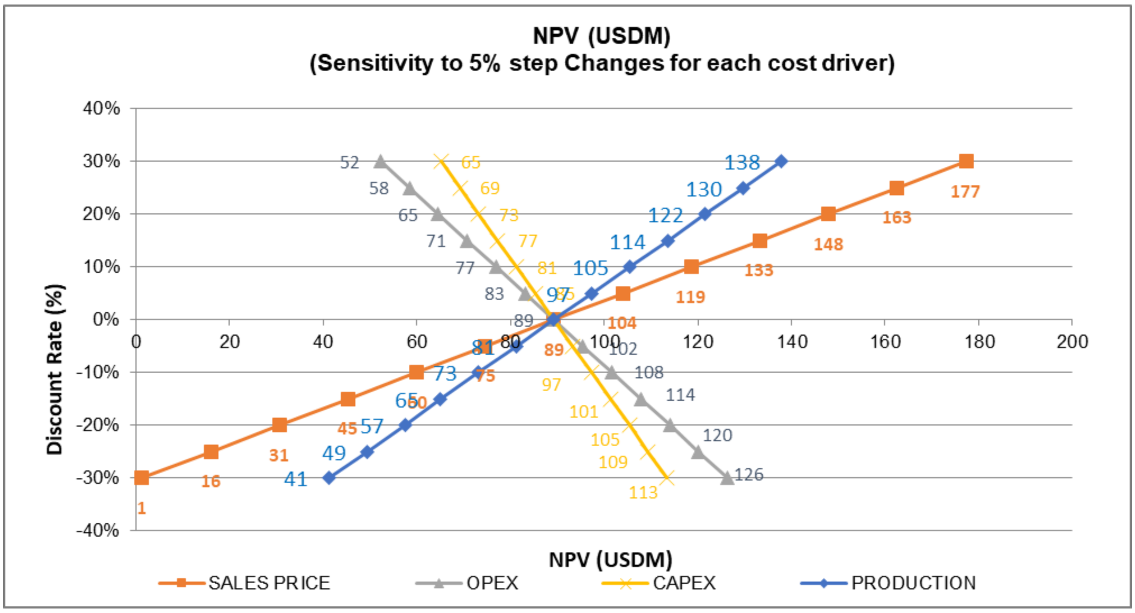


Figure 10-9: Scenario 2 (High Case) NPV summary for the high range case, showing the sensitivity of the project for each cost driver and at 5% incremental changes in discount rate

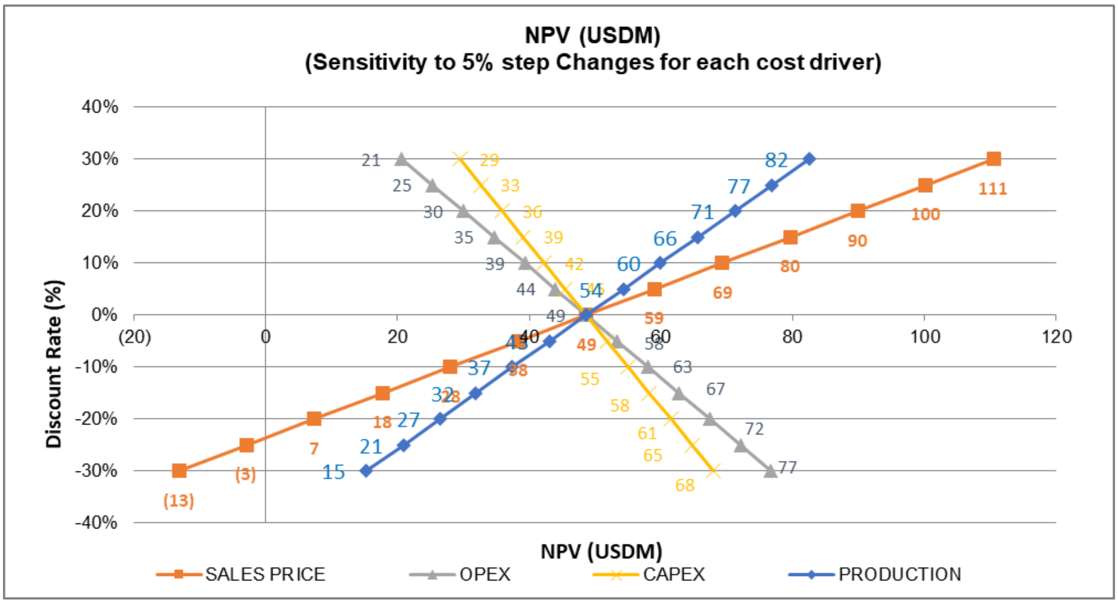


Figure 10-10: Scenario 3 (Low Case) NPV summary for the low range case, showing the sensitivity of the project for each cost driver and at 5% incremental changes in discount rate

10.6 Valuation Summary

The results of the technical valuation, when applying a “Income Based” method for a High, Medium and Low case scenarios, the results are summarised in Table 10-11

Table 10-21: Income Method Valuation Summary – KBK

Technical Value Approach	Units	NPV (USDM)
Scenario 1- (Base Case) 3Mtpa, (1Mtpa Local, 1Mtpa Exp, 1Mtpa Amourstone), contract mining, 3Mtpa crusher (O&O), conveyor (O&O) jetty rental and port develp yrs 2 onward, and contracted services, barging of export ore	USDM	120
Scenario 2 – High Case Sceanrio - 4Mtpa (20 LoM) no inf Adjustment (Valmin) , (2mtpa Amour, + 1mtpa local, 1mtpa export) contracted mining, 3mtpa installed crusher (O&O), jetty rental and contracted services (for 12mnths), barging of export materials	USDM	190
Scenario 3 - Low Case = 3Mtpa, (1Mtpa Local, 1Mtpa Exp, 1Mtpa Amour), contract mining, 3Mtpa crusher (O&O) with washing, conveyor (O&O) jetty rental and port develp yrs 2 onward, and contracted services, barging of export ore	USDM	115

On an Income Based Valuation approach, SRK estimates that the Net Present Value range of the project under each of the given scenarios as estimated in the Technical Economic Model (SRK’s preferred evaluation methodology) is between **USD 190 Million** and **USD 115 Million.**

11 CONCLUSIONS

In summary, SRK has:-

1. Made an Historical Expenditure Analysis assessment of the estimated money that has been spent on the licence to date that has added value and also the money needed to be spent to get this to the next decision stage (which has been taken as the work needed to be done to upgrade the resource to indicated status followed by the completion of a scoping study). SRK has then applied a factor of 1 to this to derive a minimum value for the Project of **USD60 Million** and a maximum value of **USD80 Million**.

2. Incorporated the Projects recent MRE result and developed a Technical Economic Model, summarising the estimated revenue, costs and capital requirements to develop and operate the KBK project under a three conceptual operating cases and for the production of several aggregate middle use products (see description 9.4). SRK also applied the Companies provided sales prices data and contractor quotation for mining and processing to calculate operating costs of the potential asset under a specific set of mining parameters and to represent three different scenarios.

   a. Scenario 1 - (Mid Case) to represent SRK revised the concept schedule to only include an equivalent amount of Indicated and Inferred Resources in the concept mine schedule (ie, approx. 50% IND, and 50% IND). However, using the Companies provided costs, SRK has included additional operating cost and capital costs adjustments in the TEM to provision for costs which SRK deems ‘reasonable’ to align with rates/fees that are more representative of intentional observed mining costs.

   b. Scenario 2 (High Case) represented a conceptual high range case operation whereby all Indicated (IND) and Inferred (INF) Resources (71.9Mt of Resources) are applied in the concept schedule. SRK has applied the Companies provided operational cost and capital cost assumptions.

   c. Scenario 3 (Low Case) - SRK also tested a third operating scenario to evaluate a low range case, whereby SRK revised the concept schedule to only include an equivalent amount of Indicated and Inferred Resources in the concept mine schedule (i.e, 50% IND, and 50% IND). For the low range case SRK has included additional operating cost and capital costs adjustments in the TEM to provision for costs which SRK deems ‘reasonable’ to align with rates/fees that are more representative of intentional observed mining costs. SRK also included a provisional cost for washing of ore after crushing as this was observed as one of the potential offtake conditions that has been provided to the Company.

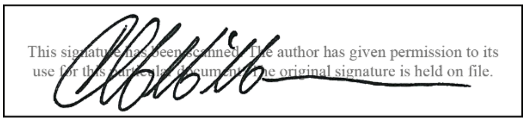
3. Overall Technical Valuation for KBK is summarised in Table 11-1.

Table 11-1: Technical Valuation Summary – KBK

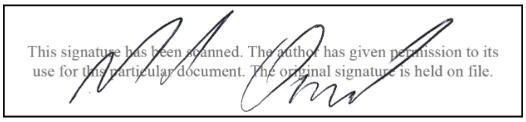
Technical Value Approach	Units	High	Most Likely	Low
Cost Base Analysis	USDM	80	70	60
Income Base Analysis	USDM	190	120	115

SRK has concluded that a reasonable technical value range for KBK is between **USD190 Million** and **USD 60 Million**. SRK accepts this is a relatively wide range but this reflects the early stage of the projects development, whereby capital and operational rates are at a scoping level of assessment.

For and on behalf of SRK Consulting (UK) Limited



Dean McMinn
Senior Consultant
(Mining Geology / Mineral Economics)
SRK Consulting (UK) Limited



Mike Armitage
Corporate Consulting
(Resource Geology)
SRK Consulting (UK) Limited

12 REFERENCES

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C.Brough.,(2018) "KBK Technical Support Microscopy- Report ID: OP2821 04/05/2018", 4 May 2018, (Petrolab Ltd)

OP2821_SRK

_04-05-2018.pdf PetroLab report (Sample A, Sample B) Greywacke Mieralogical Report 2018

BS EN 932 - 1:1997 Tests for general properties of aggregates -Part 1: Methods for sampling.

BS EN 932 - 5: 2000 Tests for general properties of aggregates - Part 5: Common equipment and calibration.

BS EN 933 - 1: 1997 Tests for geometrical properties of aggregates - Part 1: Determination of particle size distribution – Sieving method.

BS EN 933 - 3: 1997 Tests for geometrical properties of aggregates - Part 3: Determination of particle shape - Flakiness index.

BS EN 933 - 7: 1998 Tests for geometrical properties of aggregates - Part 7: Determination of shell content - Percentage of shells in coarse aggregates.

BS EN 933 - 8: 1999 Tests for geometrical properties of aggregates - Part 8: Assessment of fines. Sand equivalent test.

BS EN 933 - 9: 1999 Tests for geometrical properties of aggregates - Part 9: Assessment of fines. Methylene-blue test.

BS EN 1097- 6:2000 Tests for mechanical and physical properties of aggregates Part 6: Determination of particle density and water absorption.

BS EN 1744-1:1998 Tests for chemical properties of aggregates Part 1: Chemical analysis

BS EN 12620: 2002 Aggregates for concrete including those for use in pavements.

BS EN 13055 -1: 2002 Lightweight aggregates - Part 1: Lightweight aggregates for concrete, mortar and grout.

BS EN 13139: 2002 Aggregates for Mortar. PD 6682 - 3: 2003 Aggregates for mortar - Guidance on the use of BS EN 13139.

BS 8204 - 1: 2003 Screeds, bases and in-situ floorings: Part: 1: Concrete bases and cement sand levelling screeds to receive floorings. Code of practice

LT03-Aggregates "Aggregates" - Mortar Industry Association

APPENDIX

A PETROGRAPHIC ANALYSIS

Petrolab
Mineralogy · Petrography

KBK Aggregates

PT Kaltara Batu Konstruksi

Mineralogical Report OP4477(a) 27/05/2021

Petrolab Ltd | www.petrolab.co.uk
tel +44 (0)1209 219 541 **email** petrolab@petrolab.co.uk

C Edwards Offices, Gweal Pawl, Redruth, Cornwall TR15 3AE
Registered in England & Wales · Company No. 4777735

Contents

Petrolab document control			
Client	PT Kaltara Batu Konstruksi		
Report title	KBK Aggregates		
Analysis required	Detailed petrography of 4 rock samples, XRD analysis, XRF and total sulphur analyses.		
Client reference	KBK Greywacke	**Client contact**	Dean McMinn <dmcminn@srk.co.uk>
Report ID (issue date)	OP4477(a) 27/05/2021	**Version note**	Report Initial Issue
Prepared by	M Zajac BSc MSc	**Checked by**	C Brough PhD CGeol J Fletcher BSc MSc

Limitations

This report relates only to those samples submitted and specimens examined and to any materials properly represented by those samples and specimens. This report is issued to the Client named above for the benefit of the Client for the purposes for which it was prepared. It does not confer or purport to confer on any third party any benefit or right pursuant to the Contracts (Rights of Third Parties) Act 1999.

Report key findings and suitability for use

NOTE: Suitability for end uses has been provisionally considered on the basis of the petrographic observations against certain referenced requirements for specific end uses. Further physical and/or chemical testing against additional requirements for specific end-use applications has not been undertaken. Economic and environmental factors have not been considered. The materials examined may be suitable for other uses that have not been considered.

This is a petrographic report for PT Kaltara Batu Konstruksi to investigate four samples. It was reported that these were samples of prospective aggregate materials.

Sample 10261 represent finely banded shale. The sample is composed predominantly of quartz, feldspar clasts and clay minerals. The sample is fractured and unstable in water with layers frequently splitting apart. The sample contains ~30% of clay and fine mica minerals, which will mean the sample is prone to mechanical damage caused by its structural weakness. Framboidal pyrite is present, usually associated with clay rich layers.

- ➔ This rock type is weak and fissile, and it would not produce a strong and durable aggregate. As such, the sample is not considered prospective for use as a construction aggregate.

Sample 10262 is a fine grained greenish grey greywacke sandstone consisting of quartz and feldspar clasts hosted in a fine grained matrix containing clays, microcrystalline silica, dolomite and chlorite. The sample is also cut by dolomite-clay veins, which mark the sample weakness observed during a basic strength test. The sample strength is extremely strong within the parts of homogeneous material that does not contain any veins or veinlets. The strength is lowered in areas containing those veins, where the rock is splitting on those boundaries.

- ➔ Greywackes generally have a high polished stone value (PSV) and high abrasion resistance, which makes them highly prospective as potential sources for roadstone[1]. The examined aggregate material may meet this criteria, subject to confirmatory physical testing, with silt-sized clasts of quartz and feldspar in a fine-grained clay-rich matrix and very low porosity.
- ➔ It is noted that some greywackes, notably in the UK, have had alkali-silica reaction (ASR) implications when used in concrete[2,3] or mortar[4] manufacture due to the presence of cryptocrystalline or microcrystalline silica, and therefore the source material may not prove suitable for this end use. Further testing would be required to demonstrate the level of alkali-silica reactivity. The sulphide content, however, is not sufficient to cause concern (total sulphur, TS <0.1%).

Sample 10257 represents a medium-grained granodiorite composed of quartz, plagioclase feldspars and chlorite with minor amount of calcite and amphiboles. The sample is cut by two sulphide bearing veins and contains disseminated sulphide mineralisation. The sample strength is extremely strong and does not preferentially split along the sulphide veins.

- ➔ Most of the igneous rocks tend to produce strong aggregates with a degree of skid resistance and are hence suitable for e.g. road surfacing applications, road pavements or use as a railway ballast[5].
- ➔ Sample 10257 contains a considerable amount of sulphur due to the sulphide bearing

1 British Geological Survey. Mineral planning factsheet - Construction aggregates.
2 Alkali-silica reaction (ASR) – The reaction between the alkalis (sodium and potassium) in Portland cement binder, moisture and certain siliceous rocks or minerals, such as opaline chert, microcrystalline quartz, and acidic volcanic glass, present in some aggregates; the products of the reaction may cause abnormal expansion and cracking of concrete in service.
3 The Diagnosis of Alkali-Silica Reaction, Report of a working party. Appendix D. British Cement Association, 1992. Where rocks or mineral types are noted as 'reactive', it does not necessarily imply that damage has been caused by ASR when these have been used.
4 BS EN 12620:2013 Aggregates for concrete. BS EN 13139:2013 Aggregates for mortar.
5 British Geological Survey. Mineral planning factsheet - Construction aggregates.

veins and disseminated mineralisation. The TS value for this sample is 0.84%, which is a significant amount if considered for use as a construction aggregate, particularly as the trace presence of the sulphide mineral pyrrhotite has been identified. Further sulphur variability testing is recommended on representative samples of the material to ascertain that the TS values remain below the appropriate limits specified in European standards for aggregates used in concrete or mortar[1], and unbound and hydraulically bound material[2].

➔ Granodiorite aggregate is generally considered as having low alkali–silica reactivity when used as aggregate in concrete[3].

Sample 19999 is a silicified volcanic rock containing light beige and grey laminae cut by abundant fine microcrystalline silica veins and veinlets. The sample is composed of different polymorphs of quartz and sanidine feldspar, and is extremely strong.

➔ Silicified rocks are high in strength, which is a desirable feature for aggregate production, but usually contain abundant microcrystalline or/and cryptocrystalline silica, which may promote alkali-silica reaction (ASR) when used in concrete manufacture. Further testing would be required to demonstrate the level of alkali-silica reactivity.

➔ The sulphide content (rare crystals of pyrite observed) does not appear sufficient to cause concern.

1 BS EN 12620:2013 Aggregates for concrete. BS EN 13139:2013 Aggregates for mortar.
2 BS EN 13242:2013. Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction.
3 See BRE Digest 330, Part 2, 2004. Alkali-silica reaction in concrete. Detailed guidance for new construction.

Introduction

Scope

This is a petrographic report for PT Kaltara Batu Konstruksi to investigate four samples. It was reported that these were samples of prospective aggregate materials.

This report relates only to the samples examined (and any materials properly represented by those samples). It presents the findings of a mineralogical investigation by optical microscopy on thin sections prepared from selected sub-samples. The results of supplementary Whole rock XRD + Clay analysis are considered (results are reproduced in Appendix 1). The results of chemical analyses for 14 trace elements (XRF), loss on ignition (LOI) at 600ºC and total sulphur are also provided (see Appendix 2).

List of samples

Samples received			
Report no.	**Sample reference**	**Mass (g)**	**Type**
1	10261	4394.4	Rock chip
2	10262	2442.8	Rock core
3	10257	895.0	Rock chip
4	19999	614.5	Rock chip

Methods of investigation

A detailed mineralogical investigation was requested, with special reference to the properties with the potential to effect suitability for aggregate use.

The submitted samples were examined as received using a Nikon SMZ-U stereoscopic microscope with fibre optic illuminator. One thin section and one polished chip were prepared from each selected sample. The sections were examined by conventional transmitted and reflected light polarising microscopy using a Nikon research polarising microscope.

Digital photomicrographs were taken using a high resolution digital camera attached to the trinocular head of the microscope.

Representative sub-samples were sent to an independent specialist laboratory for whole rock and clay XRD analysis. The results are considered in this report and reproduced in Appendix 1.

Sub-samples from 10261, 102622 & 10257 were sent to an independent specialist laboratory for XRF, LOI and total sulphur (LECO) analysis. The results are provided in Appendix 2.

Sample description

A detailed mineralogical description of each sample received (which includes annotated photomicrographs), based on a high-power microscopical examination of prepared thin-sections, begins over-page.

10261

Sample as received

Sample 10261		
Petrolab ID	**Date received**	**Type · properties**
#24936	19/04/2021	Rock chip · 4394 g

A **Sample 10261**

Photograph of sample as received (scale in cm).

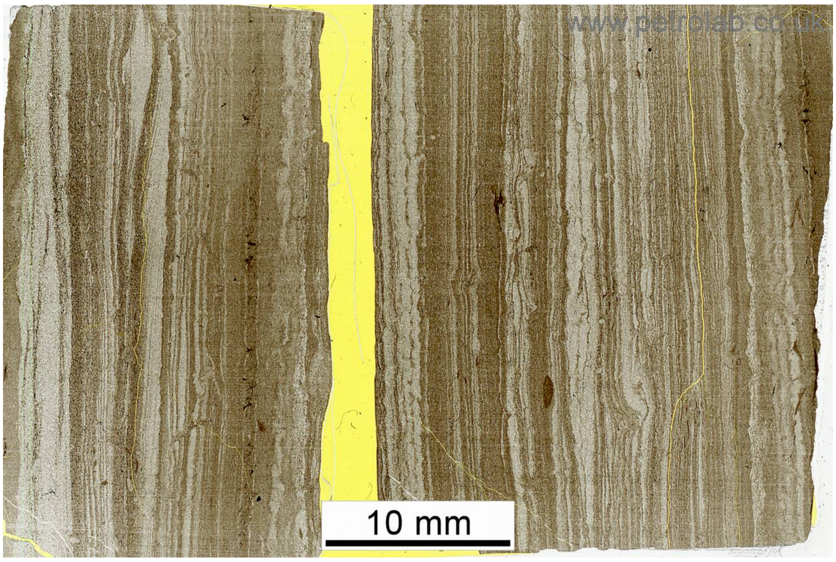
Image A
Nikon D7000 digital camera
Daylight balanced oblique light

Macroscopic (visual) description

Sample 10261	
Group | Name	Sedimentary SHALE
Colour	Dark grey to black.
Strength	Weak (5 - 25 MPa).
Structure	Thinly laminated (1 mm -5 mm).
Grain size	Uniformly fine grained with a typical size << 0.5 mm.
Weathering	Fresh.
Stability	Fairly stable in water - A few fissures are formed, or specimen surface crumbles slightly (Grade 2).

Notes:
The macroscopic description is based on visual and manual identification of the material characteristics at the scale of the sample provided. Colour, strength, structure, grain size, rock material weathering and stability terms used in the description are defined in BS EN ISO 14689-1:2003.

Section(s)



B **Sample 10261**

Low magnification view of sample thin section.

Image B
Epson scanner
White cold cathode light

Microscopical examination

Sample 10261	
Texture and fabric, weathering & alteration	The sample is a laminated dark grey shale. It comprises a fine-grained matrix (mainly varying clays and fine mica, with minor carbonate, iron oxides and organic matter) with variably abundant quartz and feldspar clasts. The abundance and varying size of clasts defines laminations. Muscovite mica, biotite mica and chlorite are also present often elongated parallel with laminations. The shale contains rare fine grained pyrite within the matrix with rare framboids randomly distributed throughout the shale texture. Cracking within the sample is also present as both parallel along bedding planes and rarely as sub-perpendicular to lamination.
Constituents of concern	Cracking is already present associated with shale layers which contain rare framboidal pyrite. They show rare evidence of pyrite oxidation which may cause enhanced porosity and potential for further expansion. The shale layers show primarily lamination parallel cracking (<100 μm width) and rare perpendicular cracking (<250 μm). There is no other microporosity and the rock appears unweathered. When exposed to water, the shale formed some fissures and expansive cracks, suggesting it is susceptible to water ingress and that swelling clays are present (XRD analysis recorded 3.0% illite/smectite).

Mineral abundance

Sample 10261			
Mineral / Phase	**General formula**	**s.g.**	**Wt%[1]**
Quartz, qtz	SiO_2	2.65	44.7%
Microcrystalline Silica, M qtz	SiO_2	2.65	
Illite, ill	$(K,H_3O)(Al,Mg,Fe)_2(Si,Al)_4O_{10}[(OH)_2,(H_2O)]$	2.75	21.5%
Muscovite, ms	$KAl_2(Si_3Al)O_{10}(OH,F)_2$	2.82	
Plagioclase feldspar, plag	$NaAlSi_3O_8$ – $CaAl_2Si_2O_8$	2.59	14.5%
Chlorite, chl	$(Mg,Fe^{++})_5Al(Si_3Al)O_{10}(OH)_8$	2.65	8.9%
Calcite, cal	$CaCO_3$	2.70	6.8%
Illite+Smectite, sm	$(Na,Ca)_{0,3}(Al,Mg)_2Si_4O_{10}(OH)_2 \cdot n(H_2O)$	2.35	3.0%
Kaolinite, kaol	$Al_2Si_2O_5(OH)_4$	2.60	0.6%
Alkali feldspar. K fsp	$KAlSi_3O_8$	2.56	trace
Biotite, bt	$K(Fe,Mg)_3(AlSi_3O_{10})(OH)_2$	3.09	trace
Dolomite, dol	$CaMg(CO_3)_2$	2.84	trace
Fe oxides, FeO	$Fe^{+++}O(OH)$	3.80	trace
Pyrite, py	FeS_2	5.01	trace

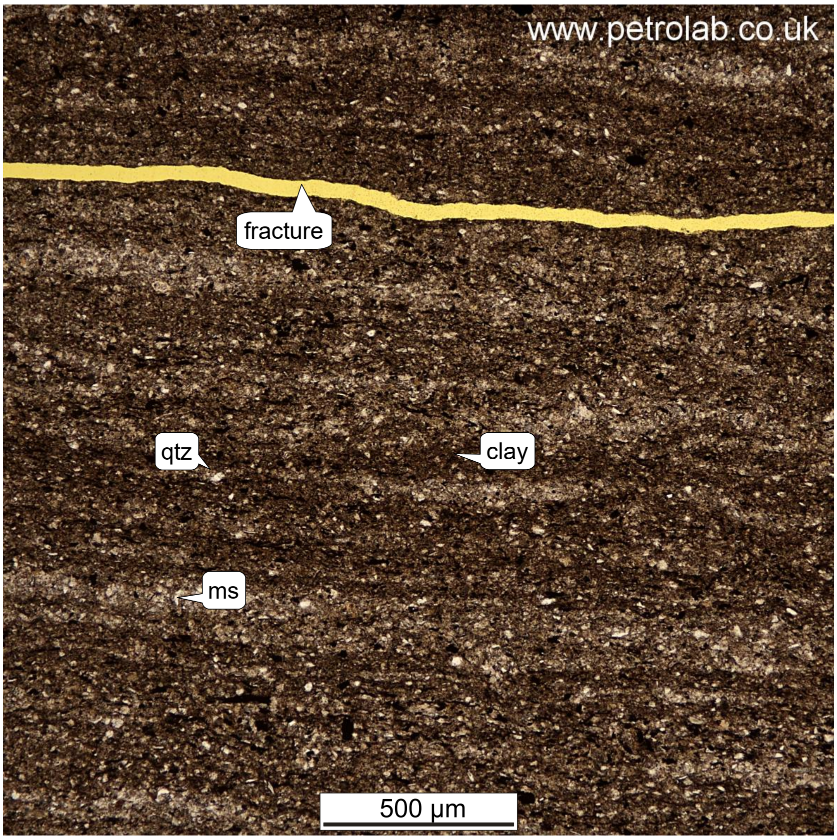
Phase description

Sample 10261				
Mineral / Phase	**Grain size (min | max | typical)**			**Prominent grain type**
Quartz	5 µm	80 µm	40 µm	Clast
Description	Angular, moderately sorted fine quartz grains are a predominant clast type within the rock. They are typically silt sized and only rarely reach ~80 µm. The variation in size and abundance throughout the texture defines the rock laminations. Slightly coarser quartz grains are usually associated with carbonate rich layers.			
Microcrystalline Silica	<5 µm	50 µm	20 µm	Matrix
Description	Microcrystalline silica is only a minor phase in the sample. Small patches of microcrystalline silica are visible within the rock, either locally altering quartz and feldspar grains, or as sporadic patches within the matrix of quartz rich layers.			
Clay	<1 µm	200 µm	5 µm	Matrix
Description	The bulk of the rock sample comprises an ultra-fine matrix containing various clay and other phyllosilicate minerals (XRD includes illite, smectite, kaolinite, mica and chlorite). Clay minerals are typically too fine grained to differentiate, appear weakly aligned parallel to lamination direction and show a range of birefringence colours. Laminations mainly appear to be defined by the amount of brown-coloured clays and fine biotite within the matrix, with additional brownish staining associated with small oxide lenses.			

1 Wt% mineral abundance reported using results from XRD analysis undertaken by X-ray Mineral Services Ltd (2021). Minerals recorded as tr (trace) were observed during this petrographic analysis but had not been detected by XRD as they were present below the limit of detection.

Sample 10261				
Muscovite	20 µm	120 µm	50 µm	Clast & matrix
Description	Elongate muscovite laths are present throughout the texture, typically aligned with laminations and showing local deformation kinking around quartz clasts. They are typically coarser grained with less alignment in the lightest quartz-rich laminations, and show variation in abundance across laminations. Some are interlayered with chlorite or clays, particularly in the clay rich layers.			
Feldspar group	10 µm	70µm	50 µm	Clast
Description	Moderate to well sorted, angular grains of plagioclase and alkali feldspar form a minor clast component throughout the rock texture. XRD analysis indicates the majority of feldspar is plagioclase. They show similar variations in grain size as quartz. Some clasts show local sericitisation, kaolinisation or alteration to microcrystalline silica.			
Carbonates (calcite, dolomite)	<5 µm	100 µm	15 µm	Clast & matrix
Description	Carbonate is present as both calcite and dolomite although could not be differentiated in thin section as it is present in microcrystalline form. This is distributed throughout the section as a component of the matrix and is also seen forming diffuse agglomerations up to 100 µm. There are also calcite and quartz rich layers within the rock texture. There are also rare calcite veins present, running perpendicular to sample lamination.			
Biotite	10 µm	70 µm	40 µm	Clast & matrix
Description	Elongated laths of biotite are present throughout the texture showing similar distribution and alignment as muscovite. They are usually finer grained than muscovite. They are commonly associated with chlorite, muscovite and clays.			
Fe oxides	5 µm	60 µm	20 µm	Matrix
Description	Rare angular to sub-angular grains and granular clusters (predominantly hematite and goethite) are typically disseminated throughout the sample.			
Pyrite	5 µm	30 µm	10 µm	Matrix
Description	Traces of small pyrite grains were visible in reflected light. They are typically disseminated throughout the rock texture and occur as framboids and angular crystals. They rarely form agglomeration of framboids.			

Photomicrographs



C **Sample 10261**

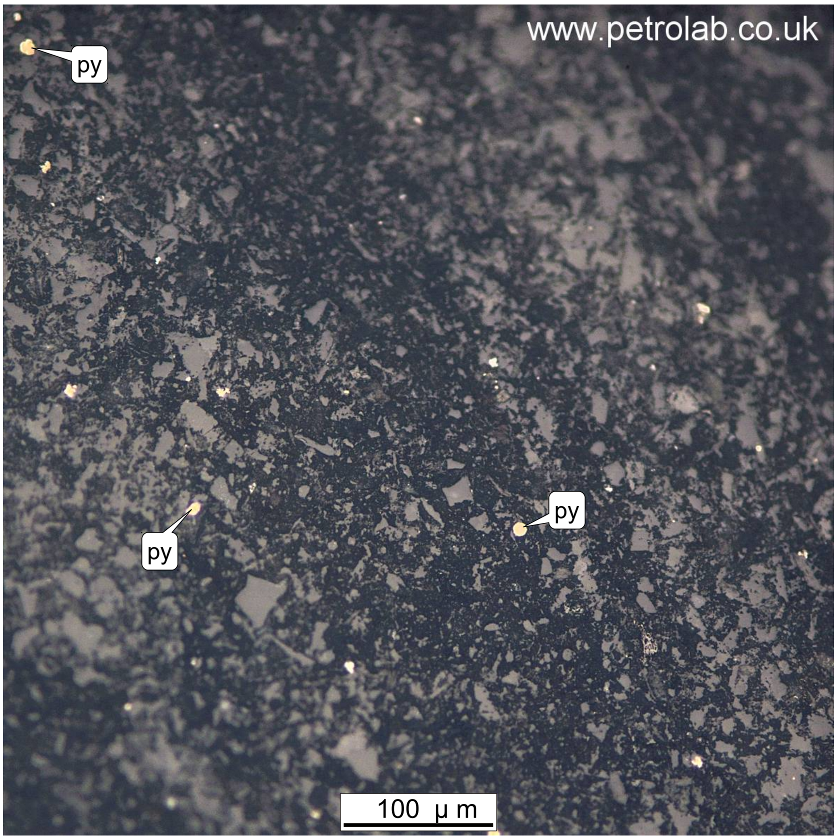
Photomicrograph of sample showing general texture of shale composed of darker, clay rich layers and lighter clast rich layers. There is also visible a fracture running parallel to rock lamination.

Image C
Nikon Microphot-FXA petrological microscope
Plane polarised transmitted light
x50

D **Sample 10261**

Photomicrograph of sample showing general texture of shale, cut by a calcite vein.

Image D
Nikon Microphot-FXA petrological microscope
Cross polarised transmitted light
x50



E **Sample 10261**

Photomicrograph of sample showing general texture with disseminated rounded framboidal pyrite (py).

Image E

Nikon Microphot-FXA petrological microscope

Plane polarised reflected light

x200

10262

Sample as received

Sample 10262		
Petrolab ID	**Date received**	**Type · properties**
#24937	19/04/2021	Rock chip · 2443 g

A **Sample 10262**

Photograph of sample as received (scale in cm).

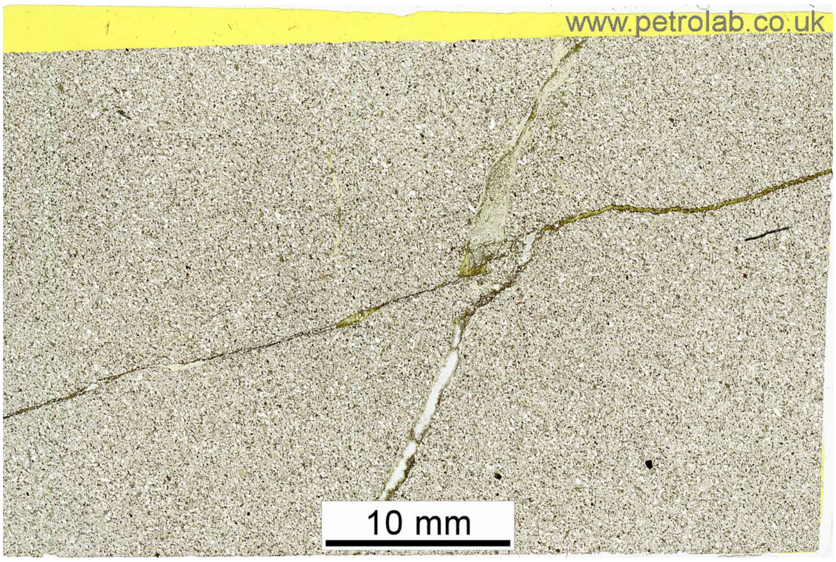
Image A
Nikon D7000 digital camera
Daylight balanced oblique light

Macroscopic (visual) description

Sample 10262	
Group | Name	Sedimentary GREYWACKE
Colour	Greenish grey.
Strength	Strong (50 - 100 MPa), broken along fracture plane.
Structure	No layering seen at sample scale. Cross-cut by high angle veins and fractures.
Grain size	Uniformly fine grained with a typical size << 1 mm.
Weathering	Fresh.
Stability	Stable in water - No changes (Grade 1).

Notes:
The macroscopic description is based on visual and manual identification of the material characteristics at the scale of the sample provided. Colour, strength, structure, grain size, rock material weathering and stability terms used in the description are defined in BS EN ISO 14689-1:2003.

Section(s)



B **Sample 10262**

Low magnification view of sample thin section.

Image B
Epson scanner
White cold cathode light

Microscopical examination

Sample 10262	
Texture and fabric, weathering & alteration	The sample is a fine-grained greywacke consisting of silt-sized clasts of quartz and feldspar (both plagioclase and alkali-feldspar) hosted in a fine-grained matrix containing micas (muscovite, biotite and chlorite), clay, dolomite, patches of microcrystalline silica and rare trace iron-oxides. The clay mineralogy is very fine-grained but likely to consist of a mixture of sericite, illite, smectite, chlorite and kaolinite. The sample is cross-cut by high-angled coarse dolomite veins. Rare occasional anhedral grains of pyrite and pyrite framboids were observed within the greywacke matrix.
Constituents of concern	Greywackes have potential alkali-silica (ASR) implications when used in concrete due to the cryptocrystalline or microcrystalline silica which may be present.

Mineral abundance

Sample 10262			
Mineral / Phase	**General formula**	**s.g.**	**Wt%[1]**
Quartz, qtz	SiO_2	2.65	40.2%
Microcrystalline Silica, M qtz	SiO_2	2.65	
Feldspar group, fsp	$KAlSi_3O_8$ - $NaAlSi_3O_8$ - $CaAl_2Si_2O_8$	2.59	21.7%
Dolomite, dol	$CaMg(CO_3)_2$	2.84	20.0%
Illite, ill	$(K,H_3O)(Al,Mg,Fe)_2(Si,Al)_4O_{10}[(OH)_2,(H_2O)]$	2.75	10.3%
Muscovite, ms	$KAl_2(Si_3Al)O_{10}(OH,F)_2$	2.82	
Kaolinite, kaol	$Al_2Si_2O_5(OH)_4$	2.60	4.8%
Illite/Smectite	$(Na,Ca)_{0,3}(Al,Mg)_2Si_4O_{10}(OH)_2{\bullet}n(H_2O)$	2.35	1.3%
Siderite, sid	$Fe^{++}CO_3$	3.96	1.3%
Anatase, ant	TiO_2	3.90	0.5%
Pyrite, py	FeS_2	5.01	trace
Fe oxides, FeO	$Fe^{+++}O(OH)$	3.80	trace
Chlorite, chl	$(Mg,Al,Fe^{++})_{12}(Si,Al)_8O_{20}(OH)_8$	2.65	trace
Apatite, apt	$Ca_5(PO_4)_3F$	3.16	trace
Zircon, zr	$ZrSiO_4$	4.65	trace

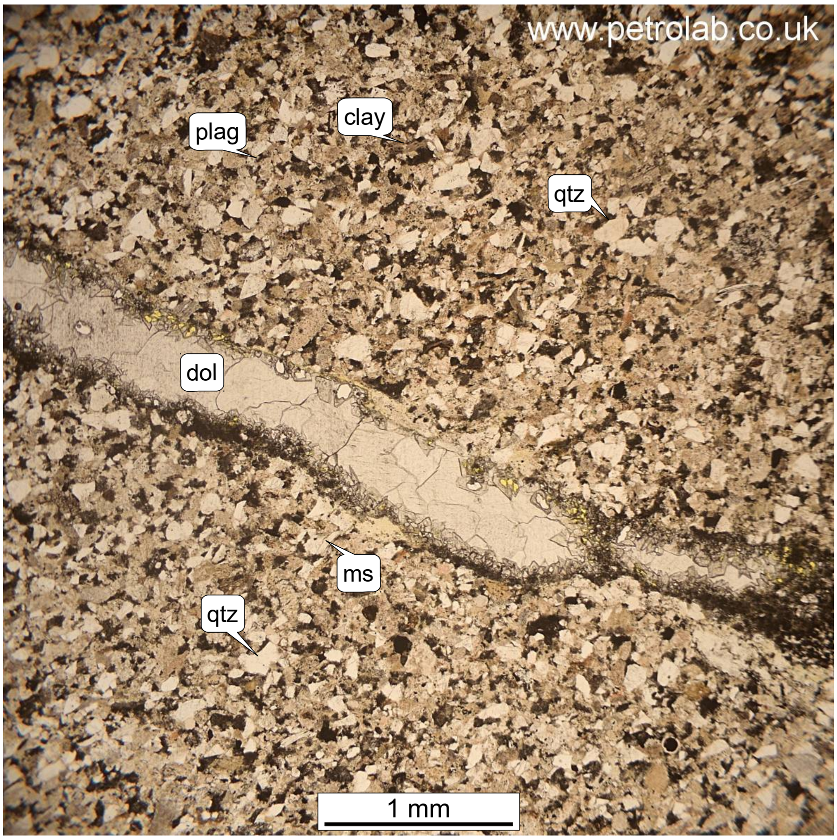
Phase description

Sample 10262				
Mineral / Phase	**Grain size (min | max | typical)**			**Prominent grain type**
Quartz	50 µm	350 µm	200 µm	Clast
Description	Inequigranular, angular, moderately to poorly sorted, monocrystalline quartz is the main constituent of sample. Grains rarely show undulose extinction and division into sub-grains, indicating a low level of deformation overall. Quartz grains do not show any alteration and are packed in between feldspar grains and clays.			
Microcrystalline Silica	50 µm	1 mm	200 µm	Matrix & clast
Description	Microcrystalline silica is a minor phase which is present in the matrix between clasts and also forming sub-rounded clast grains of chert. Within the matrix it is sometimes associated with clays. Microcrystalline silica is forming patches of silicified matrix < 1 mm within the sandstone texture.			
Feldspar group	50 µm	300 µm	200 µm	Clast
Description	Feldspars form angular clasts throughout the texture. Plagioclase feldspars are predominant throughout the sample with characteristic polysynthetic twinning. They rarely show slight sericitisation. Only minor alkali feldspar with simple twinning were observed. Rare alkali feldspars show slight kaolinisation.			

1 Wt% mineral abundance reported using results from XRD analysis undertaken by X-ray Mineral Services Ltd (2021). Minerals recorded as tr (trace) were observed during this petrographic analysis but had not been detected by XRD as they were present below the limit of detection.

Sample 10262				
Carbonates (dolomite, siderite)	10 µm	200 µm	100 µm	Sub-angular to sub rounded
Description	Carbonate is present as predominantly dolomite with a trace amount of siderite. Carbonates are distributed throughout the sample as a component of the matrix and are also seen forming diffuse agglomerations up to 100 µm (possibly siderite). Well crystallised dolomite is a major component of veins that cut the sample in different angles. In veins dolomite occurs in association with clays.			
Clay/fine micas	< 5µm	200 µm	50 µm	Matrix
Description	Fine grained masses of subhedral (elongate to platy) undifferentiated micas and clay minerals form a significant proportion of interstitial matrix between clasts (XRD includes illite, smectite, kaolinite, mica and chlorite) They are sometimes interlayered with coarser micas (e.g. muscovite, chlorite) and also associated with iron oxides, anatase, dolomite, siderite and rarely microcrystalline silica. There is no obvious preferred alignment. Some pockets of sericite are also seen replacing altered feldspars, although they never replace the entire feldspar clast.			
Muscovite	40 µm	500 µm	150 µm	Clast & matrix
Description	Muscovite is generally present as elongate subhedral to euhedral (tabular) crystal clasts randomly distributed throughout the rock texture, sometimes showing weak compaction deformation around rigid detrital grains. It is also present in fine grained form in the matrix and as part of sericitisation of feldspars but is difficult to differentiate and has been grouped with other micas/clays.			
Anatase	5 µm	70 µm	20 µm	Matrix & clast
Description	Anatase is present as small anhedral grains, elongate needles and clusters of grains (up to 70 µm) associated with other interstitial phases (clays, iron oxides). It is also present as very rare inclusions in quartz.			
Pyrite	5 µm	200 µm	30 µm	Matrix
Description	Rare subhedral to anhedral crystals of pyrite are visible in reflected light, disseminated through the sandstone texture with no obvious association. Disseminated framboids were also visible, rarely creating an agglomeration of framboids. Some of them are oxidised to iron oxides.			
Fe oxides	10 µm	70 µm	40 µm	Matrix
Description	Iron oxides (mainly composed of hematite and goethite) are disseminated throughout the rock texture as individual grains and granular clusters associated with clays, anatase and chlorite. They usually occur within the matrix and also replace some of the pyrite crystals.			
Chlorite	10 µm	200 µm	80 µm	Clast & matrix
Description	Chlorite is present within the fine micas and clays forming sample matrix, it is generally too fine grained to separate out from green clays. However there are occasionally small aggregates solely comprising chlorite and larger individual clasts of chlorite present.			
Apatite	5 µm	80 µm	20 µm	Clast
Description	Apatite is an accessory phase within the sample and forms sub-rounded randomly distributed clasts throughout the sandstone texture.			
Zircon	10 µm	20 µm	20 µm	Clast
Description	Zircon is an accessory phase within the sandstone usually forming small, sub-rounded clast grains. There is no visible alteration associated with zircon.			

Photomicrographs



C **Sample 10262**

Photomicrograph of sample showing main constituents of greywacke sandstone including quartz (qtz), plagioclase feldspar (plag) and mica (ms) grains, cut by a dolomite (dol) vein.

Image C

Nikon Microphot-FXA petrological microscope

Plane polarised transmitted light

x25

D **Sample 10262**

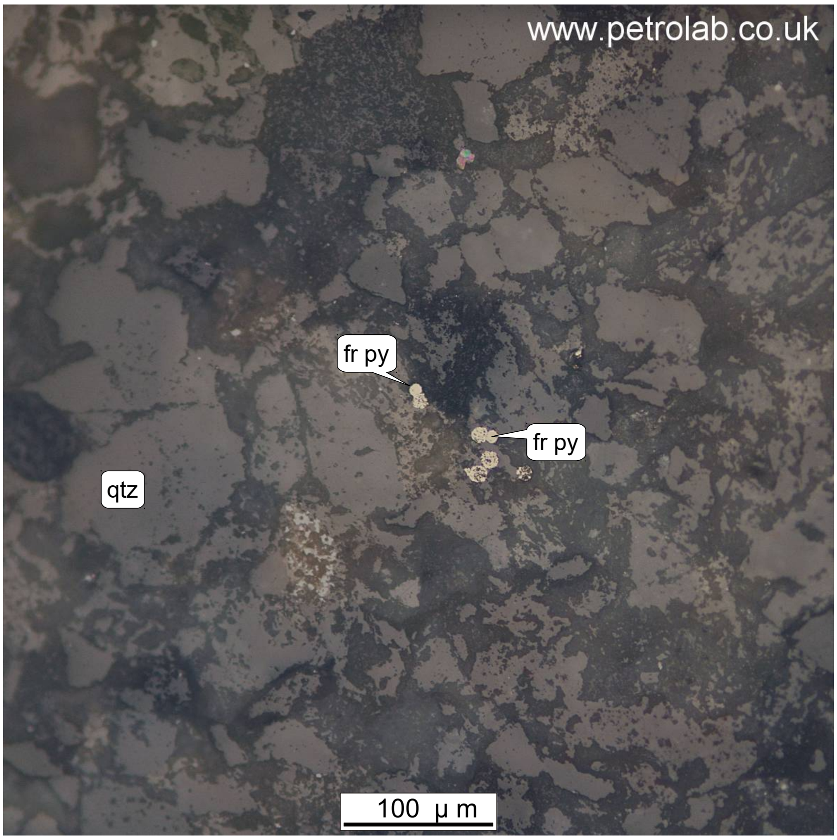
Photomicrograph of sample showing main constituents of greywacke sandstone, including quartz (qtz), plagioclase feldspar (plag) and mica (ms) clast within clay, microcrystalline silica (M qtz) and dolomite (dol) matrix.

Image D

Nikon Microphot-FXA petrological microscope

Cross polarised transmitted light

x50



E Sample 10262

Photomicrograph of sample showing general texture of greywacke sandstone with small framboidal pyrite (fr py) agglomerations.

Image E

Nikon Microphot-FXA petrological microscope

Plane polarised reflected light

x200

10257

Sample as received

Sample 10257		
Petrolab ID	**Date received**	**Type · condition · properties**
#24938	19/04/2021	Rock chip · 895.0 g

A **Sample 10257**

Photograph of sample as received (scale in cm).

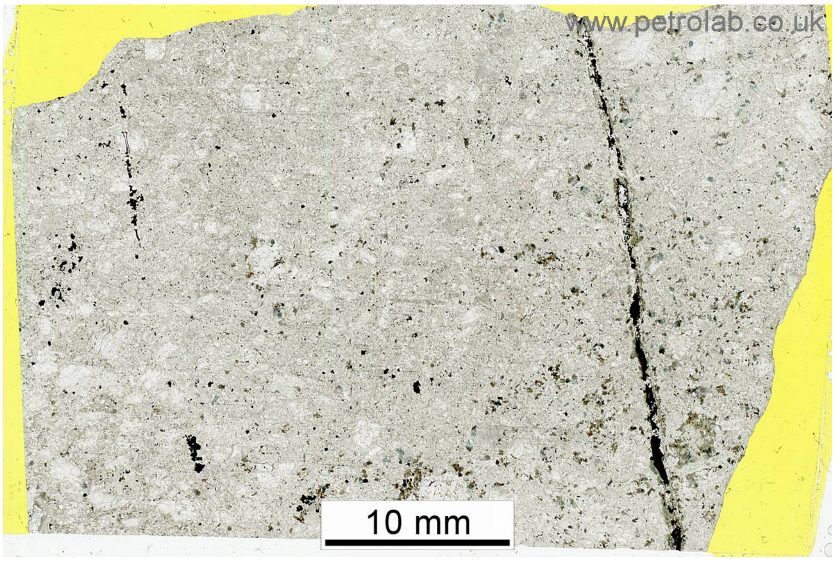
Image A
Nikon D7000 digital camera
Daylight balanced oblique light

Macroscopic (visual) description

Sample 10257	
Group | Name	Plutonic | GRANODIORITE
Colour	Greenish grey.
Strength	Extremely strong (> 250 MPa).
Structure	No layering seen at sample scale. Cut by sulphide bearing, 1 mm wide vein.
Grain size	Uniformly medium grained with a typical size < 3 mm.
Weathering	Slightly discoloured on surface due to weathering.
Stability	Stable in water - no changes (Grade 1).

Notes:
The macroscopic description is based on visual and manual identification of the material characteristics at the scale of the sample provided. Colour, strength, structure, grain size, rock material weathering and stability terms used in the description are defined in BS EN ISO 14689-1:2003.

Section(s)



B **Sample 10257**

Low magnification view of sample thin section.

Image B
Epson scanner
White cold cathode light

Microscopical examination

Sample 10257	
Texture and fabric, weathering & alteration	The sample is a medium-grained granodiorite consisting of equigranular quartz crystals with coarser-grained plagioclase feldspars with major amount of chlorite and minor amphibole, calcite, iron oxides and sulphides. The sample is cut by set of two parallel veins with one of them more superior. the veins consist of pyrite and arsenopyrite mineralisation hosted within microcrystalline silica. The sample also contains disseminated sulphide mineralisation. Some sulphides are replaced by iron or titanium oxides.
Constituents of concern	Elevated amounts of sulphur, predominantly hosted in sulphide minerals may be a concern for the particular end uses.

Mineral abundance

Sample 10257			
Mineral / Phase	**General formula**	**s.g.**	**Wt%[1]**
Quartz, qtz	SiO_2	2.65	35.3%
Plagioclase feldspar, pg	$(Na,Ca)(Si,Al)_4O_8$	2.68	27.8%
Chlorite, chl	$(Mg,Fe^{++})_5Al(Si_3Al)O_{10}(OH)_8$	2.65	23.0%
Calcite, cal	$CaCO_3$	2.70	2.3%
Pyrite, py	FeS_2	5.01	1.3%
Amphibole group, amph	$Ca_2[(Fe^{++}{}_4,Mg_4)(Al,Fe^{+++})]Si_7AlO_{22}(OH)_2$	3.23	trace
Goethite, Gt	FeOOH	4.27	trace
Ilmenite, ilm	$Fe^{++}TiO_3$	4.72	trace
Arsenopyrite, apy	FeAsS	6.07	trace
Hematite, hem	Fe_2O_3	5.30	trace
Magnetite, mag	Fe_3O_4	5.15	trace
Pyrrhotite, po	$Fe_{(1-x)}S$ (x=0-0.17)	4.61	trace
Chalcopyrite, cpy	$CuFeS_2$	4.19	trace

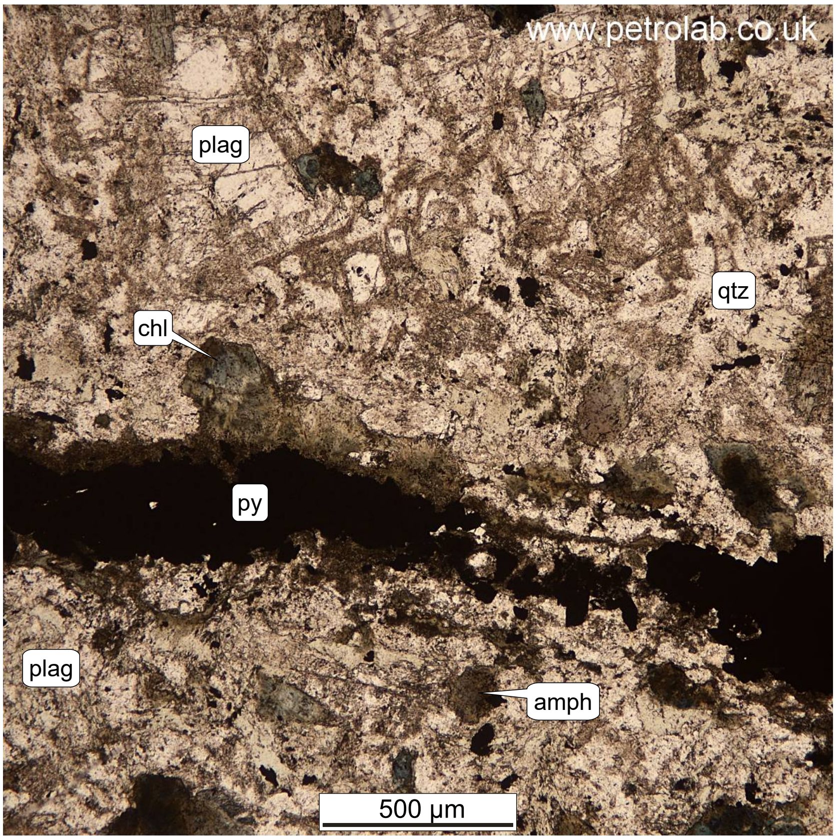
Phase description

Sample 10257				
Mineral / Phase	**Grain size (min | max | typical)**			**Prominent grain type**
Quartz	50 µm	2.5 mm	200 µm	Subhedral
Description	Quartz is the main mineral phase in this sample. It forms subhedral to anhedral crystals, often agglomerated into coarser patches. Quartz crystals commonly have intergrown boundaries.			
Plagioclase feldspar	100 µm	2.5 mm	1 mm	Tabular
Description	Plagioclase feldspar is one of the main phases within the sample. It creates tabular crystals with polysynthetic twinning. It is interstitial to finer grained quartz groundmass. Plagioclase rarely shows evidence of sericitisation. Some crystals are cut by thin calcite veins.			
Chlorite	50 µm	1 mm	300 µm	Anhedral
Description	Chlorite occurs as anhedral patches within the rock groundmass. It occurs commonly in proximity to sulphide veins and in association with acicular amphibole. Chlorite is also associated with patches of calcite, that commonly replaces its structure. Chlorite also occasionally replaces biotite laths.			
Calcite	50 µm	2 mm	300 µm	Subhedral to anhedral
Description	Calcite occurs as anhedral patchy replacement on chlorite crystals or plagioclase feldspar. It forms subhedral crystals within sulphide bearing vein. Thin calcite veins also commonly cut the sample in different directions.			
Pyrite	5 µm	1 mm	150 µm	Euhedral to anhedral
Description	Pyrite is the main ore phase within the sample. Euhedral to subhedral crystals are scattered throughout the sample. Pyrite occurs in bigger agglomerations within the main vein cutting through the sample in association with arsenopyrite. Pyrite contains sporadic inclusions of pyrrhotite. There are also instances of slightly to pervasively altered pyrite, replaced by hematite.			
Amphibole group	50 µm	500 µm	150 µm	Subhedral
Description	Amphibole group is predominantly comprised of hornblende, which is a minor phase in the sample. It forms subhedral to anhedral crystals and occurs randomly in association with plagioclase and quartz. It is commonly altered to chlorite and biotite, sometimes also containing weak iron oxide filled fractures. There are also rare acicular amphiboles forming rare radial agglomerations. They usually occur in close proximity to the sulphide bearing veins.			
Goethite	< 5 µm	50 µm	20 µm	Anhedral
Description	Goethite is only a trace phase within the sample and occurs within the sulphide bearing vein, rimming some sulphide crystals or creating anhedral patches.			
Ilmenite	5 µm	150 µm	70 µm	Subhedral to anhedral
Description	Ilmenite is the main oxide present in the sample. It forms subhedral to anhedral crystals and is scattered throughout the rock texture. It commonly contains exsolutions of hematite and magnetite with rare pyrite inclusions hosted within hematite patches.			
Arsenopyrite	50 µm	600 µm	200 µm	Subhedral
Description	Arsenopyrite forms subhedral crystals and occurs in association with pyrite within sulphide bearing vein cutting through the sample.			

1 Wt% mineral abundance reported using results from XRD analysis undertaken by X-ray Mineral Services Ltd (2021). Minerals recorded as tr (trace) were observed during this petrographic analysis but had not been detected by XRD as they were present below the limit of detection.

Sample 10257				
Hematite	10 µm	150 µm	50 µm	Anhedral
Description	Hematite is predominantly associated with ilmenite and creates patches of exsolutions within ilmenite crystals. Hematite also commonly replaces pyrite crystals. It rarely occurs by its own.			
Magnetite	5 µm	70 µm	20 µm	Anhedral
Description	Magnetite is a trace mineral phase and creates anhedral crystals. Commonly occurs as exsolutions within ilmenite crystals or replaces rare pyrrhotite crystals.			
Pyrrhotite	5 µm	50 µm	20 µm	Anhedral
Description	Pyrrhotite is only a trace phase within the sample. It occurs as inclusions within pyrite and as nearly completely altered crystals, replaced by magnetite.			
Chalcopyrite	50 µm	70 µm	50 µm	Subhedral
Description	Chalcopyrite occurs as a trace phase, associated with pyrite.			

Photomicrographs



C **Sample 10257**

Photomicrograph of sample showing texture of granodiorite cut by pyrite (py) vein rimmed by amphiboles (amph).

Image C

Nikon Microphot-FXA petrological microscope

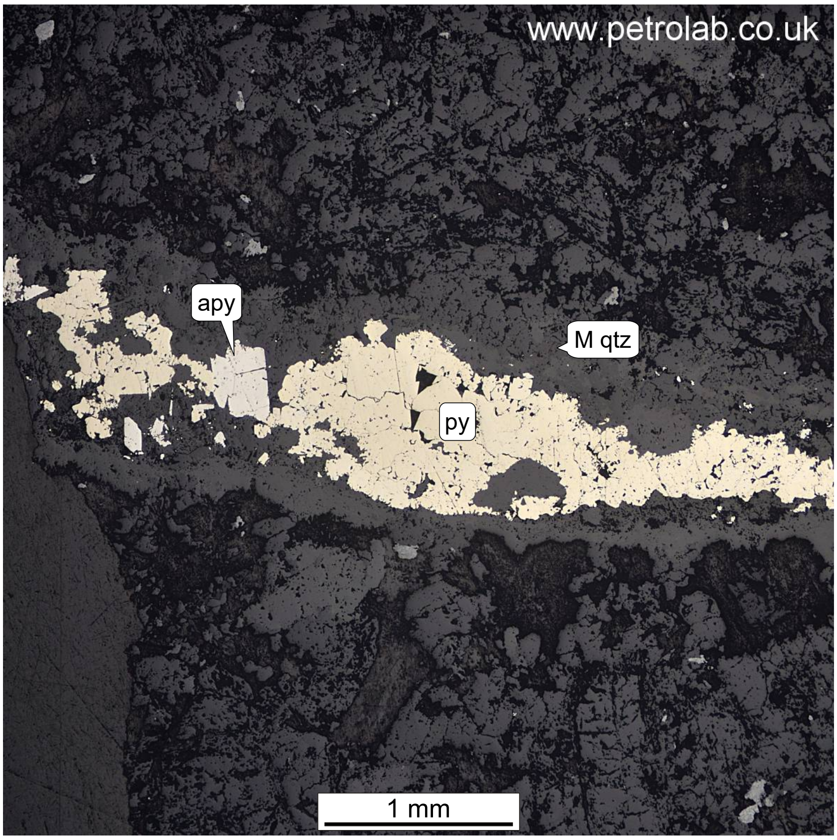
Plane polarised transmitted light

x50

D **Sample 10257**

Photomicrograph of sample showing texture of granodiorite with calcite patches (cal) replacing some of the chlorite crystals (chl) and amphiboles (amph).

Image D
Nikon Microphot-FXA petrological microscope
Cross polarised transmitted light
x50



E **Sample 10257**

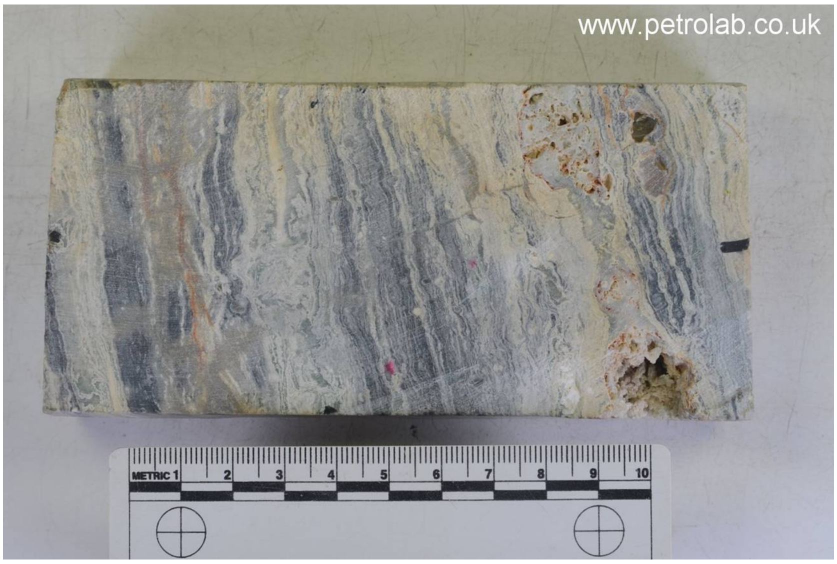
Photomicrograph showing microcrystalline quartz (M qtz) vein containing pyrite (py) and arsenopyrite (apy) mineralisation.

Image E
Nikon Microphot-FXA petrological microscope
Plane polarised reflected light
x25

19999

Sample as received

Sample 19999		
Petrolab ID	**Date received**	**Type · properties**
#24939	19/04/2021	Rock chip · 615 g



A **Sample 19999**

Photograph of sample as received (scale in cm).

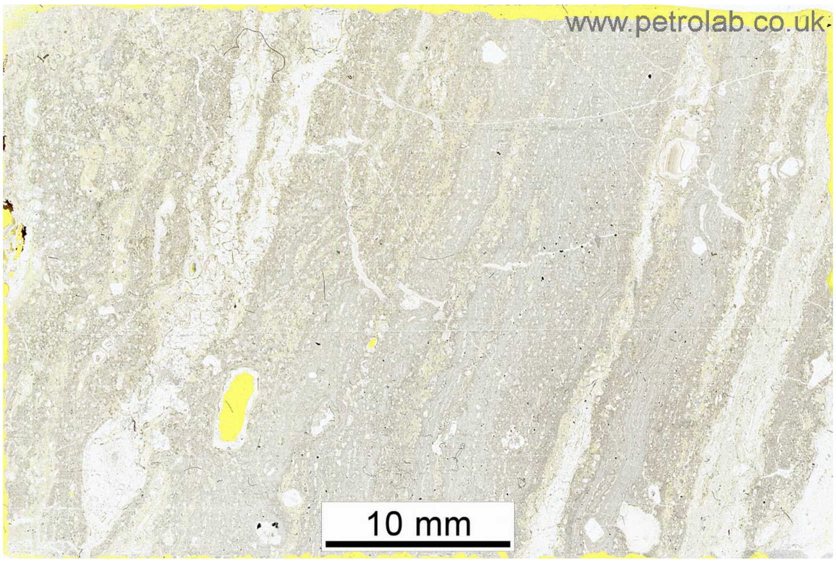
Image A
Nikon D7000 digital camera
Daylight balanced oblique light

Macroscopic (visual) description

Sample 19999	
Group | Name	Volcanic | SILICIFIED VOLCANICS
Colour	Cream to grey.
Strength	Extremely strong (> 250 MPa).
Structure	Thinly laminated (0.3 - 4 mm) with silicified cream and grey laminae. Cross-cut by high angle veins and fractures.
Grain size	Typically << 0.5 mm, maximum 6 mm.
Weathering	Fresh.
Stability	Stable in water - No changes (Grade 1).

Notes:
The macroscopic description is based on visual and manual identification of the material characteristics at the scale of the sample provided. Colour, strength, structure, grain size, rock material weathering and stability terms used in the description are defined in BS EN ISO 14689-1:2003.

Section(s)



B Sample 19999

Low magnification view of sample thin section.

Image B
Epson scanner
White cold cathode light

Microscopical examination

Sample 19999	
Texture and fabric, weathering & alteration	The sample is a silicified flow banded tuff/rhyolite containing light beige and grey laminae. The sample is composed of different polymorphs of quartz and sanidine feldspar. It contains abundant secondary microcrystalline silica and chalcedony fills within the original vesicles and abundant microcrystalline quartz veining system running parallel, perpendicular and at high angles to the sample lamination. There are sporadic occurrences of iron oxide crust. There are rare instances of small pyrite crystals scattered throughout the sample.
Constituents of concern	Heavily silicified rocks may have potential alkali-silica (ASR) implications when used in concrete due to the cryptocrystalline or microcrystalline silica which is present within their texture.

Mineral abundance

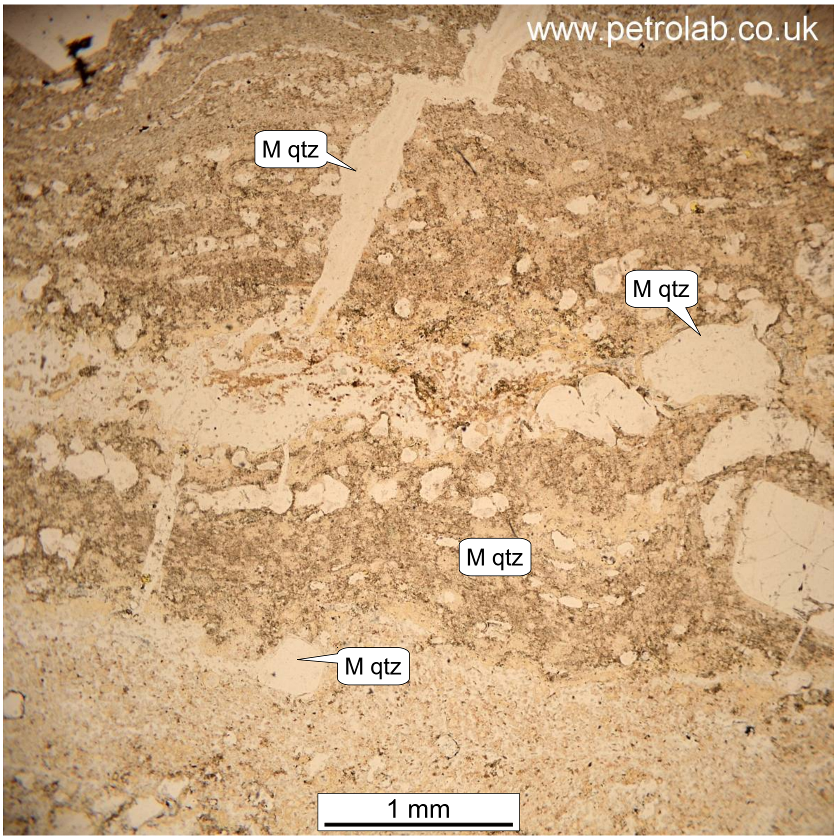
Sample 19999			
Mineral / Phase	**General formula**	**s.g.**	**Wt%[1]**
Microcrystalline Silica, M qtz	SiO_2	2.65	57.5%
Quartz, qtz	SiO_2	2.65	
Chalcedony, chc	$SiO_2 \bullet n(H_2O)$	2.09	
Sanidine, snd	$(K,Na)(Si,Al)_4O_8$	2.52	42.5%
Monazite, mon	$(Ce,La,Nd,Th)PO_4$	5.15	trace
Iron oxides, FeO	$Fe^{+++}O(OH)$	3.80	trace
Pyrite, py	FeS_2	5.01	trace
Dolomite, dol	$CaMg(CO_3)_2$	2.84	trace

1 Wt% mineral abundance reported using results from XRD analysis undertaken by X-ray Mineral Services Ltd (2021). Minerals recorded as tr (trace) were observed during this petrographic analysis but had not been detected by XRD as they were present below the limit of detection.

Phase description

Sample 19999				
Mineral / Phase	**Grain size (min | max | typical)**			**Prominent grain type**
Microcrystalline Silica	<5 μm	50 μm	20 μm	Anhedral
Description	Microcrystalline silica is the predominant component of this sample. It forms the sample groundmass, occurs within numerous veins and layers present in the sample and marks different layers within its texture. It also rims some of the quartz and secondary filled vesicles.			
Quartz	50 μm	1 cm	200 μm	Subhedral
Description	Subhedral, rarely euhedral quartz crystals are randomly distributed throughout the silicified texture of the rock. The are unaltered and commonly much coarser than other components of the sample. They may resemble the primary crystals of the original rock texture.			
Chalcedony	< 5 μm	50 μm	10 μm	Anhedral
Description	Occurs usually within filled vesicles or as irregular patches within silicified groundmass.			
Sanidine	100 μm	500 μm	200 μm	Subhedral
Description	Sanidine crystals are scattered throughout the rock texture but are also a component of sample groundmass. They are rarely associated with accessory phases.			
Monazite	25 μm	150 μm	50 μm	Subhedral
Description	Subhedral monazite is an accessory phase occurring rarely in association with sanidine.			
Iron oxides	< 5 μm	50 μm	20 μm	Anhedral
Description	Iron oxides, predominantly goethite are very rare and form crust deposits on some silicified layers, also interstitial to some quartz crystals.			
Pyrite	5 μm	150 μm	50 μm	Subhedral
Description	Rare subhedral pyrite crystals are scattered throughout the rock texture.			
Dolomite	-			
Description	Dolomite was not observed during petrographic study, but may be present as a remnant mineral phase within light beige layers.			

Photomicrographs



C **Sample 19999**

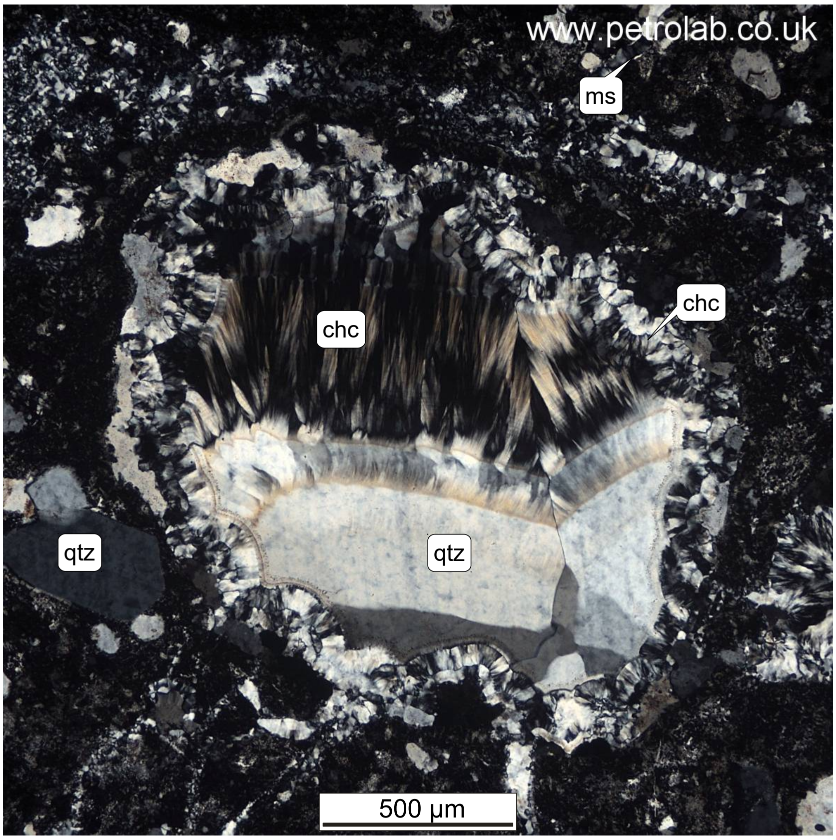
Photomicrograph of sample showing general texture of rock composed entirely of microcrystalline quartz (M qtz). It contain silicified laminae with rare coarser quartz (qtz) grains. The sample is cut by numerous microcrystalline quartz (M qtz) veins running in different directions.

Image C

Nikon Microphot-FXA petrological microscope

Plane polarised transmitted light

x25



D **Sample 19999**

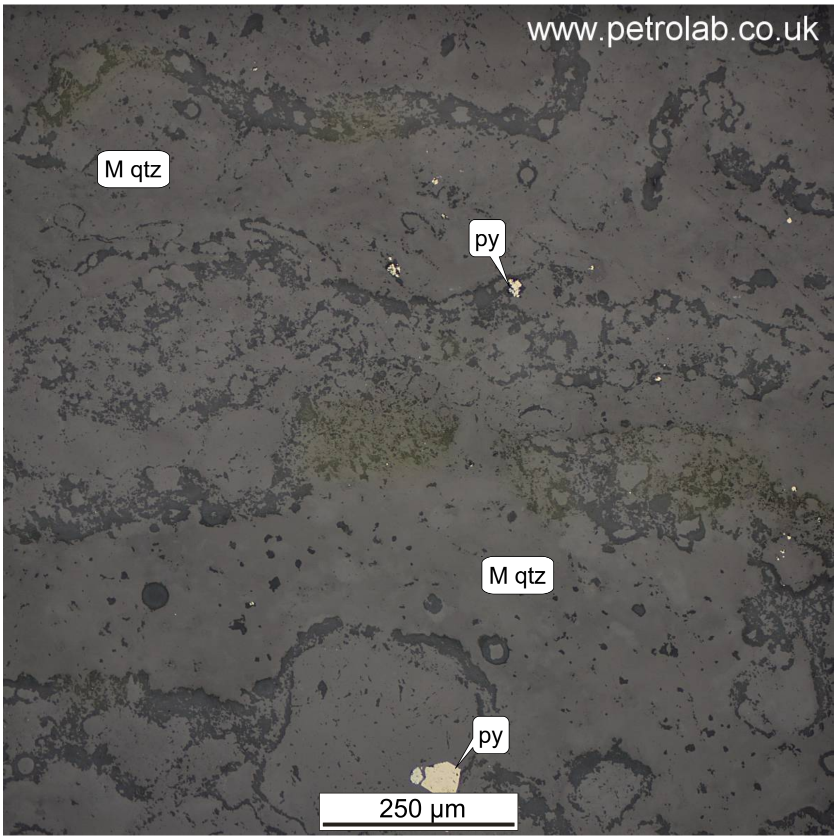
Photomicrograph showing secondary fill in vesicle composed of coarse quartz (qtz) crystals and chalcedony (chc).

Image D

Nikon Microphot-FXA petrological microscope

Cross polarised transmitted light

x50



E **Sample 19999**

Photomicrograph of sample showing general texture rock composed of microcrystalline quartz (M qtz) with disseminated pyrite (py) crystals.

Image E

Nikon Microphot-FXA petrological microscope

Plane polarised reflected light

x100

Appendix 1 · X-ray diffraction (XRD) analysis

Introduction and background

XRD analysis is chiefly undertaken to confirm the presence of clay minerals in suspected problematic lithologies, as clay minerals can be too fine to be readily identifiable by detailed thin section petrography.

Methods of investigation

Whole (Bulk) Rock Analysis

The objective is to obtain a quantitative measurement of the mineral components of a sample.

Sample Preparation

The sample is first disaggregated gently using a pestle and mortar. A 2 gram split of this material is then 'micronised' using a McCrone Micronising Mill to obtain an x-ray diffraction 'powder' with a mean particle diameter of between 5 - 10 microns. The sample as a slurry can then be treated in one of the following ways:-

If sample quantity is limited the slurry is dried overnight at 80°C, re-crushed to a fine powder and back-packed into an aluminium cavity mount, producing a randomly orientated sample for presentation to the x-ray beam. When appropriate, and with samples where 5-10g are available, the (water-based) slurry is sprayed under pressure into an oven where it is instantly dried into a powder comprising microspherical aggregates of mineral particles. This powder is front-packed into an aluminium cavity mount, producing a randomly orientated sample for presentation to the x-ray beam.

X-Ray Diffraction

The prepared sample was analysed using a PANalytical X'Pert3 Powder Diffractometer between 2° and 60° 2ϴ (theta) with a step size of 0.05°/sec using x-ray radiation from a copper anode at 35kV, 30mA.

Identification of unknown minerals was achieved by using "Traces" and "Search-Match" software to compare the x-ray diffraction pattern from the unknown sample with the International Centre for Diffraction Data PDF-4 Minerals database containing reference patterns for more than 157,000 phases.

Rietveld Analysis

Quantification was by intensity method validated by selected Rietveld analysis. The Rietveld method, first published in 1967, was used at first to understand and refine crystal structure as determined by X-ray diffraction. Since the 1980's the method has been extended to quantification of phases in mineral samples. The Rietveld equation allows a synthetic diffractogram to be calculated for a mineral mixture and takes account of practical difficulties such as dispersion, absorption, particle-size and preferred orientation. The output of the equation can be compared continuously with the experimental trace and 'refined' by incorporating modified parameters until a best fit is obtained. At this point the equation incorporates the percentage composition of the phases which are present, and those can be output directly together with statistical data relating to the fitting process. Rietveld analysis is most effective when the sample contains a limited number of well characterised mineral phases. The accuracy of the method diminishes as the percentage of the mineral phase is reduced. The reliable detection limit of the XRD method is 0.5 – 2% depending on the mineral phase, and is affected by crystallinity.

Clay Mineral Analysis

The objective is to obtain further definition of the clay mineral components of the sample.

Sample Preparation

Although clay minerals are evident in whole rock diffractograms, the most satisfactory method for their quantification is to extract and analyse separately the clay fraction. A 5 gram split of the sample that was disaggregated as the first stage of the whole rock preparation (see above) is taken and weighed accurately. The weight is recorded in a central register for later reference.

Separating the <2 micron fraction is achieved by ultrasound, shaking and centrifugation. Size fractions other than <2 micron (e.g. 2-16 micron) are obtained by varying the centrifuge speed and time. The total weight of clay extracted is determined by removing a 20ml aliquot of the final clay suspension and evaporating to dryness at 80°C. The initial and final weights of the beaker used are also recorded in the register.

The clay XRD mount is obtained by filtering the clay suspension through a Millipore glass microfibre filter and drying the filtrate on the filter paper. The samples are analysed as an untreated clay, after saturation with ethylene glycol vapour overnight and following heating at 380°C for 2 hours and 550°C for one hour. The initial scan for these four treatments is between 3° and 35° 2ϴ (theta) at a step size of 0.05°/sec using x-ray radiation from a copper anode at 40kV, 30mA. The untreated sample is also analysed between 24-27° 2ϴ at a step size of 0.02 °/2 sec to further define kaolinite/chlorite peaks.

Interpretation

Diffractograms from the four clay treatments are overlain to identify the clay mineral assemblages present and to assess the effect this treatment has had on this assemblage. Peak intensities are measured and incorporated in a formula to indicate the relative amounts of clay minerals present. This data is then used to quantify the clay minerals with respect to the whole rock by reference to the total amount of <2 micron clay fraction, which is calculated from the 20ml aliquot previously extracted and dried. An indication of the clay minerals crystallinity can be given by assessment of the peak width for each component. Where applicable the relative intensities of the chlorite 001 and 003 peaks can be used to measure the total heavy metal (predominantly Fe) content of the mineral.

Analysis results

The XRD analysis results are reproduced over page:

Whole Rock & Clay Fraction

X-ray Diffraction Analysis **Client: Petrolab**

Size Fraction : Whole Rock **Project: OP4477**

Weight % by mineral phase

Sample	Illite/ Smectite	Illite+Mica	Kaolinite	Chlorite	Quartz	K Feldspar	Plagioclase	Calcite	Dolomite	Siderite	Pyrite	Anatase	Total
10261	3.0	21.5	0.6	8.9	44.7	0.0	14.5	6.8	TR	0.0	0.0	0.0	100
10262	1.3	10.3	4.8	0.0	40.2	0.0	21.7	0.0	20.0	1.3	0.0	0.5	100
10257	0.0	0.0	0.0	23.0	35.3	10.3	27.8	2.3	0.0	0.0	1.3	0.0	100
19999	0.0	0.0	0.0	0.0	57.5	42.5	0.0	0.0	TR	0.0	0.0	0.0	100

Notes:
1) Quantification by Rietveld method (AutoQuan software)
2) Dolomite in sample 10262 is Fe-rich
3) Plagiocalse in sample 10257 is Andesine
4) K Feldspar in sample 19999 is Sanidine

X-ray Mineral Services Ltd

X-ray Diffraction Traces

Client: Petrolab

Key to laboratory numbering

No	Sample	Lab No
1	10261	232
2	10262	233
3	10257	234
4	19999	235

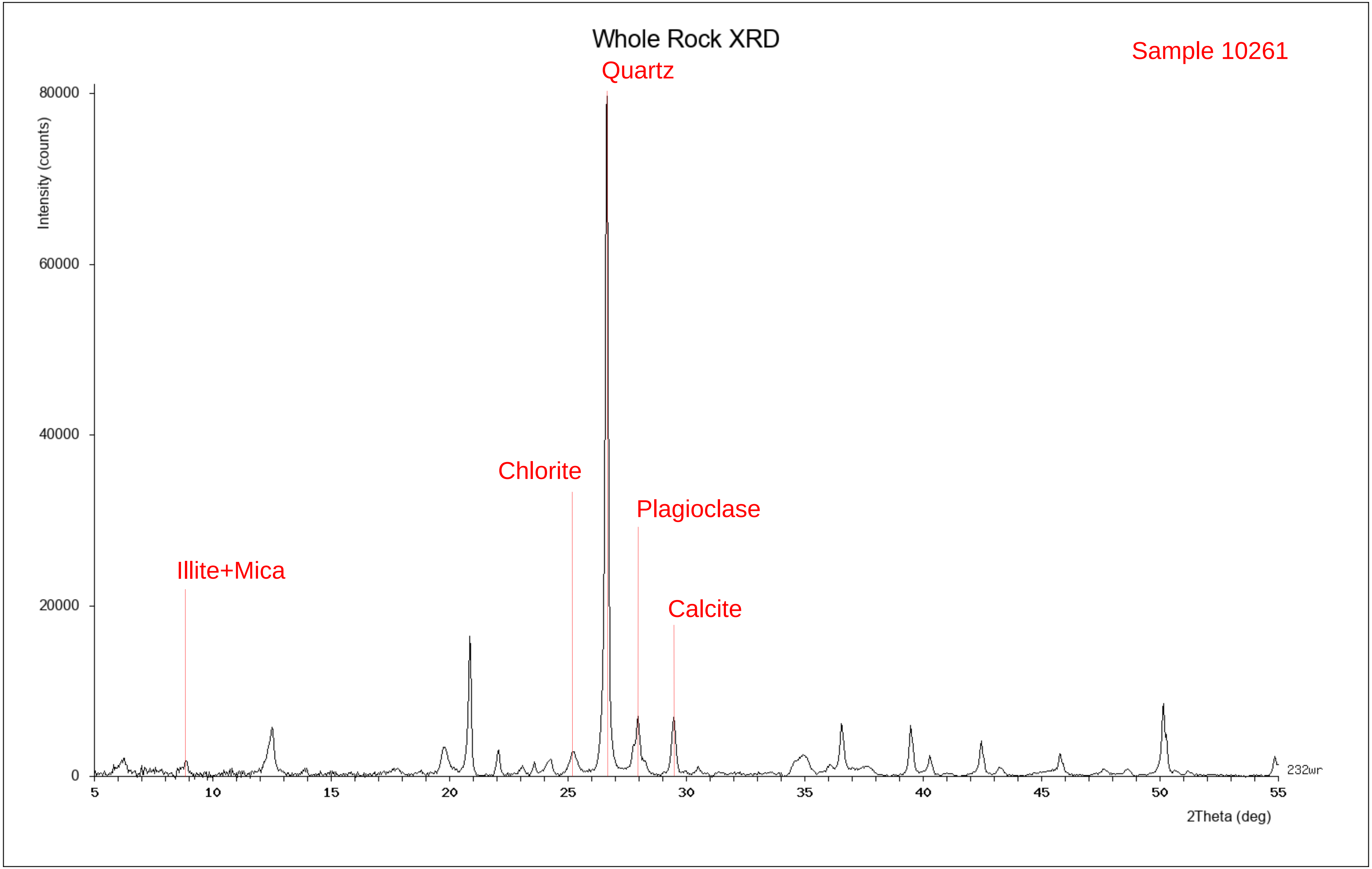
wr = Whole rock XRD
ut = Air-dried clay XRD

Calcite

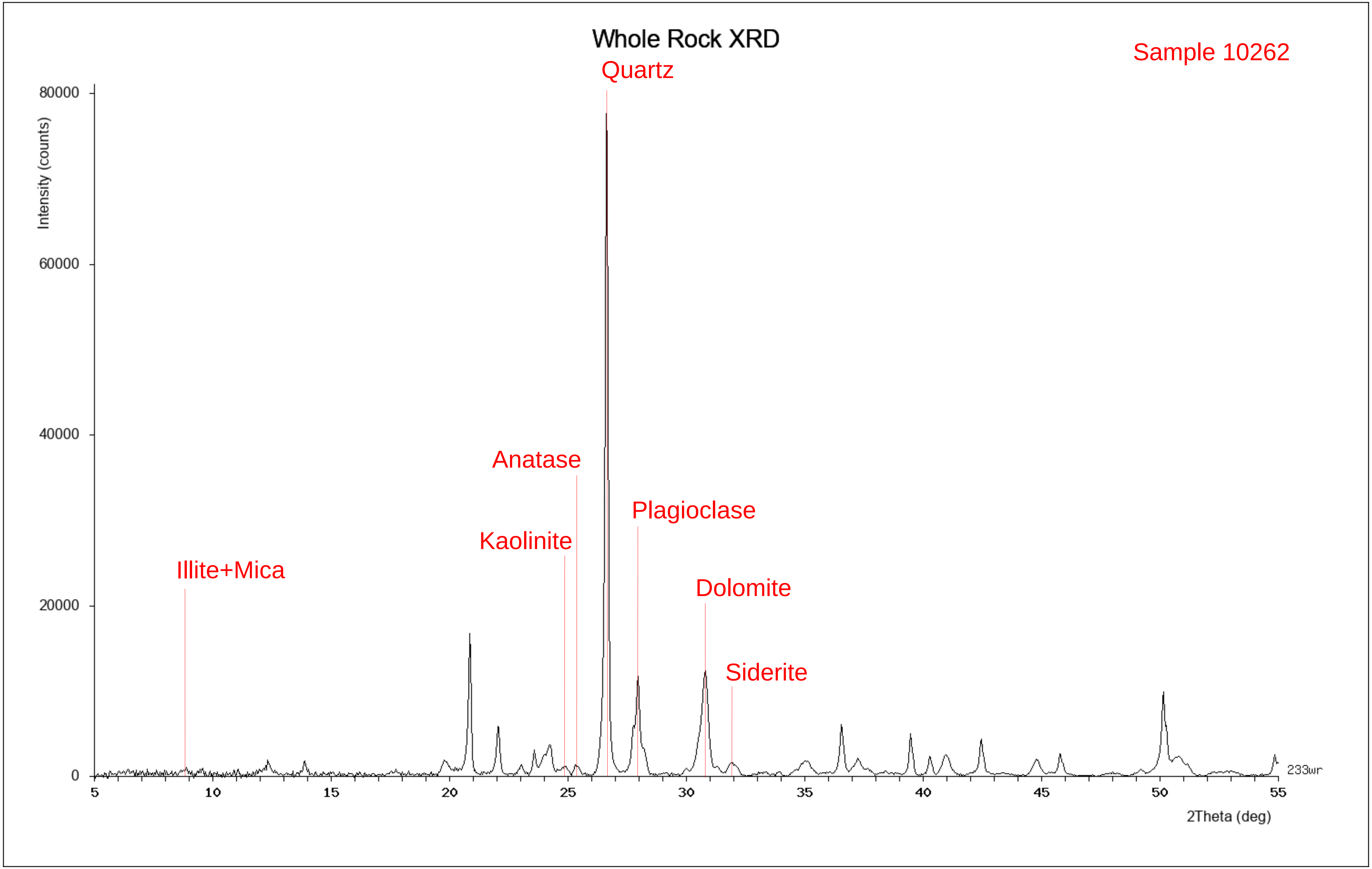
Only the main peak for interpretation is indicated in this style. Other peaks are ancillaries of the minerals listed

Illite/smectite

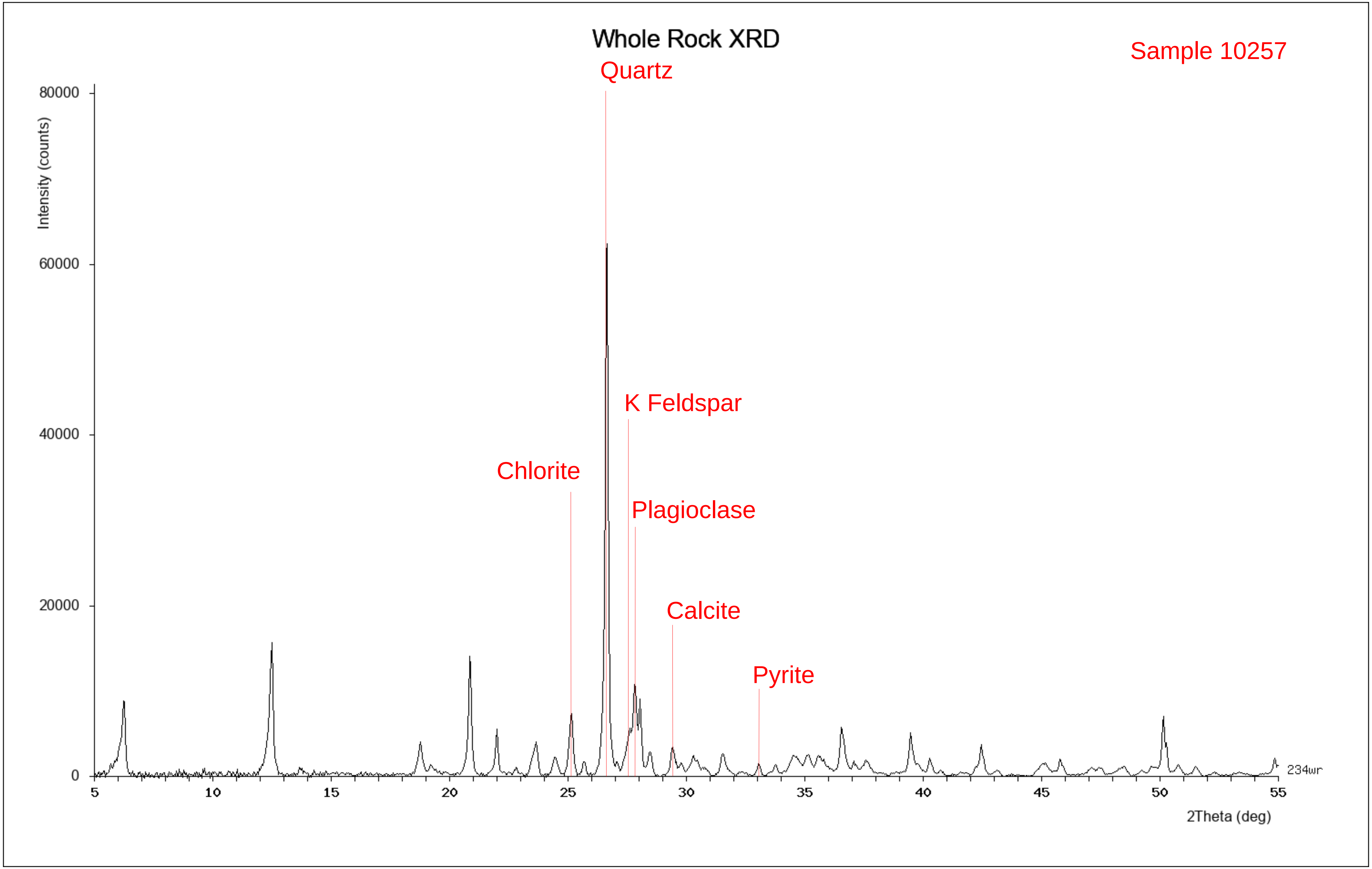
Mixed-layer clays are interpreted within the area indicated, but not based upon peak-height



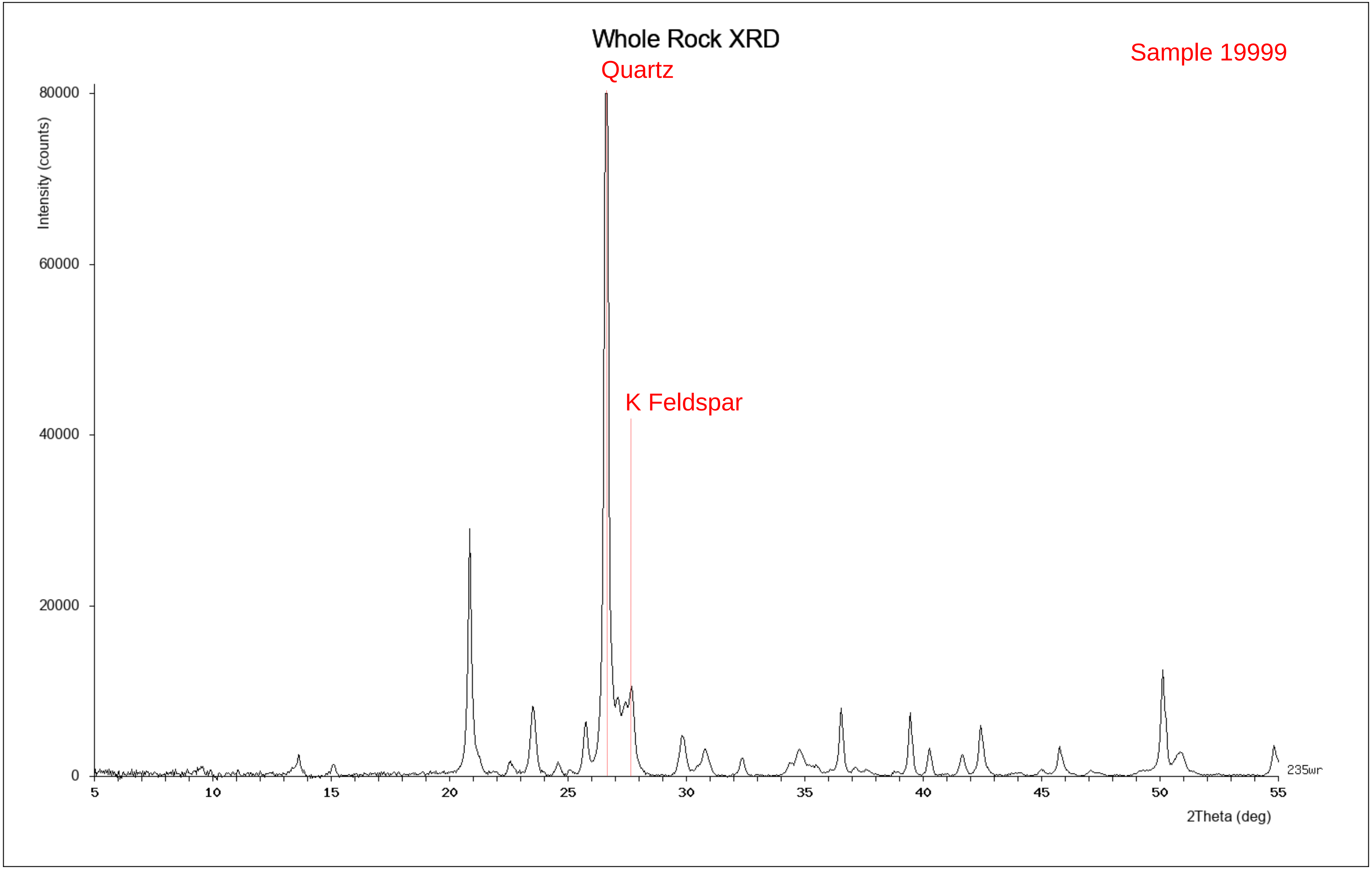
Whole Rock XRD
Sample 10261
Quartz
Chlorite
Plagioclase
Illite+Mica
Calcite
Intensity (counts)
80000
60000
40000
20000
0
5
10
15
20
25
30
35
40
45
50
55
2Theta (deg)
232wr



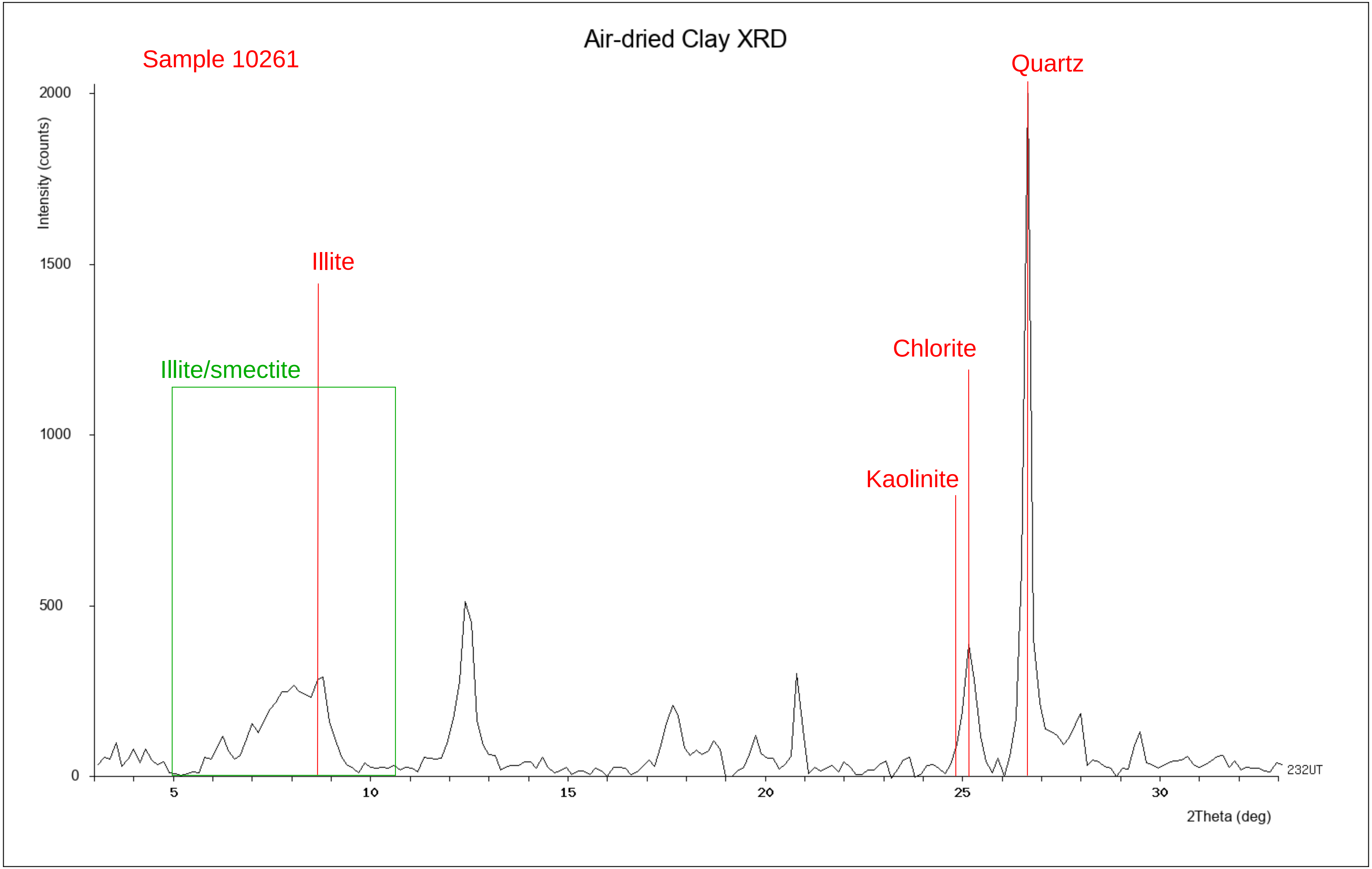
Whole Rock XRD
Sample 10262
Quartz
Anatase
Plagioclase
Kaolinite
Illite+Mica
Dolomite
Siderite
Intensity (counts)
80000
60000
40000
20000
0
5
10
15
20
25
30
35
40
45
50
55
233wr
2Theta (deg)



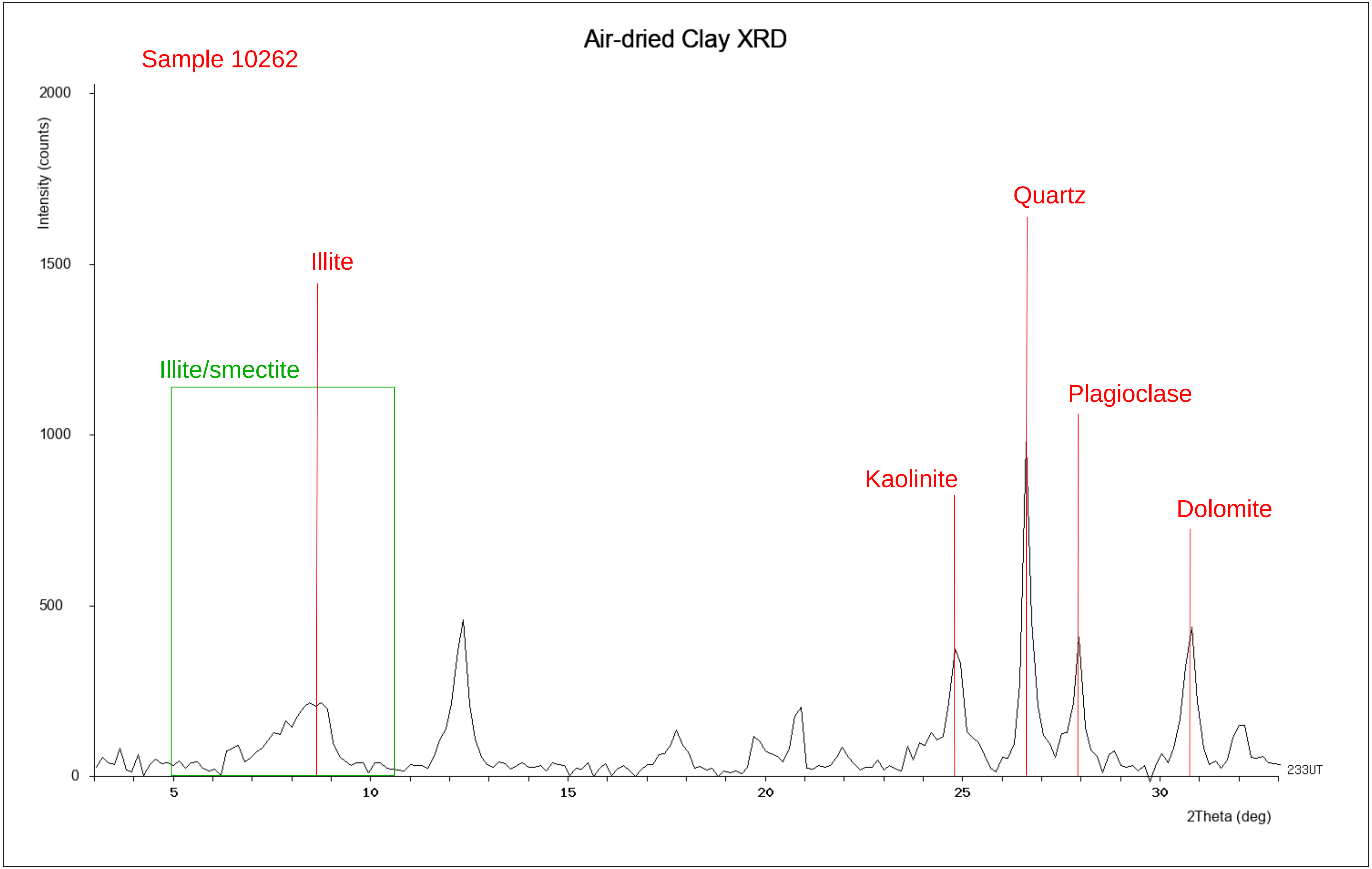
Whole Rock XRD
Sample 10257
Quartz
K Feldspar
Chlorite
Plagioclase
Calcite
Pyrite
Intensity (counts)
80000
60000
40000
20000
0
5
10
15
20
25
30
35
40
45
50
55
2Theta (deg)
234wr



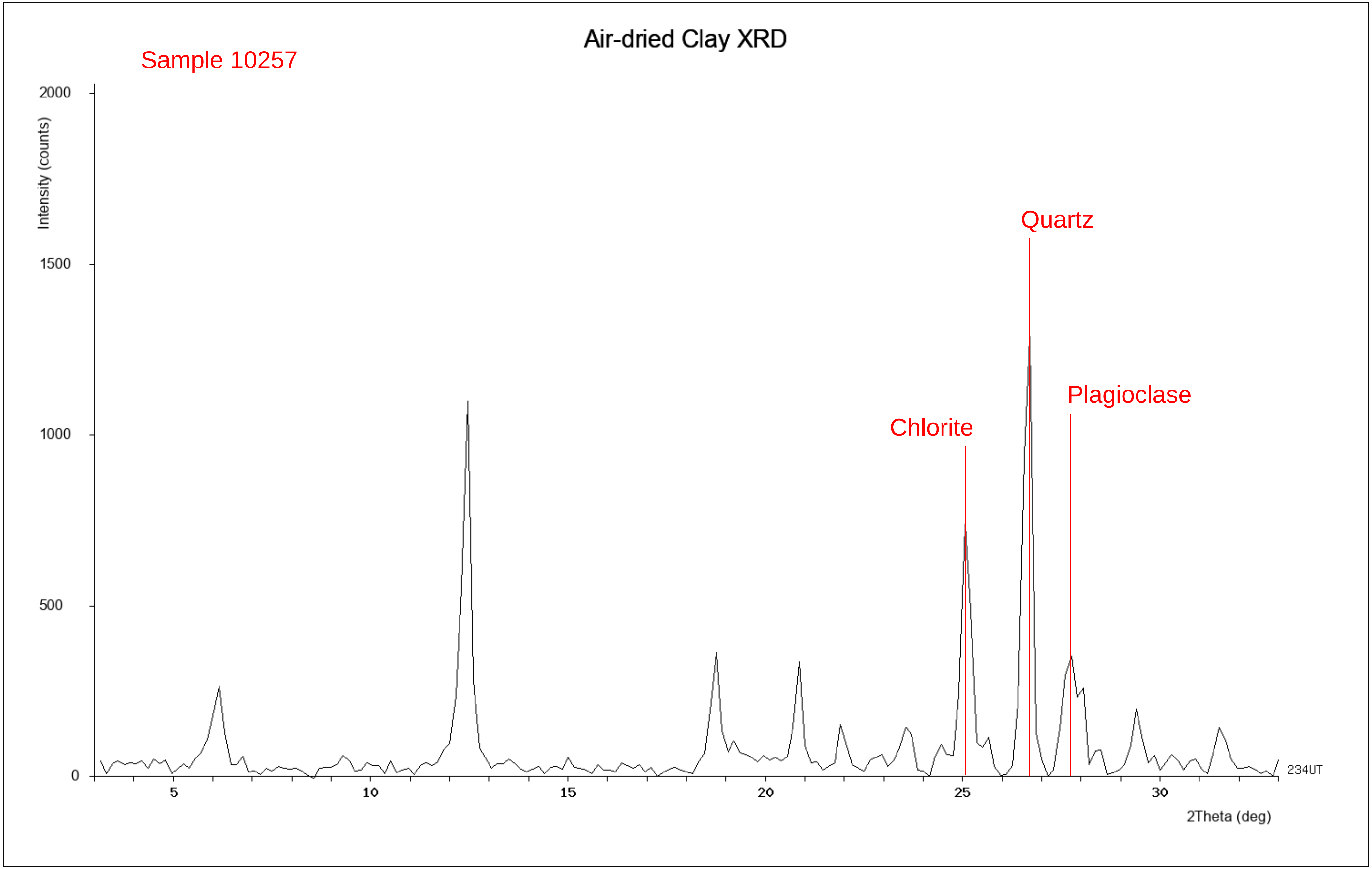
Whole Rock XRD
Sample 19999
Quartz
K Feldspar
Intensity (counts)
80000
60000
40000
20000
0
5
10
15
20
25
30
35
40
45
50
55
2Theta (deg)
235wr

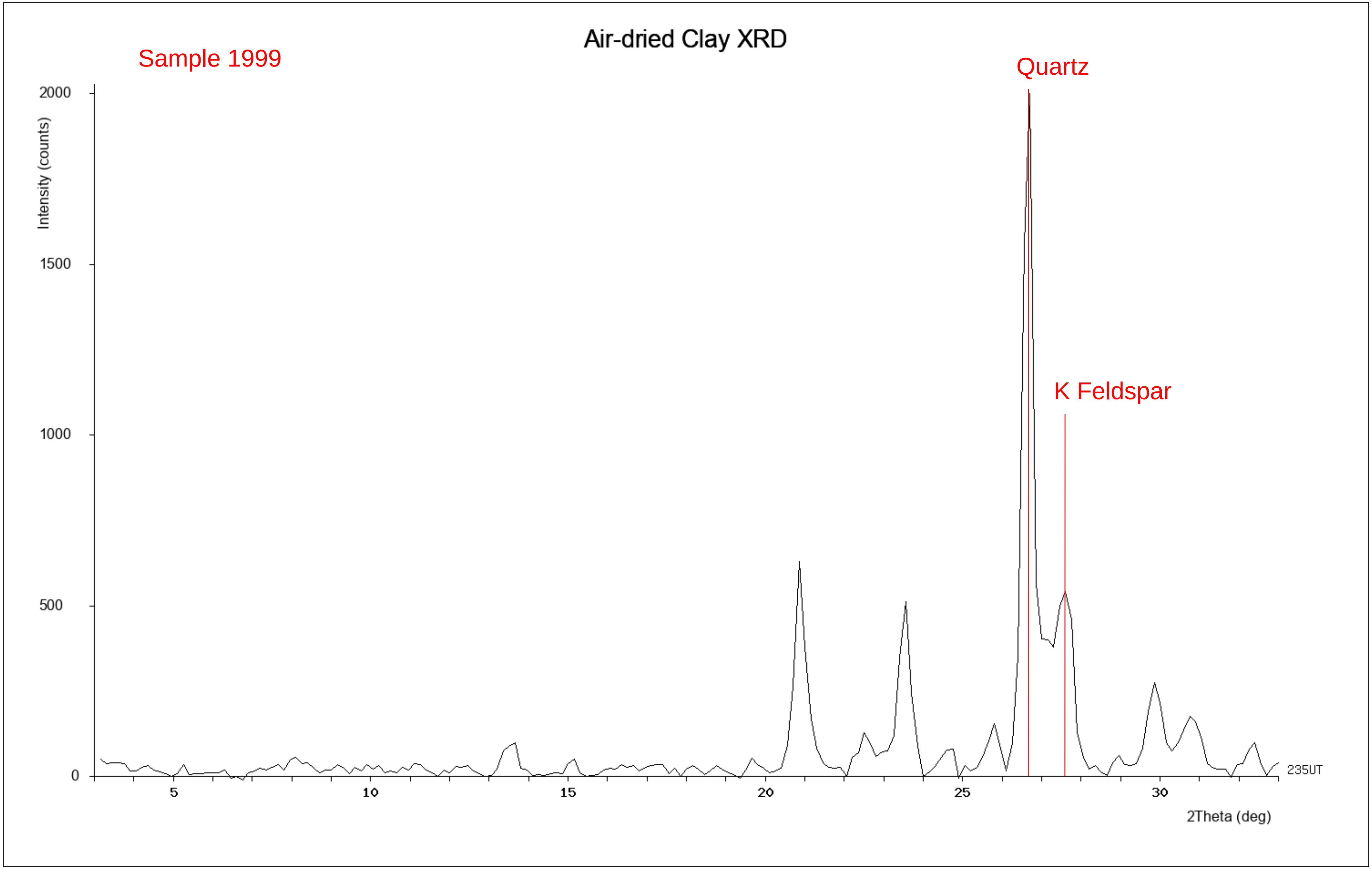


Air-dried Clay XRD
Sample 10261
Quartz
Illite
Chlorite
Illite/smectite
Kaolinite
Intensity (counts)
2000
1500
1000
500
0
5
10
15
20
25
30
2Theta (deg)
232UT



Air-dried Clay XRD
Sample 10262
Intensity (counts)
2000
1500
1000
500
0
Illite
Illite/smectite
Kaolinite
Quartz
Plagioclase
Dolomite
5
10
15
20
25
30
233UT
2Theta (deg)


Air-dried Clay XRD
Sample 10257
Intensity (counts)
2000
1500
1000
500
0
5
10
15
20
25
30
2Theta (deg)
234UT
Quartz
Plagioclase
Chlorite



Air-dried Clay XRD
Sample 1999
Quartz
K Feldspar
Intensity (counts)
2000
1500
1000
500
0
5
10
15
20
25
30
2Theta (deg)
235UT

Appendix 2 · XRF analysis

XRF Method and interpretation

Whole (Bulk) Rock Analysis

The objective is to obtain a quantitative measurement of the elemental components of a sample.

Sample Preparation

Before we conduct any analysis we assess whether the samples need drying and pulverising etc. We carry this out by drying the samples at 105C until constant weight. If needed we pass the sample through a jaw crusher to reduce the particle size in order to separate out a representative sub sample (normally 100g). We then pulverise this sub sample to <53 micron using a TEMA mill.

X-Ray Fluorescence

The prepared sample was analysed using a panalytical Epsilon 3 XL. We prepare pressed powder pellets using aluminium cups in a Herzog Hydraulic press. These pellets are then placed in the instrument using a polypropylene film. The samples are then run on the Omnium program. This program uses internal references in order to evaluate semi quantitatively. The Omnium program also uses the entire range of power settings and tube filters to evaluate each sample comprehensively. The results are then balanced by the software to 100% depending on the selection of the element output (oxides, elemental etc). The XRF is unable to evaluate atomically light elements (elements lighter than Na) due to the nature of the technology and so if there are known components such as carbonates etc this has to be taken in to consideration.

Wheal Jane Services Ltd t/a Wheal Jane Laboratory
Wheal Jane Services Ltd, Old Mine Offices, Wheal Jane, Baldhu, Truro, Cornwall TR3 6EE**Telephone (01872) 560200, Direct Line (01872) 562023, Facsimile (01872) 562000**
E-mail crice@wheal-jane.co.uk

Test Report

WJL ID No: 126,123-126,125
Report No: 21050701c

Sample(s) Received: 26/04/21
Sample(s) Tested: 07/05/21
Tested By: CR LP JH
Test Procedure/Method(s): O1, O2, as requested

For the attention of:
Name: J. Strongman
Company: **Petrolab**
Address: C Edwards Offices Redruth
Subject: OP4477

Sample	10261	10262	10257
%			
L.O.I 1hr @ 600°C	5.98	4.75	2.82
%			
S(tot)	0.15	0.04	0.84
%			
Al2O3	21.3	20.8	20.5
BaO	<0.1	<0.1	<0.1
CaO	4.0	4.5	5.7
Cr2O3	<0.1	<0.1	<0.1
Fe2O3	7.2	5.1	8.1
K2O	2.8	1.8	1.5
MgO	3.5	2.3	6.2
MnO	<0.1	<0.1	<0.1
Na2O	1.4	3.5	1.1
P2O5	<0.1	<0.1	0.2
SiO2	58.3	60.7	54.2
SO3	0.3	0.1	1.3
SrO	<0.1	<0.1	<0.1
TiO2	0.8	0.6	0.7

Signed		Authorised Signatories:	Signed by:	Checked by:
		Clifford Rice, Laboratory Director		
		Liam Palmer, Laboratory Manager	X	
		Rebecca Turner, Systems Administrator		
Dated	07/05/21	Fiona Dennis, Administrator		X

APPENDIX

B KBK PERMIT – 38/1/IUP/PMA/2020

HEAD OF INVESTMENT COORDINATING BOARD OF THE REPUBLIC OF INDONESIA

DECREE OF HEAD OF INVESTMENT COORDINATING BOARD

NUMBER: 38/1/IUP/PMA/2020

CONCERNING

APPROVAL FOR THE ESCALATION OF EXPLORATION MINING BUSINESS LICENSE TO PRODUCTION OPERATIONS MINING BUSINESS LICENSE IN THE FRAMEWORK OF FOREIGN INVESTMENT FOR ROCK COMMODITY TO PT KALTARA BATU KONSTRUKSI

HEAD OF INVESTMENT COORDINATING BOARD

Considering : a. whereas PT Kaltara Batu Konstruksi through a Letter from the Director of PT Kaltara Batu Konstruksi Bangkit to the Minister of Energy and Mineral Resources, in this case The Head of BKPM Number 20200422/KBK/016.001/013/SH-hs dated April 22, 2020 has submitted an application for an escalation in the Non-Metal Mineral and Rock Production Operation Mining Business License;

SWORN TRANSLATOR
SK GUB.DKI JAKARTA
FATCHUROZAK
NO. 3065/2003
PENERJEMAH BERSUMPAH

b. whereas PT Kaltara Batu Konstruksi has completed the necessary documents for the stage escalation to Production Operation IUP to the Minister of ESDM in this case the Head of BKPM through the Letter of Director of PT Kaltara Batu Konstruksi Number 20200422/KBK/016.001/013/SH-hs dated April 22, 2020;

c. whereas based on the evaluation results, PT Kaltara Batu Konstruksi's licensing documents have met the requirements in accordance with the provisions of laws and regulations;

d. whereas based on the considerations as referred to in letter a, letter b and letter c, it is necessary to stipulate a Decree of the Head of Investment Coordinating Board concerning the Approval for the Escalation of Exploration Mining Business License to Production Operation Mining Business License in the Framework of Foreign Investment for Gold Commodity to PT Kaltara Batu Konstruksi;

SWORN TRANSLATOR SK GUB.DKI JAKARTA FATCHUROZAK NO. 3065/2003 PENERJEMAH BERSUMPAH

Bearing in Mind : 1. Law Number 25 of 2007 on Investment (State Gazette of the Republic of Indonesia of 2007 Number 67, Supplement to State Gazette of the Republic of Indonesia Number 4724);

2. Law Number 3 of 2020 concerning Amendment to Law Number 4 of 2009 on Mineral and Coal Mining

3. Government Regulation Number 23 of 2010 concerning the Implementation of Mineral and Coal Mining Business Activities (State Gazette of the Republic of Indonesia of 2010 Number 29, Supplement to the State Gazette of the Republic of Indonesia Number 5111) as amended several times, most recently by Government Regulation Number 8 of 2018 concerning the Fifth Amendment to the Government Regulation Number 23 of 2010 concerning the Implementation of Mineral and Coal Mining Business Activities (Supplement to the State Gazette of the Republic of Indonesia Number 6186);

4. Presidential Regulation Number 90 of

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PENERJEMAH BERSUMPAH

2007 concerning, Investment Coordinating Board, as amended by Presidential Regulation Number 86 of 2012 concerning Amendment to Presidential Regulation Number 90 of 2007 concerning the Investment Coordinating Board (State Gazette of the Republic of Indonesia of 2014 Number 2010);

5. Presidential Regulation Number 97 of 2014 concerning Implementation of One Stop Services (State Gazette of the Republic of Indonesia of 2014 Number 221);
6. Presidential Decree No. 114/P of 2016 dated October 14, 2016;
7. Regulation of the Head of Investment Coordinating Board of the Republic of Indonesia Number 15 of 2015 concerning Guidelines and Procedures for Licensing and Non-Licensing of Investment (State Gazette of the Republic of Indonesia of 2015 Number 1479);
8. Regulation of the Minister of Energy and Mineral Resources Number 25 Year

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NO. 3065/2003
PENERJEMAH BERSUMPAH

2015 on Delegation of Authority to Grant Licensing of Mineral and Coal Mining in the Framework of Implementing One Stop Integrated Service to the Head of Investment Coordinating Board (State Gazette of the of 2015 Number 1187);

9. Regulation of the Minister of Energy and Mineral Resources Number 13 of 2016 on Organization and Working Procedure of the Ministry of Energy and Mineral Resources (State Gazette of the Republic of Indonesia of 2016 Number 782);
10. Regulation of the Minister of Energy and Mineral Resources Number 25 of 2018 concerning Exploitation of Mineral and Coal Mining (State Gazette of the Republic of Indonesia of 2018 Number 595) as amended by Regulation of the Minister of Energy and Mineral Resources Number 50 of 2018 concerning Amendment to the Regulation of the Minister of Energy and Resources Mineral Resources Number 25 of 2018 concerning Mineral and Coal Mining

SWORN TRANSLATOR SK GUB.DKI JAKARTA FATCHUROZAK NO. 3065/2003 PENERJEMAH BERSUMPAH

Business (State Gazette of the Republic of Indonesia of 2018 Number 1591);

11. Regulation of the Minister of Energy and Mineral Resources Number 7 of 2020 concerning Procedures for Granting Areas, Licensing and Reporting on Mineral and Coal Mining Business Activities (State Gazette of the Republic of Indonesia of 2020 Number 220);
12. Decree of the Minister of Energy and Mineral Resources Number 1796 K/30/MEM/2018 concerning Guidelines for Application, Evaluation and Issuance of Licensing in the Mineral and Coal Mining Sector;
13. Decree of the Head of BKPM Number 13/I/IUP/PMA/2019 dated February 08, 2019 concerning Approval of Rock Exploration Mining Business License in in the framework of Foreign Investment to PT Kaltara Batu Konstruksi;

IT IS HEREBY RESOLVED

SWORN TRANSLATOR
SK GUB.DKI JAKARTA
FATCHUROZAK
NO. 3065/2003
PENERJEMAH BERSUMPAH

To stipulate : DECREE OF HEAD OF INVESTMENT COORDINATING BOARD CONCERNING APPROVAL FOR THE ESCALATION OF EXPLORATION MINING BUSINESS LICENSE TO PRODUCTION OPERATIONS MINING BUSINESS LIENCE IN THE FRAMEWORK OF FOREIGN INVESTMENT FOR ROCK COMMODITY TO PT KALTARA BATU KONSTRUKSI.

FIRST : To grant approval for Escalation of Exploration Mining Business License to Production Operations Mining Business License In The Framework Of Foreign Investment For Coal Commodity To:

a. Company's Name : PT Kaltara Batu Konstruksi

b. Name of Directors/Commissioners

1. President Director : Josh Sleiman
   T.I.N : 75.747.402.8-053.000
2. Director : Saufi Handri
   T.I.N : 67.376.178.9-125.000
3. Commissioner : Difai
   T.I.N : 09.318.960.3.411.000

c. Composition of Shareholders:

1. PT. Puncak Mineral Investasi (Indonesia) : Rp.9,000,000,000 (60%)
2. Ozindo Investments Pty Ltd (Australia) : Rp.6,000,000,000 (40%)

d. Address : Simprug Gallery Blok S Jl. Teuku Nyak Arif No. 10, Jakarta Selatan 12220 Phone.(021)739 8482

e. T.I.N : 80.388.421.2-013.000

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f. Commodity	:	Mountain Rocks
g. Mining Location		
- Village	:	Kuala Lapang
- District	:	Malinau Barat
- Regency	:	Malinau
- Province	:	North Kalimantan
h. Area Code	:	23.6502.5.33.2018.086
i. Area Size	:	40.09 Ha (forty point zero nine) hectare

SECOND : IUP during the operation activity stage as referred to in the FIRST Dictum is granted based on the mining business license area at the production operation stage, hereinafter referred to as WIUP at the production operation stage in accordance with the list of coordinates and map of Production Operation WIUP as listed in Annex I and Annex II which is an integral part of this Decree.

THIRD : IUP at the stage of Production Operation activities as referred to in the FIRST Dictum is granted for 5 (five) years.

FOURTH : PT Kaltara Batu Konstruksi as referred to in the FIRST Dictum during the period of IUP validity at the Production Operation activity stage as referred to in the

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SECOND Dictum may carry out construction, mining, processing and/or refining, transportation and sales as well as reclamation and post-mining activities in accordance with the RKAB that has been approved in accordance with the provisions of laws and regulations.

FIFTH : PT Kaltara Batu Konstruksi is obliged to submit reclamation and post-mining plans and place reclamation guarantees and post-mining guarantees in accordance with statutory provisions.

SIXTH : In the event of a change as referred to in the FIRST Dictum, it is obliged to comply with the provisions of the statutory regulations and the change shall be stated as an inseparable part of this Head Decree.

SEVENTH : PT Kaltara Batu Konstruksi is prohibited from:

a. engaging subsidiaries and/or affiliates engaged in the mining service business in the implementation of mining business

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activities without approval from the Head of the Investment Coordinating Board;

b. transferring the IUP to another party;

c. carrying out mining business activities in restricted area as provided for by the provisions of laws and regulations;

d. transferring the IUP to any third party without the approval of the Minister;

e. violating other prohibitions in accordance with the provisions of laws and regulations.

EIGHTH : Apart from the rights, obligations and prohibitions as referred to in the FOURTH Dictum, the FIFTH Dictum and the SEVENTH Dictum, PT Kaltara Batu Konstruksi is granted the rights and obligations as stated in Appendix III which are an integral part of this Decree and in accordance with the provisions of the legislation.

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NINTH : PT Kaltara Batu Konstruksi may be subject to administrative sanctions in the form of written warnings, temporary suspension of activities, or revocation of IUPs at the stage of production operations, if PT Kaltara Batu Konstruksi does not fulfill its obligations and/or violates the prohibitions as referred to in Dictum FIFTH, Dictum SIXTH and Dictum SEVEN.

TENTH This Decree shall be effective since the stipulation date.

Stipulated in: Jakarta

On: September 02, 2020

p.p MINISTER OF ENERGY AND MINERAL RESOURCES

HEAD OF INVESTMENT COORDINATING BOARD

[sealed and signed]

BAHLIL LAHADALIA

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SK GUB.DKI JAKARTA
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NO. 3065/2003
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The Copies of this Decree shall be given to:

1. Coordinating Minister for Maritime Affairs and Investment of the Republic of Indonesia;
2. Coordinating Minister for Economic Affairs of the Republic of Indonesia
3. Minister of Energy and Mineral Resources;
4. Minister of Finance;
5. Minister of Home Affairs;
6. Minister of Law and Human Rights;
7. Minister of Environment and Forestry;
8. Secretary General of the Ministry of Energy and Mineral Resources;
9. Inspector General of the Ministry of Energy and Mineral Resources;
10. Director General of Mineral and Coal;
11. Governor of North Kalimantan
12. Regent of Malinau
13. Head of Office of Energy and Mineral Resources of North Kalimantan Province;
14. Head of One Stop Integrated Office of Investment and Service of North Kalimantan Province;
15. Board of Directors PT Kaltara Batu Konstruksi.

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ANNEX I TO DECREE OF HEAD OF INVESTMENT COORDINATING BOARD

NUMBER: 38 /1/IUP/PMA/2017

DATED: SEPTEMBER 02, 2020

LIST OF COORDINATES

NAME OF COMPANY : PT Kaltara Batu Konstruksi

Activity Stage : Production Operation

LOCATION

- Province : North Kalimantan
- Regency : Malinau
- Sub-District : Malinau Barat
- Commodity : Mountain Rocks
- Area Code : 1365025332018001
- Area : 40,09 HA

No	Longitude (BT)			Latitude			
	O	'	"	O	'	"	LU/LS
1	116	37	35.440	3	31	46.48	LU
2	116	37	33.520	3	31	46.48	LU
3	116	37	33.520	3	31	3.14	LU
4	116	37	20.280	3	31	3.14	LU
5	116	37	20.280	3	31	4.05	LU
6	116	37	18.200	3	31	4.05	LU
7	116	37	18.200	3	31	5.42	LU
8	116	37	26.610	3	31	5.42	LU
9	116	37	26.610	3	32	0.42	LU
10	116	37	27.820	3	32	0.42	LU
11	116	37	27.820	3	32	3.45	LU
12	116	37	35.440	3	32	3.45	LU

p.p MINISTER OF ENERGY AND MINERAL RESOURCES

HEAD OF INVESTMENT COORDINATING BOARD

[sealed and signed]

BAHLIL LAHADALIA

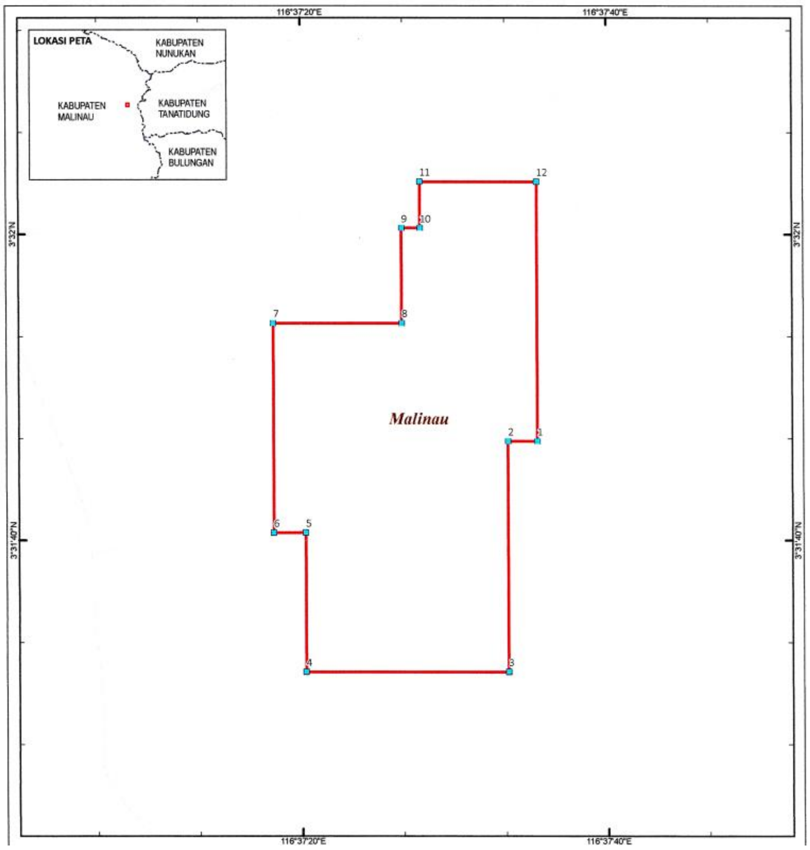
SWORN TRANSLATOR
SK GUB.DKI JAKARTA
FATCHUROZAK
NO. 3065/2003
PENERJEMAH BERSUMPAH

ANNEX II TO DECREE OF HEAD OF INVESTMENT COORDINATING BOARD

NUMBER : 38/I/IUP/PMA/2020

DATE : SEPTEMBER 02, 2020

AREA MAP OF MINING BUSINESS LICENSE



Area Map of Mining Business License	LEGEND	Road	MINISTRY OF ENERGY AND
Granted to : PT. Kaltara Batu Konstruksi	Concession Area	Artery Road	MINERAL RESOURCES
Processing Date : July 13 2017	PT Kaltara Batu Konstruksi	Collector Road	DIRECTORATE GENERAL
Activity Stage : Production Operation (Extension II)	Water Body:	Local Road	OF MINERAL AND COAL
Area Code : 1365025332018001	Lake	Other Road	p.p MINISTER OF ENERGY
Area : 40.09 Ha	River	Forest Designation	AND MINERAL RESOURCES
Commodity : Rocks (Mountain Rocks	Administration Borders	Other Designation Area	HEAD OF INVESTMENT
Activity Location	State Border	Conservation Forest	COORDINATING BOARD
Province : North Kalimantan	Province Border	Protection Forest	[sealed and signed]
Regency : Malinau	Regency/City Border	Limited Production Forest	Bahil Lahadila
Projection : Transverse Mercator		Convertible Production	
Datum : National Geodetic Datum (DGN) 95		Forest	
Coordinate : Geographic			
Source : Basic Geospatial Information Map			
Forest Area Map (Ministry of Environment and Forestry, 2019)			

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FATCHUROZAK
NO. 3065/2003
PENERJEMAH BERSUMPAH

ANNEX III TO DECREE OF HEAD OF INVESTMENT COORDINATING BOARD

NUMBER : 38 /1/IUP/PMA/2017

DATED : SEPTEMBER 02, 2020

CONCERNING APPROVAL FOR THE ESCALATION OF EXPLORATION MINING BUSINESS LICENSE TO PRODUCTION OPERATIONS MINING BUSINESS LICENSE IN THE FRAMEWORK OF FOREIGN INVESTMENT FOR ROCK COMMODITY TO PT KALTARA BATU KONSTRUKSI

Rights and Obligations

A. Rights

1. Entering the Mining Business License Area (WIUP) according to the map and coordinate list;

2. Carrying out IUP activities at the Production Operation stage of activities (construction, mining, processing, transportation and sales) of other supporting facilities and infrastructure in accordance with the provisions of laws and regulations;

3. Building facilities to support IUP activities at the Production Operation stage of activities (construction, mining, processing, transportation and sales) in the WIUP;

4. Submitting an application to stop Production Operation activities at any time on the grounds that

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the continuation of the Production Operation activity is not commercially feasible or practical and return the IUP during the Production Operation activity stage to the Minister in accordance with the provisions of the legislation;

5. Applying for a temporary suspension of production operations for each stage of activities in part or all of WIUP due to force majeure or obstructing conditions;

6. Applying for exploitation of other commodities found in WIUP;

7. Submitting a statement of no interest in the exploitation of other commodities found in WIUP;

8. Applying for areas outside the WIUP to the Minister to support mining business activities;

9. Utilizing public facilities and infrastructure for the purposes of IUP activities at the Production Operation stage of activities (construction, mining, processing, transportation and sales) after fulfilling the provisions of laws and regulations;

10. Cooperating with other business entities in order to use any facilities owned by other companies, whether

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affiliated with the company or not, in accordance with the provisions of laws and regulations;

11. Building facilities and infrastructure within the WIUP or in an area outside the WIUP with the approval of the Minister;

12. Applying for IUP extension in accordance with statutory provisions

13. Building facilities and infrastructure for construction activities, among others:

    a. mining facilities and equipment;

    b. mineral quality improvement installations and equipment;

    c. airport facilities which may include docks, ports, docks, bridges, barges, breakers, workshop facilities, stockpiling areas, warehouses and loading and unloading equipment;

    d. transportation and communication facilities which may include roads, bridges, ferries, airports, rails, aircraft landing sites, hangars, garages, pumps, radio and telecommunications facilities as well as telegraphic and telephone network facilities;

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e. urban facilities which include residential houses, shops, schools, hospitals, theaters and other buildings, facilities and equipment for contractor employees including dependents of these employees;

f. electricity, water and waste water facilities and includes electricity generation (which can be hydropower, steam, gas or diesel), electricity grids, dams, waterways, water supply systems and sewage systems (tailings), factory wastewater and household wastewater;

g. other facilities, which may include but not limited to machine shop, casting and repair shop;

h. all additional facilities or other facilities, factories and equipment deemed necessary or suitable for business operations related to WIUP or providing services or carrying out supporting activities or activities of an incidental nature.

14. Other rights in accordance with statutory provisions.

B. Obligations

1. Electing jurisdiction in the District Court where the WIUP is located in domestic arbitration;

2. Appointing a Mining Engineering Head who is responsible for the implementation of Production Operations (Construction, Production, Processing, Transportation and Sales), Mining Occupational Health and Safety, and Mining Environmental Management;

3. Reporting the Investment Plan;

4. Submitting the Work Plan and Budget (RKAB) no later than 45 (forty five) calendar days before the end of the current year (takwim) which includes plans for next year and realization of activities for each current year to the Minister with a copy to the Director General.

5. Submitting a Monthly Activity Report which must be submitted within 5 (five) calendar days after the end of the biweekly or calendar month for the Biweekly and Monthly Reports;

6. Submitting Quarterly Activity Reports and Annual Activity reports which must be submitted within 30 (thirty) days after the end of the quarter or

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calendar year periodically to the Minister with a copy to the Governor;

7. If the provisions for the deadline for submitting RKAB and reporting as referred to in number 6, number 7, and number 8 are exceeded, then IUP holders at the Production Operation activity stage will be given a written warning;

8. Submitting a reclamation plan for a period of 5 (five) years at the latest 45 (forty five) calendar days before the end of the reclamation implementation of the Production Operation stage for the previous 5 (five) years in accordance with the provisions of laws and regulations;

9. Placing reclamation guarantees at the Production Operation stage and post-mining guarantees in accordance with the approved reclamation plans and post-mining plans;

10. Applying the principles of good mining techniques;

11. Submitting the Local Community Development and Empowerment Program Plan and its costs annually as part of the RKAB;

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12. Paying Fixed Contribution every year and pay Production Contribution (Royalty) in accordance with the provisions of laws and regulations;

13. Paying state and regional income according to statutory regulations;

14. Increasing the added value of mineral resources in the mining, processing and utilization of minerals;

15. Processing the results of mining activities in the country;

16. Within a period of not more than 6 (six) months from the expiration of this Head's decision, the IUP Holder at the Production Operation stage of activity must remove all his goods/assets, except for objects/buildings used for public interest;

17. If within the period referred to in number 18 the IUP holder during the Production Operation activity stage does not remove all of his goods/assets, then the goods/assets of the IUP holder during the Production Operation activity stage will become the property of the government;

18. Providing data and/or information if at any time needed by the Government;

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19. Allowing and accepting the Government at any time to conduct an examination;

20. Managing finances in accordance with the Indonesian accounting system;

21. Reporting the implementation of development and empowerment of the local community regularly every 6 (six) months;

22. Prioritizing the use of local manpower, domestic goods and services in accordance with statutory provisions;

23. Prioritizing domestic purchases from local entrepreneurs in the area in accordance with statutory provisions;

24. Using local and/or national mining service companies;

25. Reporting data and implementation of the use of mining service businesses;

26. Submitting all data obtained from the results of IUP activities during the Production Operation activity stage to the Minister with a copy to the Governor;

27. Resolving land rights in part or all of WIUP in accordance with the provisions of statutory

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regulations and providing compensation or compensation to holders of land rights and stands disturbed due to IUP activities during Production Operation activities based on agreements with land rights holders;

28. Prioritizing the fulfillment of domestic demand for non-metal minerals and rocks (Domestic Market Obligation) in accordance with the provisions of laws and regulations;

29. Carrying out sales of non-metal minerals for export, domestic sales, and to subsidiaries (affiliates) based on reference prices in accordance with the provisions of laws and regulations;

30. Long-term sales contracts (minimum 3 years) must obtain prior approval from the Minister;

31. Being responsible for relationships and/or cooperation with third parties in accordance with the provisions of laws and regulations;

32. Complying with environmental carrying capacity tolerance limits;

33. Guaranteeing the application of environmental quality standards and model in accordance with the characteristics of an area;

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34. Maintaining the sustainability of the function and carrying capacity of the water resources concerned in accordance with the provisions of the statutory regulations.

35. Other obligations in accordance with the laws and regulations.

p.p MINISTER OF ENERGY AND MINERAL RESOURCES

HEAD OF INVESTMENT COORDINATING BOARD

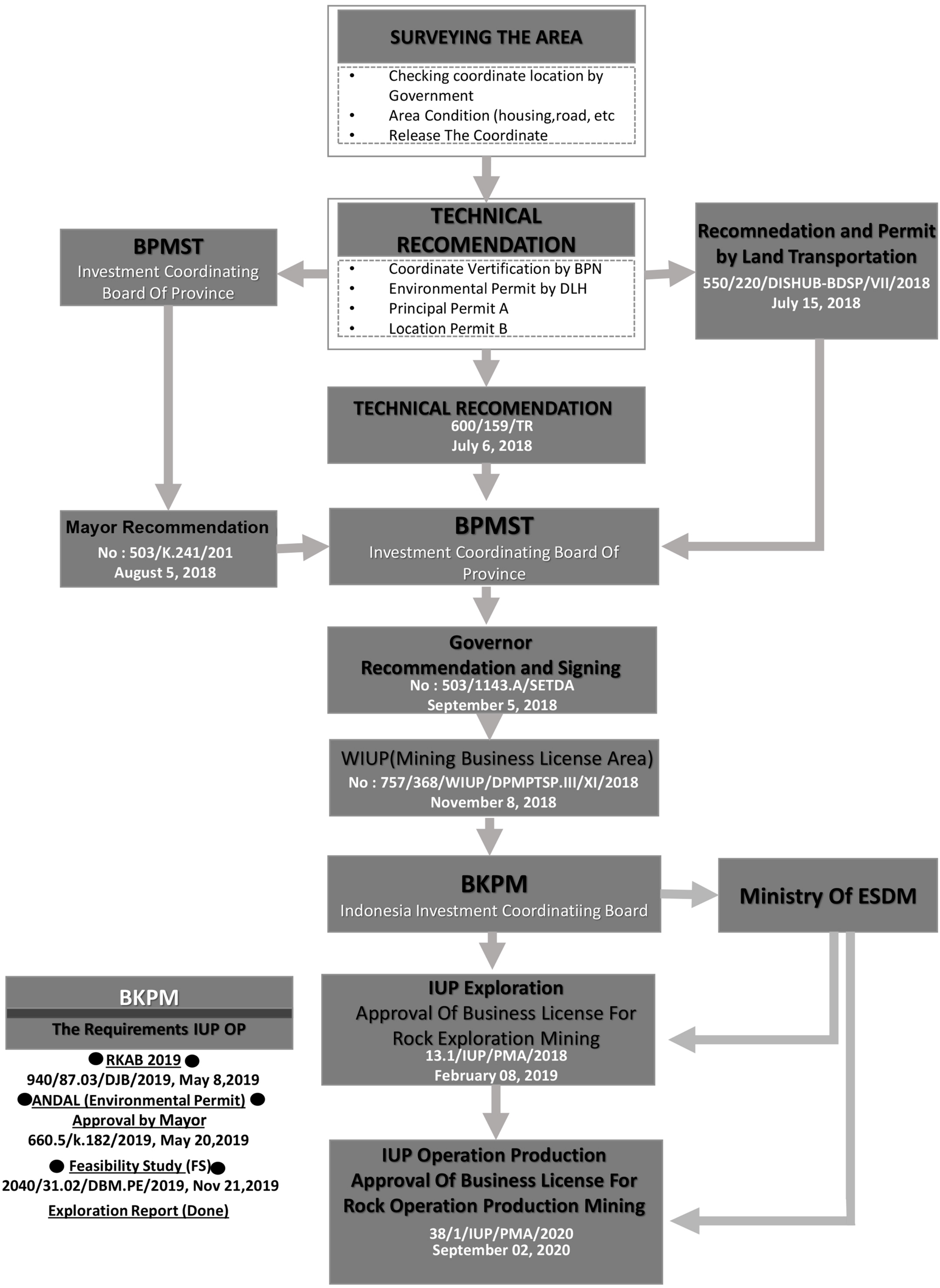
[sealed and signed]

BAHLIL LAHADALIA

APPENDIX

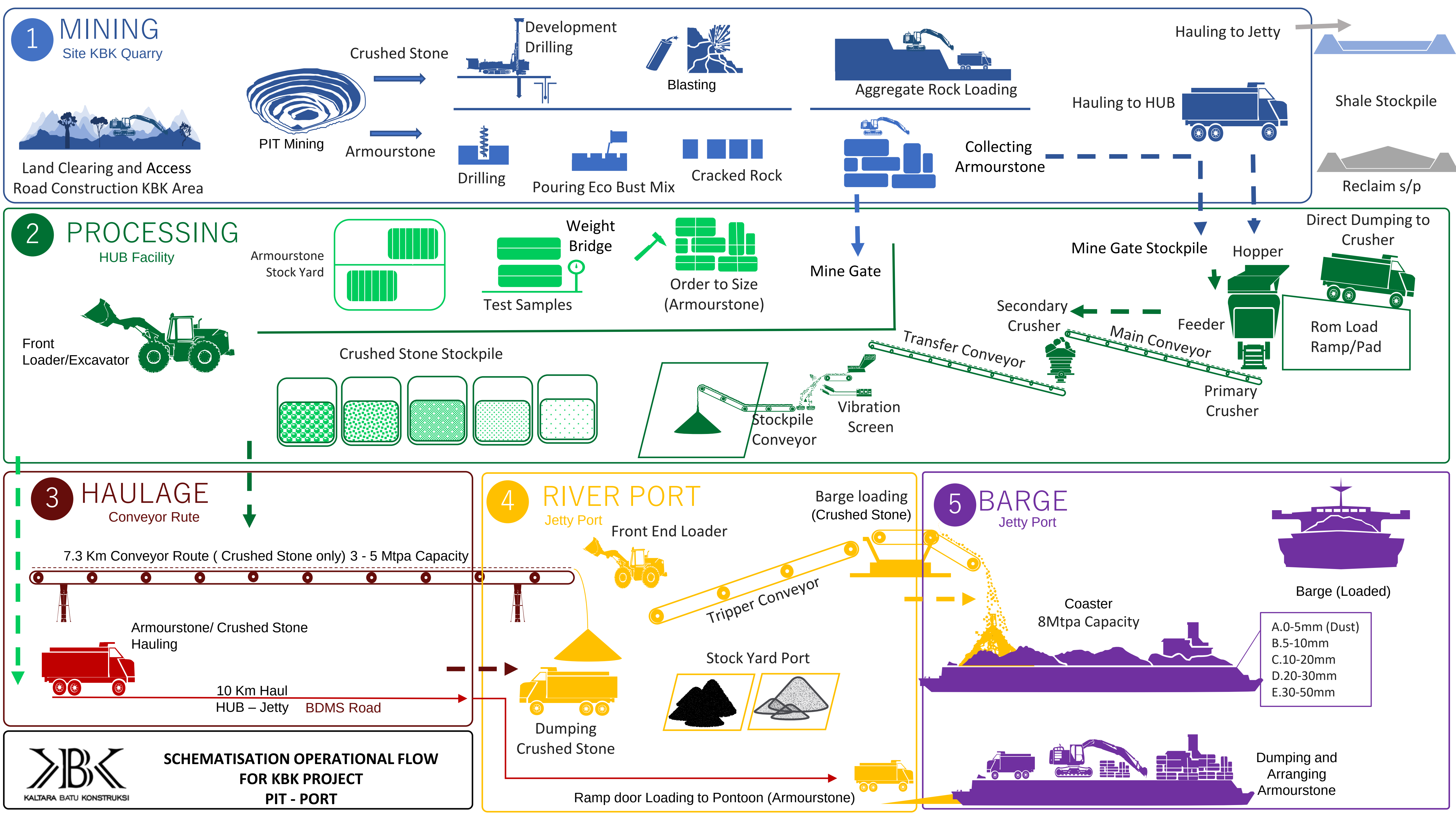
C INDONESIA PERMIT FLOW CHART

KALTARA BATU KONSTRUKSI



APPENDIX

D CONCEPTUAL FLOW CHARTS FOR OPERATIONS



1 MINING
Site KBK Quarry
Land Clearing and Access Road Construction KBK Area
PIT Mining
Crushed Stone
Armourstone
Development Drilling
Blasting
Aggregate Rock Loading
Hauling to Jetty
Hauling to HUB
Shale Stockpile
Reclaim s/p
Drilling
Pouring Eco Bust Mix
Cracked Rock
Collecting Armourstone
2 PROCESSING
HUB Facility
Armourstone Stock Yard
Weight Bridge
Test Samples
Order to Size (Armourstone)
Mine Gate
Mine Gate Stockpile
Hopper
Direct Dumping to Crusher
Front Loader/Excavator
Secondary Crusher
Feeder
Rom Load Ramp/Pad
Transfer Conveyor
Main Conveyor
Crushed Stone Stockpile
Primary Crusher
Vibration Screen
Stockpile Conveyor
3 HAULAGE
Conveyor Rute
7.3 Km Conveyor Route (Crushed Stone only) 3 - 5 Mtpa Capacity
Armourstone/ Crushed Stone Hauling
10 Km Haul
HUB – Jetty
BDMS Road
4 RIVER PORT
Jetty Port
Front End Loader
Barge loading (Crushed Stone)
Tripper Conveyor
Stock Yard Port
Dumping Crushed Stone
Ramp door Loading to Pontoon (Armourstone)
5 BARGE
Jetty Port
Barge (Loaded)
Coaster
8Mtpa Capacity
A.0-5mm (Dust)
B.5-10mm
C.10-20mm
D.20-30mm
E.30-50mm
Dumping and Arranging Armourstone
KALTARA BATU KONSTRUKSI
SCHEMATISATION OPERATIONAL FLOW FOR KBK PROJECT PIT - PORT

APPENDIX

E MOU – PT SAKA TECHNOLOGY INDONESIA (PT STI)

DATED THIS 02ND DAY OF AUGUST 2021

BETWEEN

PT. KALTARA BATU KONSTRUKSI (PT. KBK)

AND

PT. SAKA TECHNOLOGY INDONESIA (PT. STI)

****

MEMORANDUM OF UNDERSTANDING
FOR THE PURCHASE OF AGGREGATE MATERIALS

****

Memorandum of Understanding

This Memorandum of Understanding (hereinafter referred to as "MOU") is entered into on **Monday, 02nd of August, in the year 2021** (hereinafter referred to as "Effective Date") by and between:

PT. KALTARA BATU KONSTRUKSI, a company established under the laws of the Republic of Indonesia, with its registered office at **Simprug Gallery Blok S, Jalan Teuku Nyak Arief No. 10, Jakarta Selatan, Indonesia** (hereinafter referred to as "**PT. KBK**"; and

PT. SAKA TECHNOLOGY INDONESIA, a company established under the laws of the Republic of Indonesia, with its registered office at **Cibubur Point Blok A No. 1, Jalan Alternatif Cibubur, Cimanggis, Depok, Indonesia** (hereinafter referred to as "**PT. STI**".

(Above companies hereinafter collectively referred to as the "Parties" and individually as the "Party").

WHEREAS:

A. **PT. KBK** is an Aggregate Materials Mining Company with a Mining Operational Production License (IUP OP) that covers a total area of 40 Ha (400,000 m^2) in Malinau, North Kalimantan, Indonesia.

B. **PT. STI** is a Project Management Company principally engaged in multiple infrastructure and construction projects for the Public and Private Sectors in Indonesia.

1. Purpose of MOU

1.1 This MOU is intended to reflect the present understanding of the discussions the Parties have had in their negotiations about the terms and conditions of the proposed transaction as follows:

a) PT. STI intention to purchase the Aggregate Materials from PT. KBK in a specified size, quality specifications and price as follows:

Product	Sizes	Quality Specifications	Price
1. Rock Dust	0 – 5 mm	Average Density 2.5 Abrasion maximum 16	USD 5.63/Ton
2. Crushed Stone	5 – 10 mm	Average Density 2.5 Abrasion maximum 16	USD 27.11/Ton
3. Crushed Stone	10 – 20 mm	Average Density 2.5 Abrasion maximum 16	USD 27.11/Ton
4. Crushed Stone	20 – 30 mm	Average Density 2.5 Abrasion maximum 16	USD 27.11/Ton
5. Crushed Stone	30 – 50 mm	Average Density 2.5 Abrasion maximum 16	USD 26.40/Ton
6. Armour Stone	100 – 300kg Blocks	Average Density 2.5 Abrasion maximum 16	USD 31.69/Ton

b) PT. KBK intention and readiness to supply the Aggregate Materials to PT. STI in a specified quantity and payment terms as follows:

Rock Dust and Crushed Stones: Between 1 – 2 million tonnes per year
Armour Stones: Between 1 – 3 million tonnes per year
Total Quantity to be supplied: About 5 million tonnes per year
Payment Terms: FOB Barge at Jetty-Port Malinau

1.2 Each Party agrees to act in good faith to negotiate toward execution of a definitive Sales and Purchase Agreement or collaboration in infrastructure or construction projects.

2. Effect of MOU

This MOU shall be in effect from the Effective Date until:

a) the Parties mutually agree to terminate this MOU;
b) it is terminated by written notice by either Party to the other Party; or
c) it is terminated by the signing of a Sales and Purchase Agreement.

3. Commercial

Any cost and expenses incurred by either Party, individually or collectively, under or in connection with this MOU shall be agreed in written format by each Party.

4. Confidentiality

4.1 Confidential Information means business related information marked or otherwise identified in writing by either of the party's, as proprietary or confidential or that, under the circumstances surrounding the disclosure, ought in good faith to be treated as proprietary or confidential. It includes non-public information regarding either party's products, features, marketing and promotions, and the negotiated terms of the agreements.

5. Use of Confidential Information

Neither party will: -

a) Use the other's Confidential Information without the other's written consent, except in furtherance of this business relationship or as expressly permitted by this MOU; or disclose the other's Confidential Information, except to obtain advice from legal or financial consultants, or if compelled by law (in which case the party compelled to make the disclosure will use its best efforts to give the other party notice of the requirement so that the disclosure can be contested).

b) Take reasonable precautions to safeguard the other party's Confidential Information. Those precautions will be at least as great as the precautions that the other party takes to protect its own Confidential Information. Each party will disclose the other's Confidential Information to its employees, consultants or subcontractors only on a need-to-know basis and subject to the confidentiality obligations imposed here. When Confidential Information is no longer necessary to perform any obligation under this Agreement, each party will return it to the other party or destroy it at the other's request.

c) Immediately notify the other upon discovery of any unauthorized use or disclosure of Confidential Information and will cooperate in any reasonable way to help the other regain possession of the Confidential Information and prevent further unauthorized use.

6. Intellectual Property

The intellectual property brought by each party to the relationship under this MOU remains in the ownership of that party. Ownership and management of any intellectual property developed in relation to a project or projects under this MOU in any form are to be dealt with in other contractual arrangements.

7. Warranty and Indemnification

a) All parties warrant that materials or information provided by it will not infringe the rights of any third parties. All parties agree to defend, hold harmless, and indemnify all parties and their directors, officers and employees from and against all third-party claims, actions, demands, proceedings, damages, costs and liabilities of any kind to the extent that such claims arise out of or related to any materials or information provided by it under this MOU.

b) Each Party warrants that materials or information provided by it will not infringe the rights of any third parties. Each Party agrees to defend, hold harmless, and indemnify the other Party/Parties and its/their directors, officers, and employees from and against all third-party claims, actions, demands, proceedings, damages, costs and liabilities of any kind to the extent that such claims arise out of or related to any materials or information provided by it under this MOU.

8. Governing Law

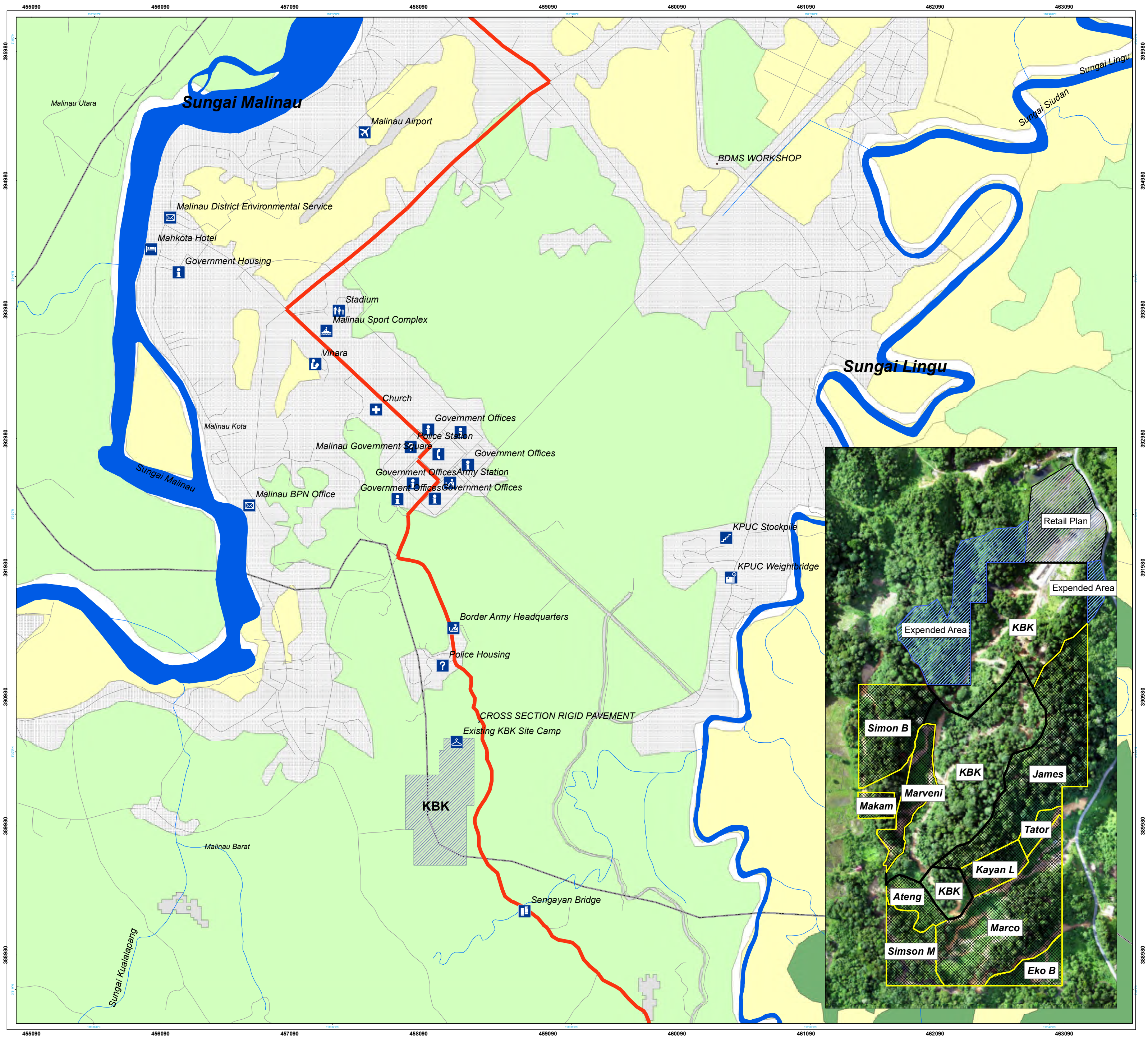
This MOU shall be governed by and construed in accordance with the laws of the Republic of Indonesia. Any dispute arising from this MOU, which cannot be amicably settled between the Parties, shall be referred to the laws of the Republic of Indonesia.

IN THIS EFFECTIVE DATE HEREWITH, the Parties hereto have caused this MOU to be executed by their respective duly authorized representatives.

Signed on behalf of **PT. KALTARA BATU KONSTRUKSI**	Signed on behalf of **PT. SAKA TECHNOLOGY INDONESIA**
JOSH SLEIMAN PRESIDENT DIRECTOR	PT SAKA TECHNOLOGY INDONESIA **ASWIN ISKA** DIRECTOR

APPENDIX

F PT KBK - SCHEMATIC LAYOUTS OF REQUIRED FACILITIES



KBK MALINAU ZONE
MALINAU REGENCY
NORTH KALIMANTAN PROVIENCE

N

1:10,000

0 0.05 0.1 0.2 0.3 0.4 Kilometers

DIAGRAM LOCATION

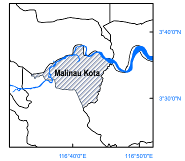
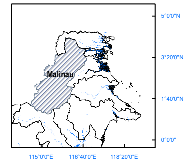


DIAGRAM LOCATION



Projection	:	Transverse Mercator
Zone	:	50 N
Datum horizontal	:	WGS 1984
Format	:	Degrees Minutes Seconds

PUBLISH BY :
PT Kaltara Batu Konstruksi
Simprug Gallery, Blok S,
Jl. Teuku Nyak Arief No.RT.10

LEGEND

Point Information and Public Facility

Road

Provincial Road

Stream

River

IUP KBK Quarty
40 Ha

LAND UTILIZATION

Swamp / Magrove / Forest

Settlement

Farm / Agriculture

LAND ACQUISITION PLAN

Owned by KBK
24 Ha

Outside of IUP KBK
6.44 Ha

Owned by Local Landowner
16 Ha

Land for Retail Plan
3.2 Ha

Draw by :

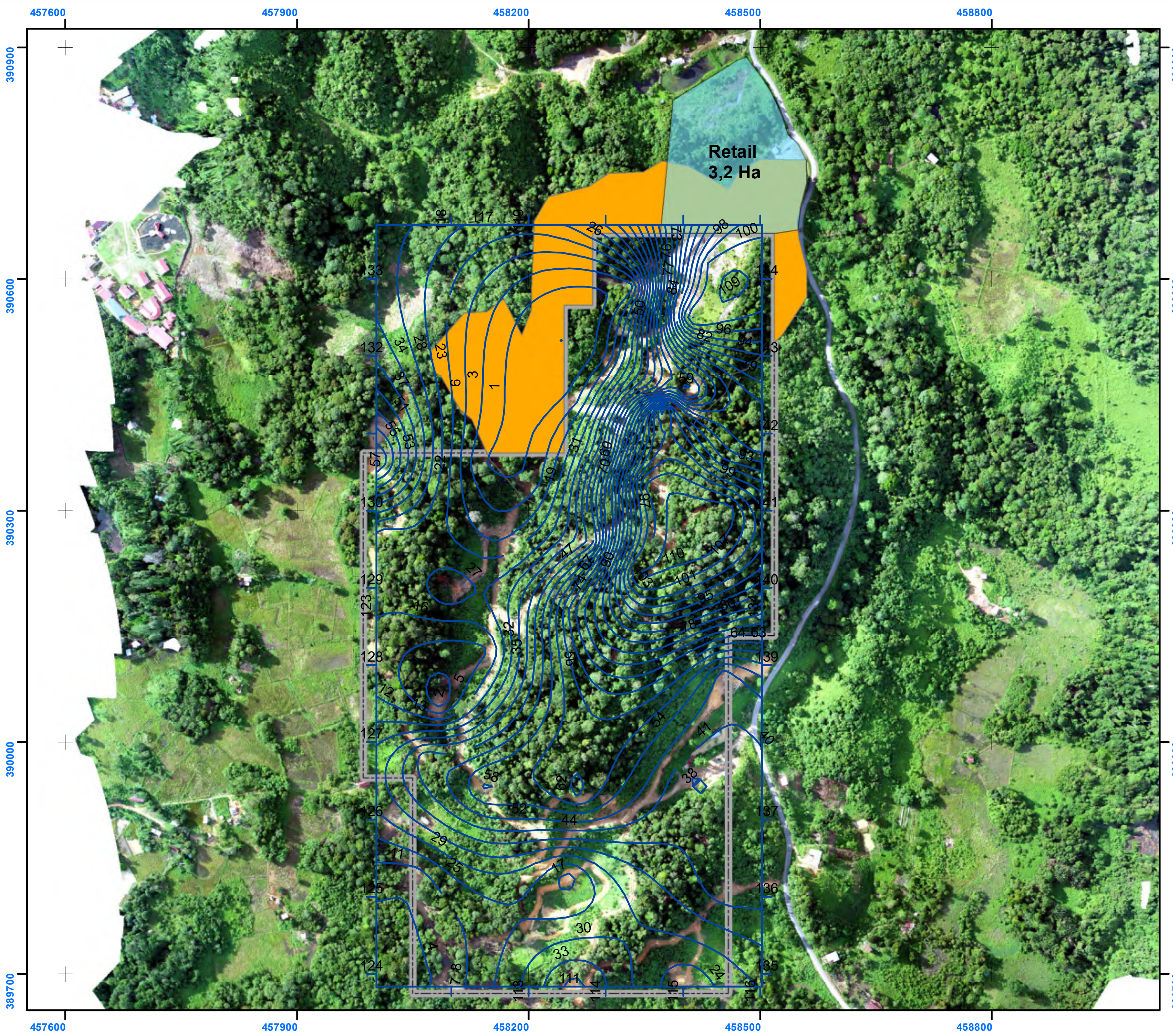
Hamzah Imanul Haq
GIS Operator

Approval by :

Ahmad Soffian
(Direktor KBK)

Data Resource : 1. North Kalimantan Provience Map
2. Indonesia Map
3. Drone RTK 4 dji
4. Google Earth 2020
5. GPS Tracking Malinau - Field Observation
6. Data Spatial - tanahair.indonesia.go.id

Note : This map depicts the boundaries
of PT Kaltara Batu construction IUP, Public facility points
and Land ownership



PT. KALTARA BATU KONSTRUKSI
MALINAU REGION
KALIMANTAN UTARA PROVINCE

Scale
1:6.000

Meters
0 30 60 120 180 240

Legend

Countur

Plan Retail

Lahan KBK

Luar IUP = 6.44 Ha

Dalam IUP = 7 Ha

IUP KBK

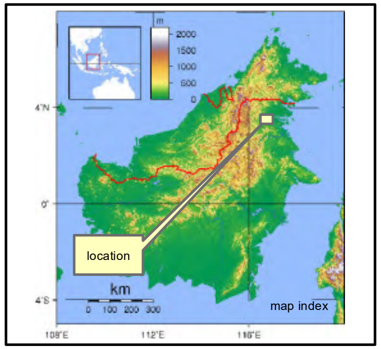
Orto Foto

RGB

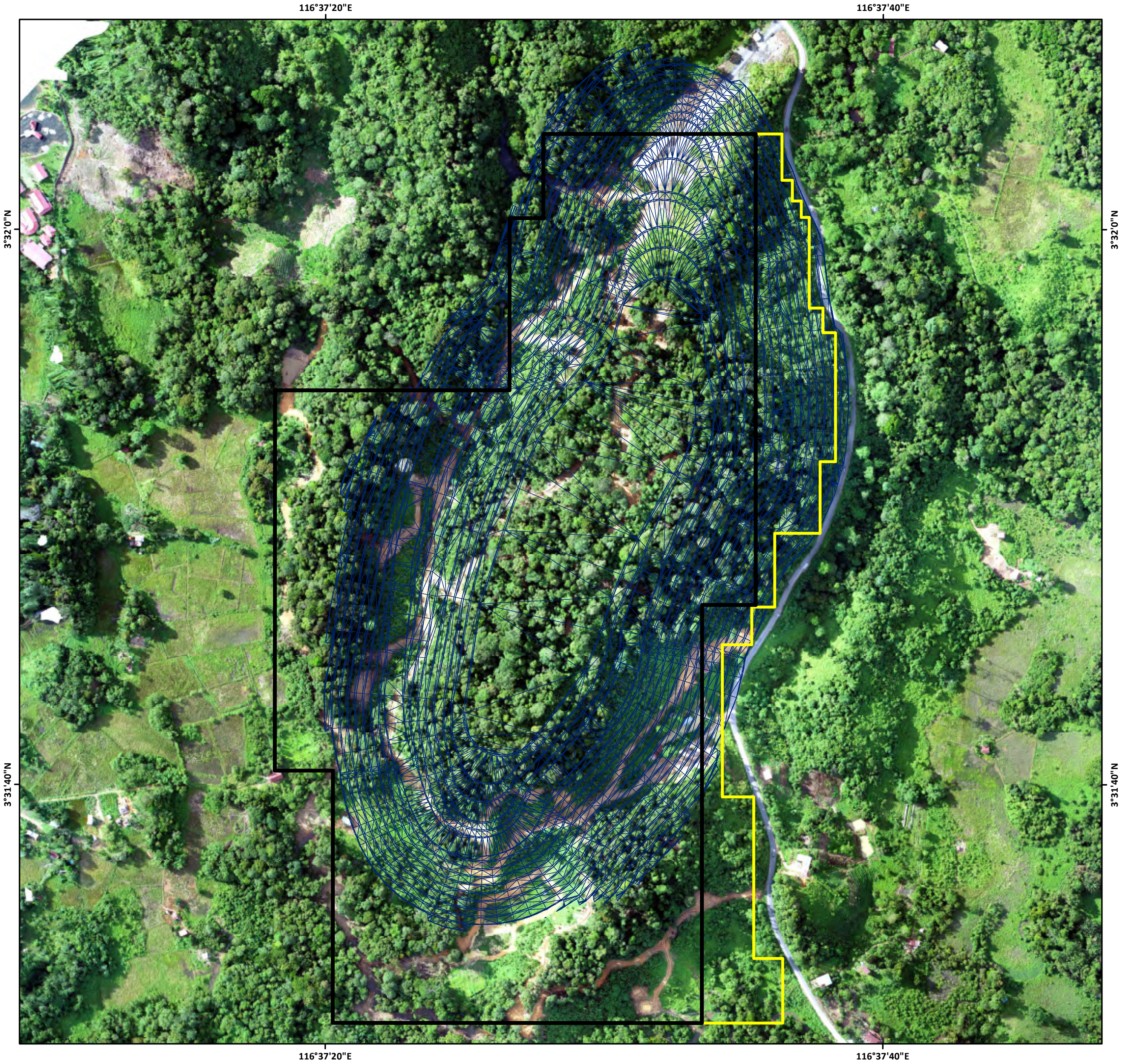
Red: Band_1

Green: Band_2

Blue: Band_3



Data source :
- Using the dji 4 pro RTK Drone
- Using geodetic GPS Reach rs2 emlid
- Processing data using agisoft metashape and arcgis
- Updateon Sept 10, 2021



PT KALTARA BATU KONSTRUKSI

PIT DESIGN KBK QUARRY
MALINAU REGENCY
NORTH KALIMANTAN PROVINCE

N

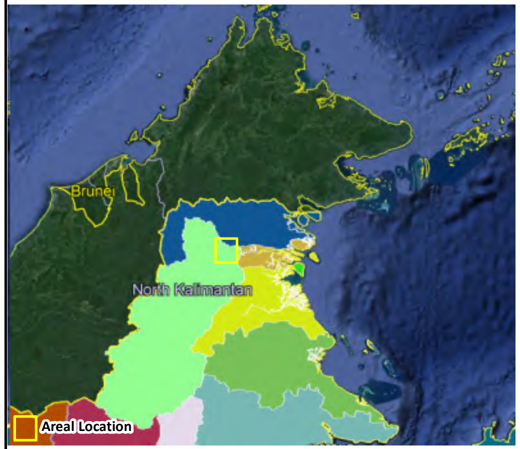
1:3,000
Projection : UTM
Zone : 50 N
Datum : WGS_1984
Format : Degrees Minutes Seconds

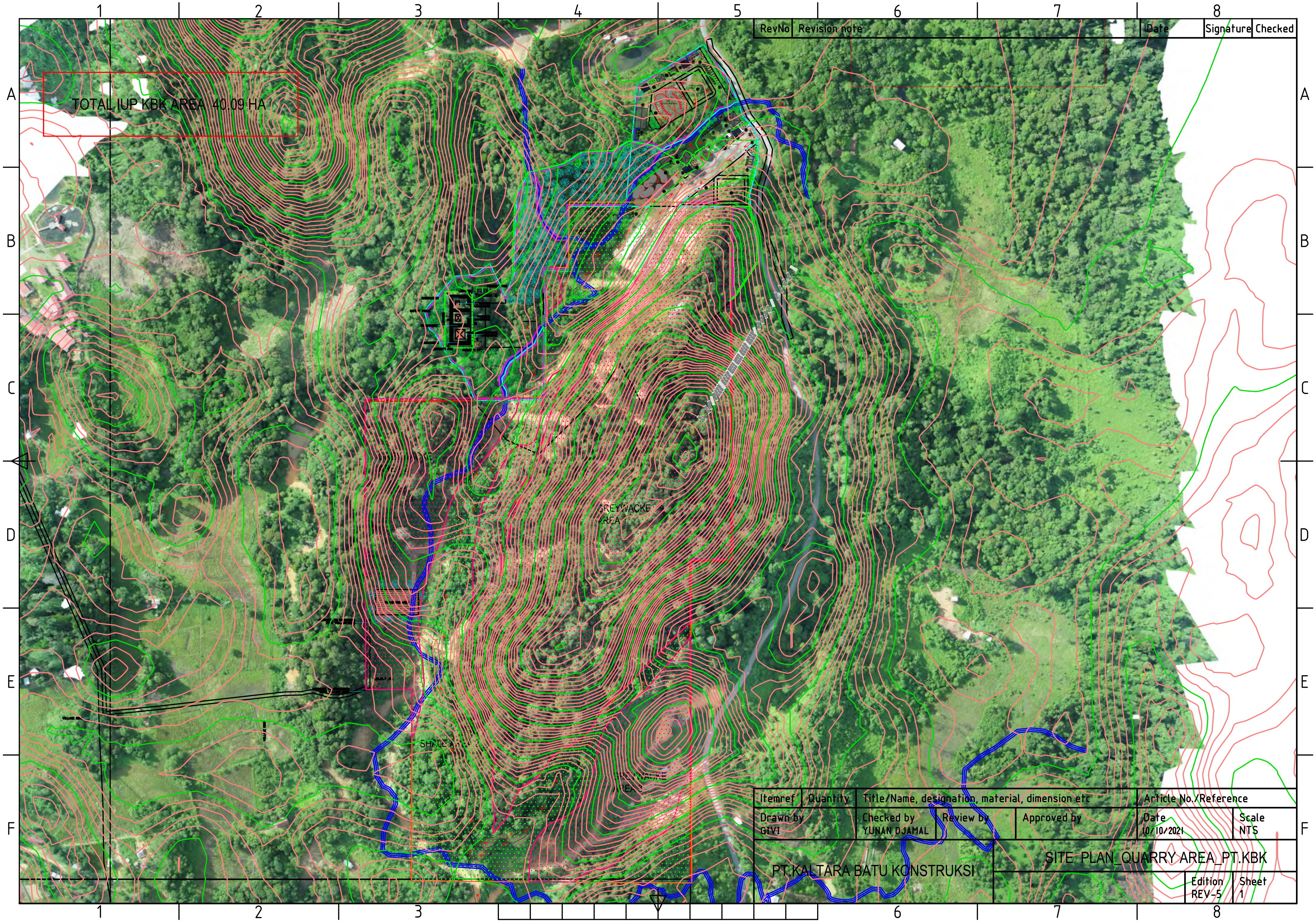
Legend :

- Point City
- River
- Regency Boundary
- PIT Design
- KBK Quarry : 40 Ha
- KBK Extended 5.4 Ha

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





RevNo
Revision note
Date
Signature
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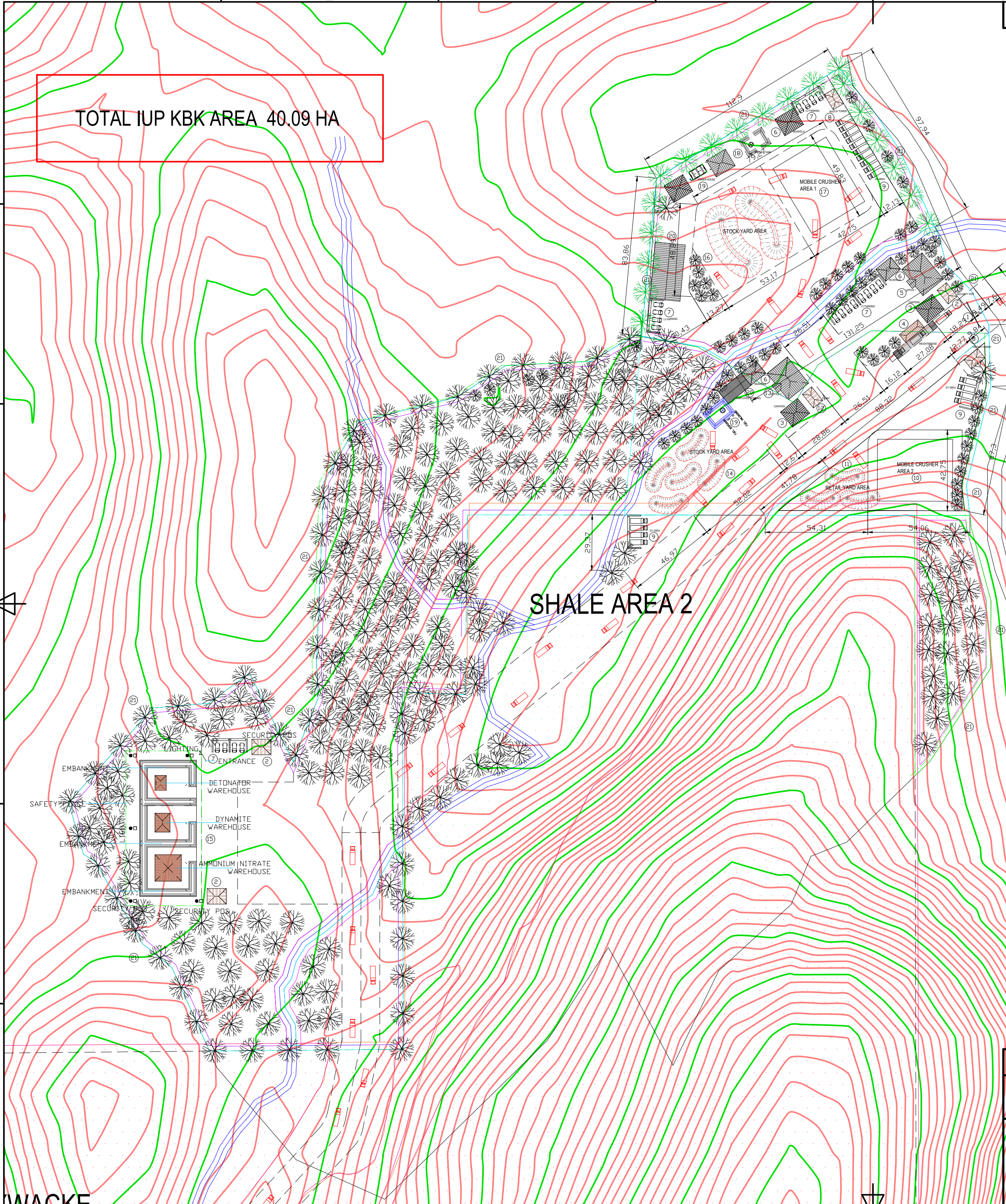
TOTAL IUP KBK AREA 40.09 HA
GREYWACKE
AREA 1
Itemref
Quantity
Title/Name, designation, material, dimension etc
Article No./Reference
Drawn by
GIVI
Checked by
YUNAN DJAMAL
Review by
Approved by
Date
10/10/2021
Scale
NTS
PT KALTARA BATU KONSTRUKSI
SITE PLAN QUARRY AREA PT.KBK
Edition
REV-5
Sheet
1

RevNo	Revision note	Date	Signature	Checked



SITE PLAN_QUARRY AREA_PT.KBK

BOUNDARY AREA COORDINATES

Zone : 50 N

NO	EASTING	NORTHING
1	458531.44	390796.39
2	458561.55	390758.47
3	458547.49	390676.90
4	458568.44	390587.60
5	458484.06	390483.72
6	458392.20	390364.98
7	458357.58	390428.31
8	458238.50	390296.25
9	458072.82	390505.77
10	458115.86	390555.23
11	458167.76	390574.45
12	458192.23	390528.42
13	458222.94	390703.66
14	458371.93	390755.91
15	458460.25	390717.30

HAULING ROAD INTERCONNECTION

NO	DESCRIPTION	WIDE	STRUCTURE
A.	INTERCONNECTION FROM KBK&IB3 TO HUB	25 M	SOIL AND STONE PAVEMENT
B.	INTERCONNECTION TO BDMS HAULING ROAD	25 M	SOIL AND STONE PAVEMENT
C.	WALK IN THE HUB AREA	25 M	SOIL AND STONE PAVEMENT OR CONCRETE BASE

HUB AREA FACILITIES

NO	DESCRIPTION	DIMENSION	STRUCTURE
1	PORTAL	15 M	PONDATION, PAD & ERECTION BEAM
2	SECURITY POST	9 X 6 M	PONDATION & WALL
3	CANTEEN	10 X 8 M	PONDATION & WALL
4	WEIGHT BRIDGE	CONDITIONAL	PONDATION & WALL
5	MAIN OFFICE	8 X 14 M	PONDATION & WALL
6	PRAYER ROOM / MOSQUE	10 X 8 M	PONDATION & WALL
7	LV PARKING	CONDITIONAL	CUT WORK & COMPACTING GROUND
8	WATCH TOWER	CONDITIONAL	PONDATION,PAD & ERECTION BEAM
9	DUMP TRUCK / HEAVY EQUIPMENT BASE PARKING AREA	CONDITIONAL	CUT WORK
10	MOBILE CRUSHER AREA 2	4407 M2	CUT WORK & COMPACTING GROUND
11	RETAIL YARD AREA 2	4407 M2	CUT WORK & COMPACTING GROUND
12	CLINIC	10 X 8 M	PONDATION & WALL
13	RETAIL & STAFF OFFICE	8 X 14 M	PONDATION & WALL
14	STOCKYARD & STOCKPILE AREA	CONDITIONAL	CUT WORK & COMPACTING GROUND
15	ECOBUST WAREHOUSE AREA	CONDITIONAL	PONDATION & WALL
16	STOCKYARD & STOCKPILE AREA	2511 M2	CUT WORK & COMPACTING GROUND
17	MOBILE CRUSHER AREA 1	2075 M2	CUT WORK & COMPACTING GROUND
18	FUEL TANK CAP. 20 KL	20 X 10 M	PONDATION, PAD & TANK
19	POWER HOUSE (SMALL SIZE) 2X@270Kva COMPLETE WITH OILTRAP	10 X 8 M	PONDATION & WALL
20	MESS/HOUSING/LAUNDRY	40 ft CONTAINER	TEMPORARY PONDATION & STRUCTURES
21	FENCE CONSTRUCTION	CONDITIONAL	PONDATION & WALL
22			
23			
24			
25			

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference

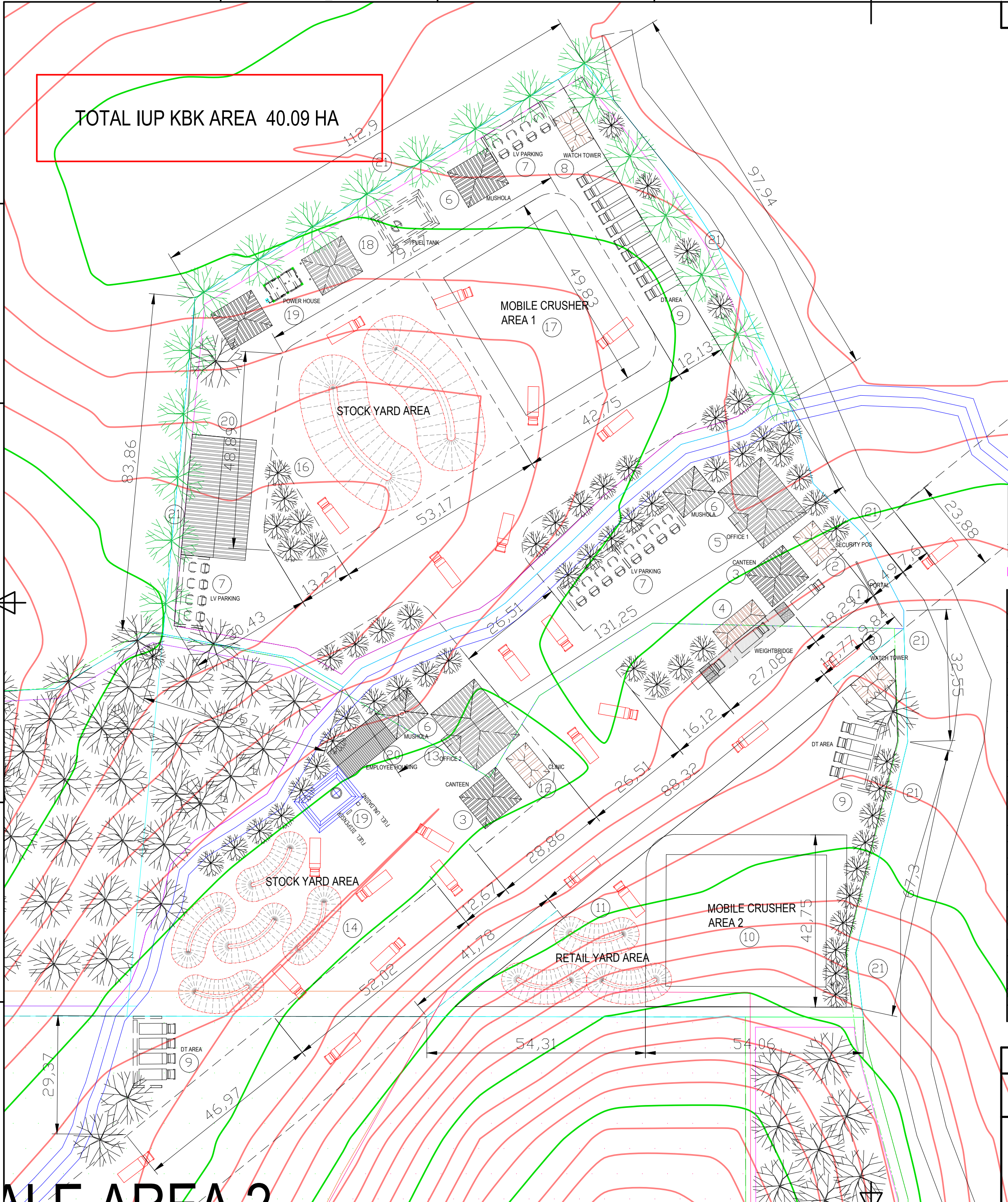
Drawn by	Checked by	Review by	Approved by	Date	Scale
GIVI	YUNAN DJAMAL			10/10/2021	NTS

PT.KALTARA BATU KONSTRUKSI

SITE PLAN_QUARRY AREA_PT.KBK

Edition	Sheet
REV-5	1

RevNo	Revision note	Date	Signature	Checked



SITE PLAN_QUARRY AREA_PT.KBK

BOUNDARY AREA COORDINATES

Zone : 50 N

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18	FUEL TANK CAP. 20 KL	20 X 10 M	PONDATION, PAD & TANK
19	POWER HOUSE (SMALL SIZE) 2X@270Kva COMPLETE WITH OILTRAP	10 X 8 M	PONDATION & WALL
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21	FENCE CONSTRUCTION	CONDITIONAL	PONDATION & WALL
22			
23			
24			
25			

Itemref	Quantity	Title/Name, designation, material, dimension etc			Article No./Reference	
Drawn by GIVI		Checked by YUNAN DJAMAL	Review by	Approved by	Date 10/10/2021	Scale NTS
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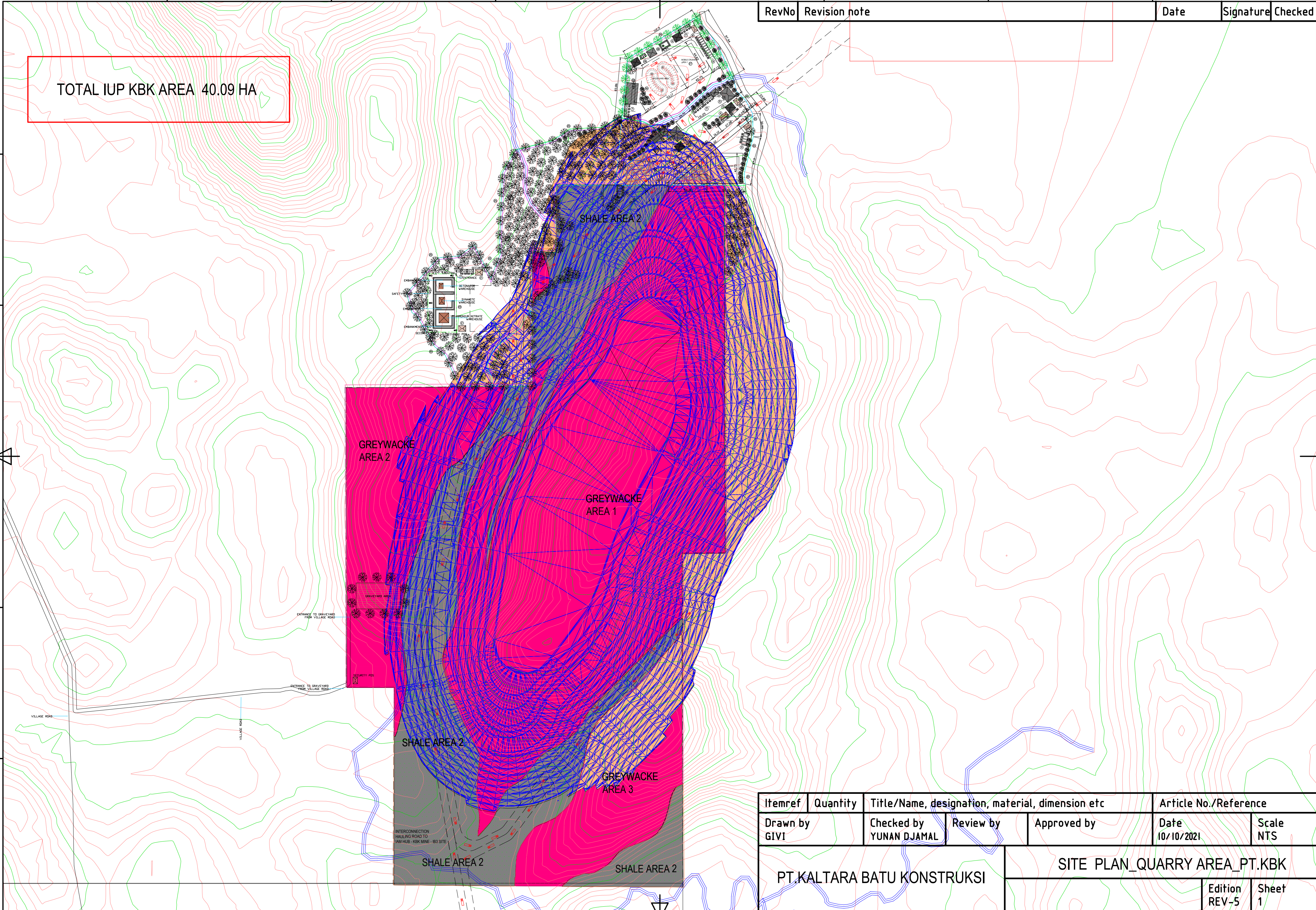
					Edition REV-5	Sheet 1



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Revision note
Date
Signature
Checked
TOTAL IUP KBK AREA 40.09 HA
SHALE AREA 2
GREYWACKE AREA 2
GREYWACKE AREA 1
ENTRANCE TO GRAVEYARD FROM VILLAGE ROAD
VILLAGE ROAD
SHALE AREA 2
GREYWACKE AREA 3
INTERCONNECTION HAULING ROAD TO IAM HUB - KBK MINE - IB3 SITE
SHALE AREA 2
SHALE AREA 2
Itemref
Quantity
Title/Name, designation, material, dimension etc
Article No./Reference
Drawn by GIVI
Checked by YUNAN DJAMAL
Review by
Approved by
Date 10/10/2021
Scale NTS
PT.KALTARA BATU KONSTRUKSI
SITE PLAN_QUARRY AREA_PT.KBK
Edition REV-5
Sheet 1

WARRIOR 140
POWER SCREE
TEREX PEGSON

APPENDIX

G STUDY DEFINITIONS

1 TECHNICAL MINING PROJECT STUDY DEFINITIONS

Table 1-1: Typical technical mining project study definitions

Technical Study	Definition
Feasibility Study	A comprehensive study of a mineral deposit in which all geological, engineering, legal, operating, economic, social, environmental and other relevant factors are considered in sufficient detail so that it could reasonably serve as the basis for a final decision by a financial institution to finance the development of the deposit for mineral production. For the avoidance of doubt, this would commonly ensure that the technical feasibility and economic viability of the mineral deposit has been demonstrated on a multi-disciplinary basis to what is commonly known as "bankable standards". In a Feasibility Study the declaration of Ore Reserves would be expected, and the economic viability of the mineral deposit could be demonstrated with sole reliance on the depletion of the Ore Reserves without inclusion of Mineral Resources. In parallel to the development of the Feasibility Study it is normally expected that an Environmental and Social Impact Study would have been completed. Typical contingencies included within the capital expenditure estimate range between 10% and 15% and accuracy ranges are typically ±15%.
Pre-Feasibility Study	A comprehensive study of the viability of a mineral project that has advanced to a stage where the mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, has been established and an effective method of mineral processing has been determined, and includes a financial analysis based on reasonable assumptions of technical, engineering, legal, operating, economic, social, and environmental factors and the evaluation of other relevant factors which are sufficient for a qualified person, acting reasonably, to determine if all or part of the Mineral Resource may be classified as an Ore Reserve. For the avoidance of doubt this would commonly ensure that the technical feasibility and economic viability of the mineral project has been demonstrated on a multi-disciplinary basis to PFS levels and accordingly the declaration of Ore Reserves would be expected. SRK notes that such studies are not normally dependent on Inferred Mineral Resources to demonstrate economic viability and generally include appropriate contingencies (± 20% to 25%) with respect to capital expenditures to account for the lower amount of site specific engineering designs completed compared to that normally included in a Feasibility Study. Furthermore, it is also general industry practice to acknowledge that such studies in reflecting a lower degree of accuracy are accompanied by higher accuracy/sensitivity ranges (in the range ±20-35%). Key deliverables of a Pre-Feasibility Study would include a recommendation of a single and sufficiently positive technical and economic outcome such that advancement to Feasibility-Study level is warranted.
Scoping study	A study that includes an economic analysis of the potential viability of mineral resources taken at an early stage of the project prior to the completion of a PFS. A Scoping Study may be based on Measured, Indicated, or Inferred Mineral resources or a combination of any of these and include disclosure of forecast mine production rates and may contain capital costs to develop and sustain the mining operation, operating costs. For the avoidance of doubt a Scoping Study would seek to establish the mining method and process route to establish the nature and scale of the mineral project. A Scoping Study would have limited site-specific data in respect of key operating assumptions and would only address certain disciplines on a high-level fatal flaw basis. Both the contingency (>30%) and accuracy/sensitivity (in the range ±40-50%) associated with key assumptions are generally higher than that assumed for PFSs. Key deliverables of a Scoping Study would include the determination of sufficiently positive technical and economic outcomes such that advancement to PFS level is warranted. A Scoping Study is preliminary in nature, in that it generally includes Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Ore Reserves, and there is no certainty that the technical and economic aspects presented will be realised.

For defining Cost Accuracy / Estimate Classes, the range of technical studies can be largely grouped in accordance with the following key criteria:

- classification of Mineral Resources;
- the overall study objectives;
- the availability of and reliance on site specific technical information;
- the degree of engineering completed, measured by reference to percent complete;
- design basis and cost estimation methodology;
- cost estimation accuracy for both capital and operating expenditures;
- the level of contingency deemed applicable.

Table 1-2 below presents a detailed summary of the range of technical studies and the expected level of detail to support such studies and to achieve the cost accuracy range.

Cost estimates are categories as follows with the classes of estimates generally aligned to the AusIMM Mining Handbook and comparable to the American Association of Cost Engineers (“AACE”) “Class 1-5” approach.

Table 1-2: Technical study: envisaged or target criteria status edited for the project

Estimate class	***Scoping / Concept Study***	***Prefeasibility Study***	***Bankable Feasibility Study***	***Project execution / Definitive Estimate***
Estimate Class	**Class 5**	**Class 4**	**Class 3**	**Class 2**
Level of Definition (Expressed as percentage of complete engineering using appropriate indicators i.e. % of EPCM, % of Engineering Cost	0% to 2% of full project engineering definition	5% to 15% of full project engineering definition	15% to 40% of full project engineering definition	40% to 60% of full project definition being completed with minimum 60% engineering completed, minimum 40% procurement by value fixed by quotation and minimum 10% construction fixed by quotation or tender.
Typical Accuracy Range (*may vary for different reporting code) Dependent on project scope and sensitivity to specific areas.	+/- 40 to +/- 50%	+/-20 to **+/-**35**%** (dependent on project scope)	+/-10 to +/-15%	+/-5% to +/-10%
Quotations / Tenders - Supporting the Estimates	None – Benchmark Data from other projects and operations. E.g. cost unit rates are based on analogues such as in-house data, benchmarks and data gathered on previous assessments and commercially available estimating databases. Costing will be based on cost per distance (USD/km) quantities from linear measurements made during the technical evaluation.	Equipment budget quotes and benchmark material supply and construction rates. Mine contracts factorised from existing arrangements with preliminary negotiations as to the likely difference	Multiple firm and budgetary equipment quotes. Multiple material supply and construction quotes and rates checked. Mine supply contracts negotiated to binding heads of agreement or near final agreements specific to the business case.	Equipment on order, tendered or firm quotes available. Tenders for equipment, material, supply and construction costs. Some contracts awarded. Completed and executed mine, rail and port contracts specific to the project.
A CAPITAL COST ESTIMATE METHODOLOGY				
A1 Mining				
A1.1 - Mineral Resource Classification	Indicated and Inferred	Indicated and Inferred	Measured, Indicated and Inferred	Measured, Indicated and Inferred
A1.4 – Site Layout	Sketch	Preliminary	Defined – Generally optimized	Complete
A1.5 – Mine Design Criteria	Assumed or Started	Preliminary	Defined – Generally optimized	Defined for year 1 and complete thereafter
A1.6 Waste Dump Design Crit.	Assumed or Started	Preliminary	Defined – Generally optimized	Defined for year 1 and complete thereafter
A1.7 - Mine Schedule	Assumed	Approximated	Optimized or Prelim. - Matched to Fleet	Defined for year 1 and complete thereafter
A1.8 - Mine Schedule	Assumed	Approximated	Optimized or Preliminary - Matched to Fleet	Defined for year 1 and Complete thereafter
A1.9 - Mine Equipment	None or Assessed	Budget Priced	Calculated or Detailed	Final – Quoted Specifically
A1.10 – Mine Services	Assessed	Budget Price – Sketch designed	Calculated or Detailed – full outlines	Final

Estimate class	*Scoping / Concept Study*	*Prefeasibility Study*	*Bankable Feasibility Study*	*Project execution / Definitive Estimate*
Estimate Class	**Class 5**	**Class 4**	**Class 3**	**Class 2**
A2 Plant and Infrastructure (will vary for different types of infrastructure)				
A2.1 – Equipment Quotes	None or Factorized	Budget Prices – single check price and / or factored from recent and appropriate firm quotes or as-built costs	Detailed – Multiple quotes	Final on Prices – firm
A2.2 - Civil / Structural / earthworks	Assessed (cost per km based on benchmarks)	Budget Priced – Take-off sketch, or benchmark or factored from equipment. Some site-specific geotechnical information is required.	Calculated or Detailed – MTO & multiple quotes for supply costs, benchmarked hours to install	Final – Tender or Contract Prices
A2.3 – Mechanical / Piping	Assessed - % of key equipment	Budget Priced – Mix of MTOs and factors.	Calculated or Detailed – MTO & multiple quotes – Benchmarked to similar plus hours to install data. Small bore piping may be factorized	Final – Tender or Contract Prices
A2.4 – Electrical / instruments	Assessed – Cost per kw or Calculate as % of total direct costs	Mixture of calculation for major equipment and factoring for minor equipment based on direct costs.	Calculated – LTO & Hours with benchmarked or budget quotes	Final – estimates or Tender Prices
A2.5 – Information Systems / Control Systems	Calculate as % of total direct costs	Calculate % of total direct costs	Calculated – Mix of calculated and multiple quotes	Detailed Tender or Contract Prices
A3 Indirect Costs:				
A3.2 - Construction Support	Calculated as % or direct costs	Calculated as % of direct costs	Calculated	Detailed or Final – Tender or Contract Price
A3.3 – EPCM Services	Calculated as % of direct costs	Calculated as % or direct costs, checked to benchmarks	Calculated in detail – Benchmarks used to verify	Detailed or Final – Tender or Contract Price
A3.4 – Contractor Risk and Profit Margins	Part of 5 – ECPM costs	As an all up % of the EPCM services costs or the applicable contract values for EPC	As a % for risk and as % for profit of the applicable contract values	As actual amounts for risk and profit margins for each applicable EPCM or EPC contract
A4 Owners Costs				
A4.1 – Contingency (final scenario) Basis Minimum Other	Assessed or Factorized for overall project. 25% to 35% of total costs. Add up to 5% for project in existing operation. Add up to 5% for new or novel technology or underground projects	Calculated or Detailed – area 15% to 25% of total costs. Add up to 5% for project in existing operation. Add up to 5% for new or novel technology or underground projects	Detailed – by trade and area 10% to 15% of total costs. Add up to 5% for project in existing operation. Add up to 5% for new or novel technology or underground projects	Final – by trade and area 5% to 10% of total costs. Add up to 5% for project in existing operation. Add up to 5% for new or novel technology or underground projects.

1.1 Responsibility Matrix

The ToR has been broken down into separate work items (authoring roles) and responsibilities for SRK, the third party companies and Client as delegated in the Responsibility Matrix (Table 1-3).

Table 1-3: Responsibility Matrix

	Scope of Work Responsibility		
Feasibility Study Item	SRK	Client	Third Party Consultant
Study management & control			
Geological Block Model			
Structural geology			
Resource geology			
Mineral Resource statement (JORC)			
Hydrology			
Hydrogeology			
Geochemistry			
Geotechnical engineering (mining)			
Geotechnical engineering (civil)			
Open Pit Optimisation			
Mine Design			
Mine Schedule			
Mine Equipment			
Mine Electrical			
Materials handling (open pit)			
Materials handling (surface)			
Mineral processing and flow sheet design			
Process plant design			
Surface Waste Management Facility(s)			
Tailings Management Facility(s)			
Access roads and transportation routes			
Site layout			
Utilities supply and distribution (power)			
River diversion design			
Water balance (mine)			
Water balance (process and overall)			
Site infrastructure and logistics			
Labour			
Construction planning (above ground)			
Environmental & Social (ESIA) and Permitting			
Capital and Operating cost estimate (mine)			
Capital and Operating cost estimate (surface facilities)			
Closure Planning and Cost Estimate			
Marketing study			
Economic Modelling			
Ore Reserve statement (JORC)			
Adjacent Properties			
Risk Assessment			
Preparation of complete Pre-Feasibility Study Report			

APPENDIX

H MINE STUDY AND PIT OPTIMISATION

SRK Consulting (UK) Limited
5th Floor Churchill House
17 Churchill Way
Cardiff CF10 2HH
Wales, United Kingdom
E-mail: enquiries@srk.co.uk
URL: www.srk.com
Tel: + 44 (0) 2920 348 150

External Memorandum

To:	Mr Josh Sleiman; Soffian Ahmad;	**From:**	Dean McMinn
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.

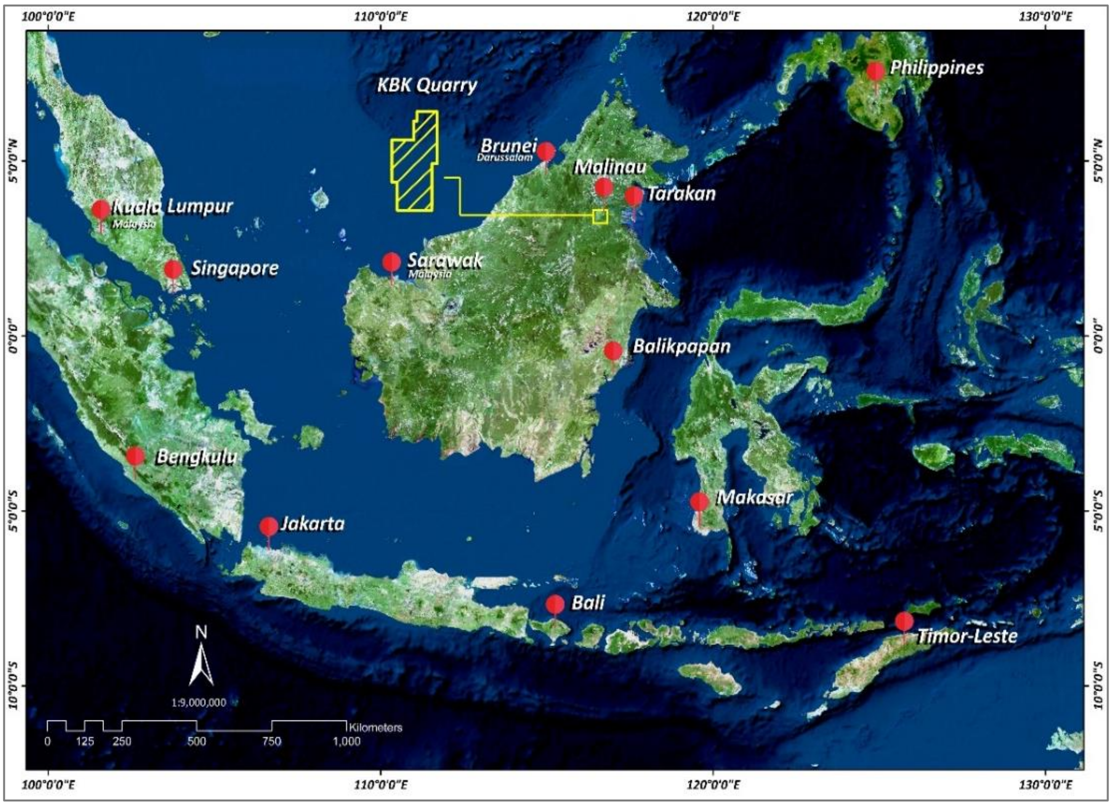


Figure 2-1: General Location Map (source: PT KBK Sept 2021)

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.

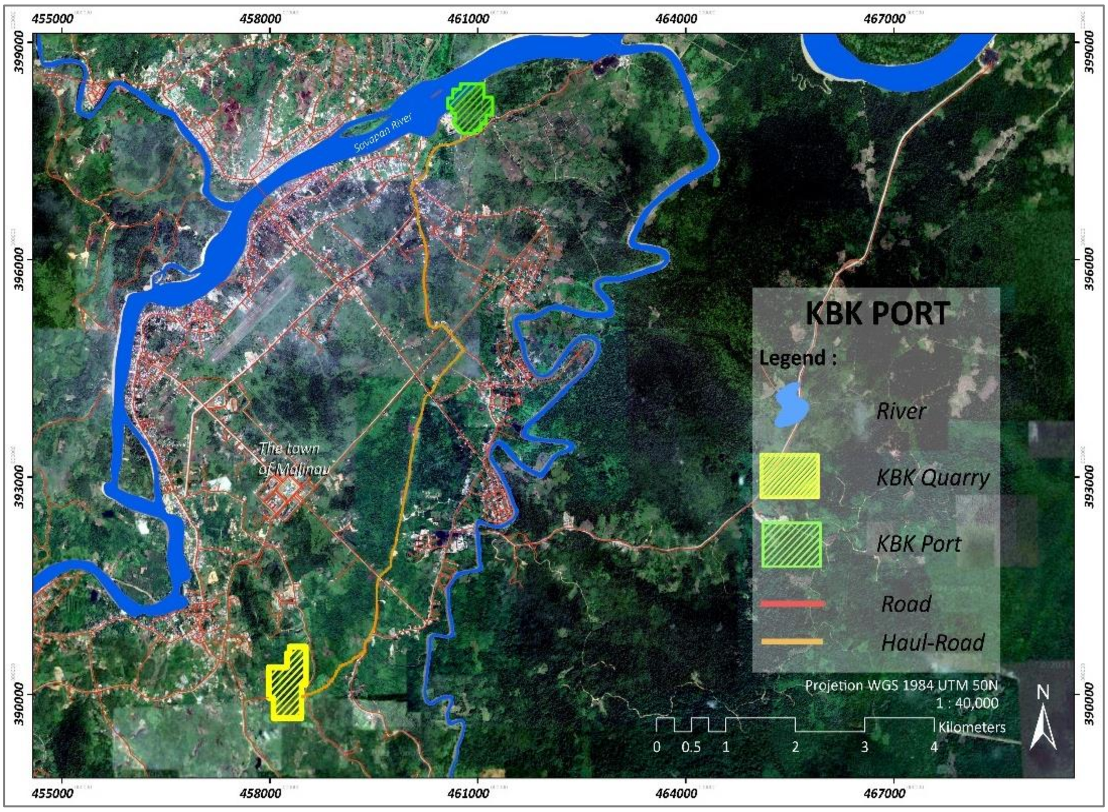


Figure 2-2: KBK River Port (green), existing roads (red) and KBK location (yellow)

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.

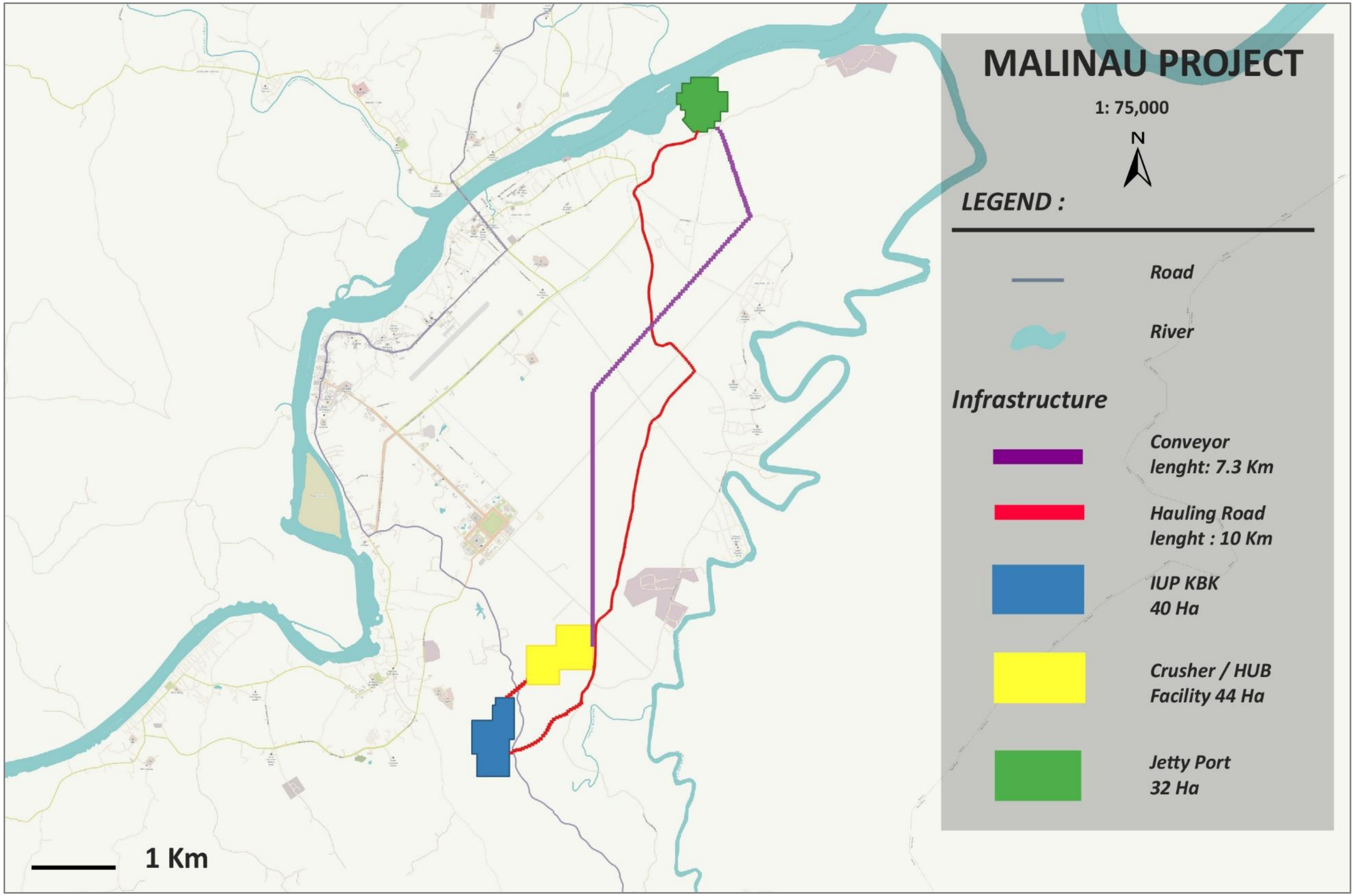


Figure 3-1: General Layout and Location of Key Existing and Proposed Infrastructure Locations (source: PT KBK Sept 2021)

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).

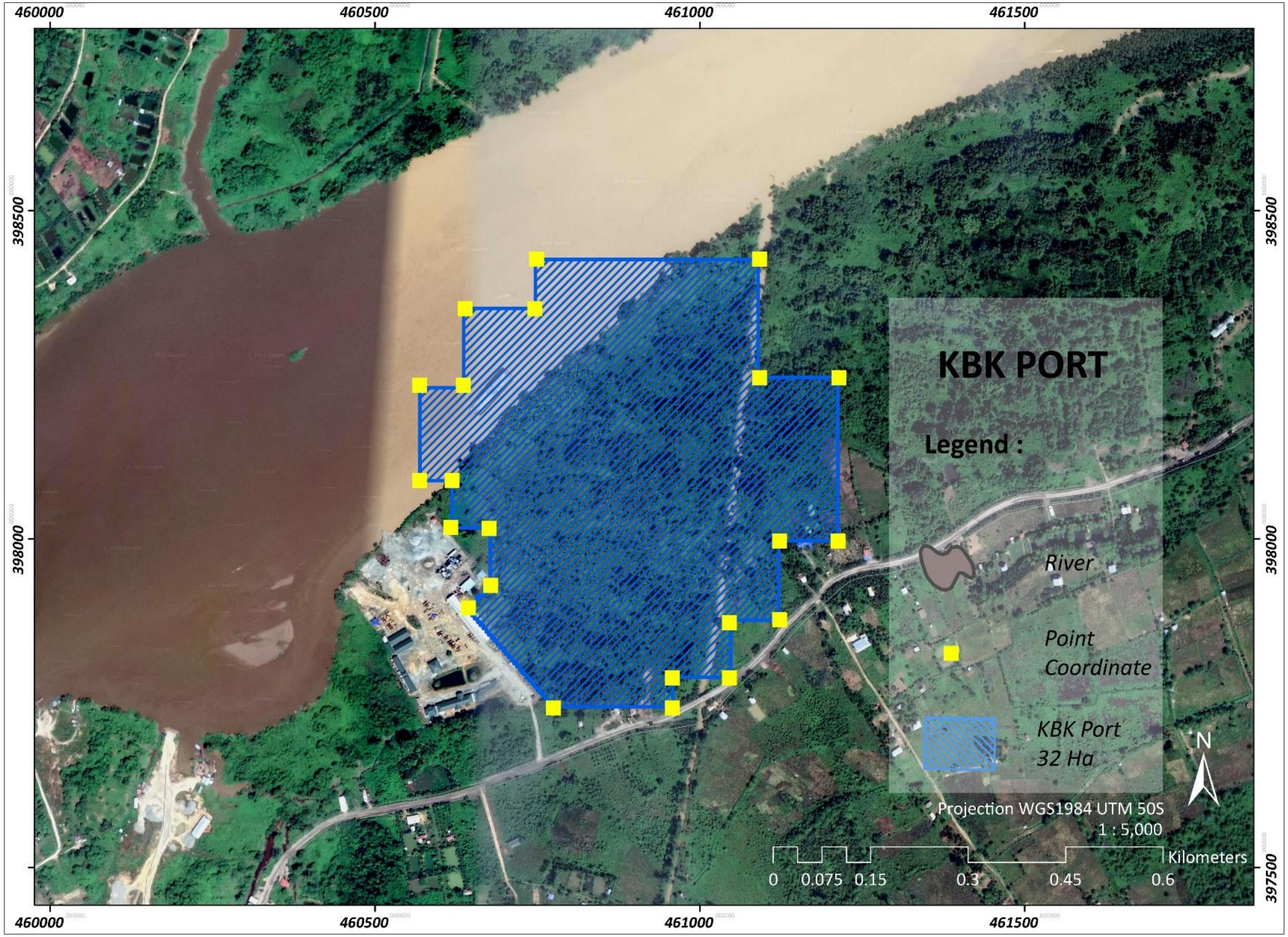


Figure 3-3: PT. KBK (yellow outline) and existing surrounding infrastructure (Source: PT KBK, October 2021)

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.

Rock Aggregate: Armour Stone (100-500kg/Block)
(Price: USD 31.69/Ton, Capacity: up to 3 million ton/Year)

This type of stone is often referred to as the boulder stone. Armour stone is a type of split stone that has the largest size compared to other types of split stone. Armour stone serves to hoard land or locations close to the beach. This Armour stone is usually used to make concrete breakwater, beach reclamation material, material for making small piers or most commonly used for building foundation materials.

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.

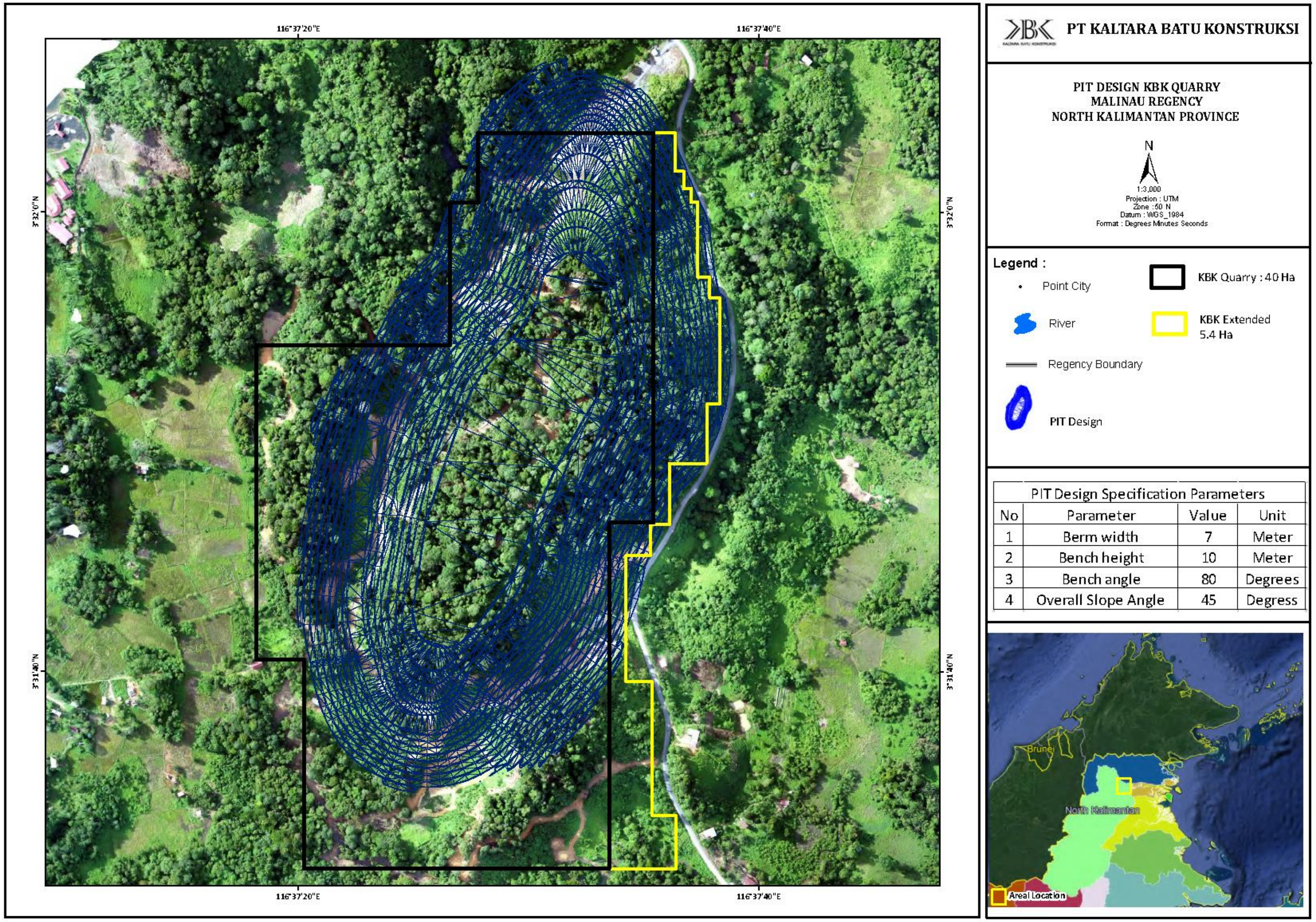


Figure 4-2: Permit outline (black polygon) draped to Landsat Image on main Area of Interest at KBK showing optimised pit shell outline (blue contours), with expansion area showing (yellow) to be applied for in 2025 (Source: PT KBK Sept 2021)

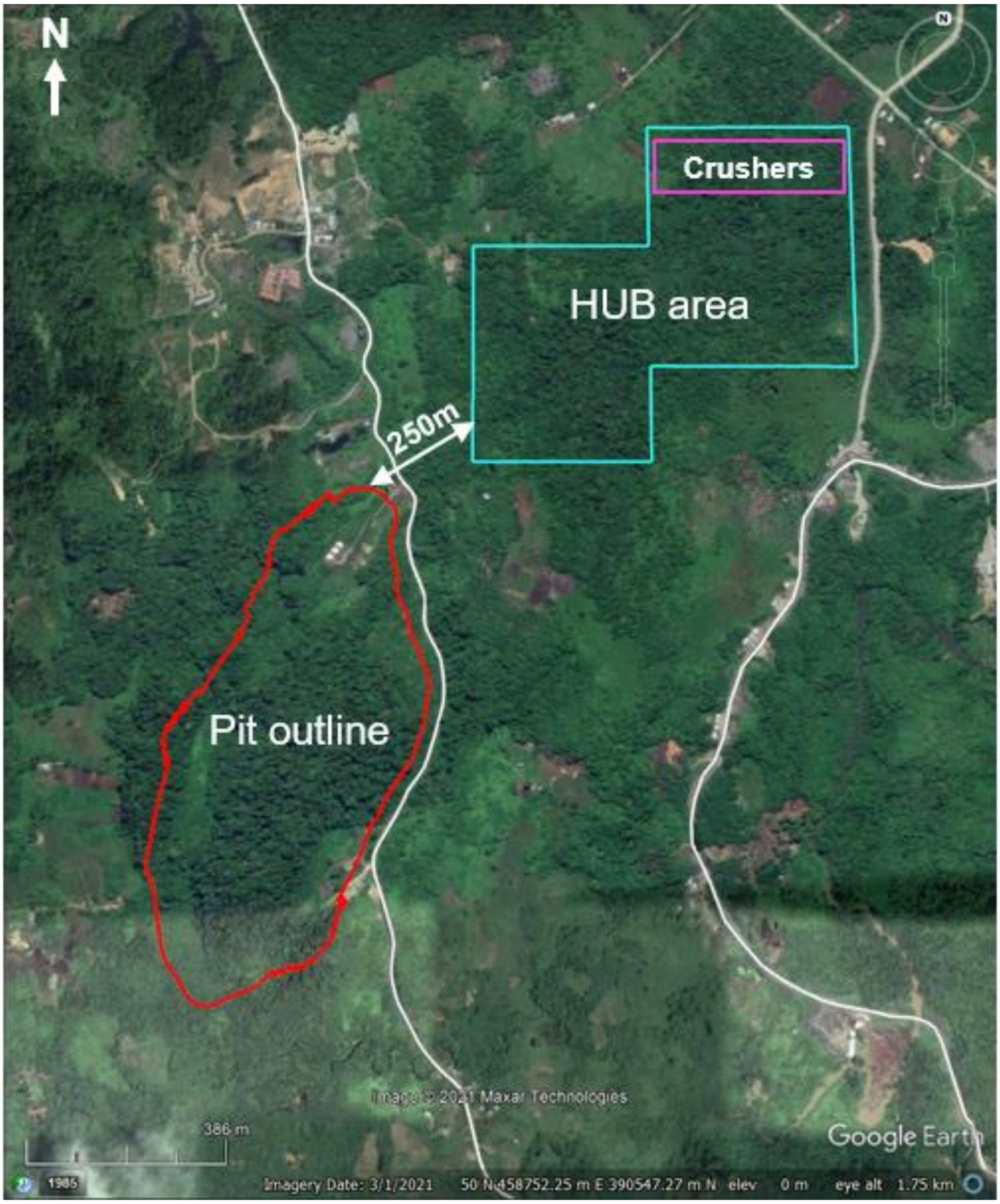


Figure 4-3: General Layout Pit outline and HUB area with proposed crushing area (source: SRK September 2021)

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.

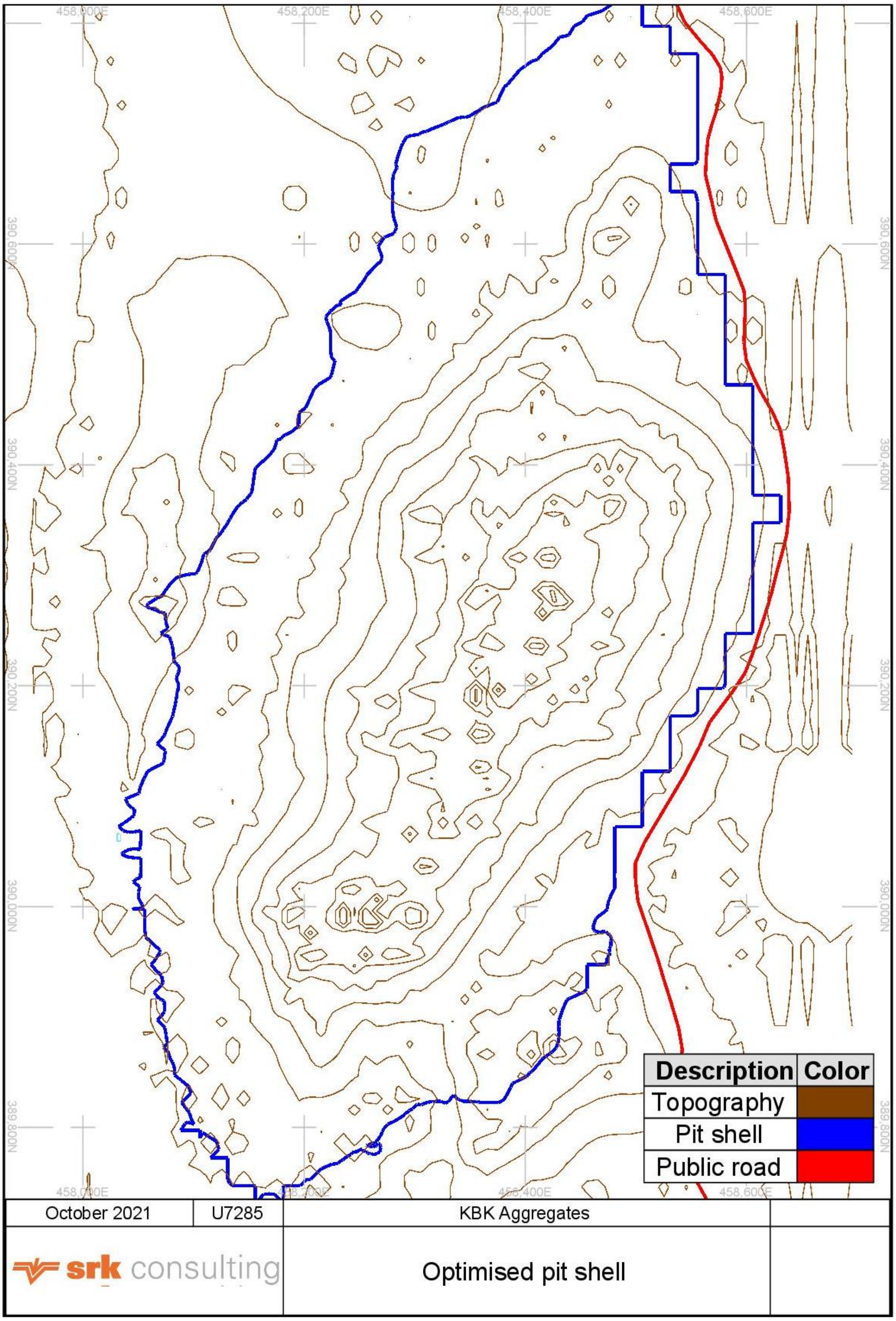


Figure 5-1: Optimised Pit shell showing the 20m offset from the existing public road

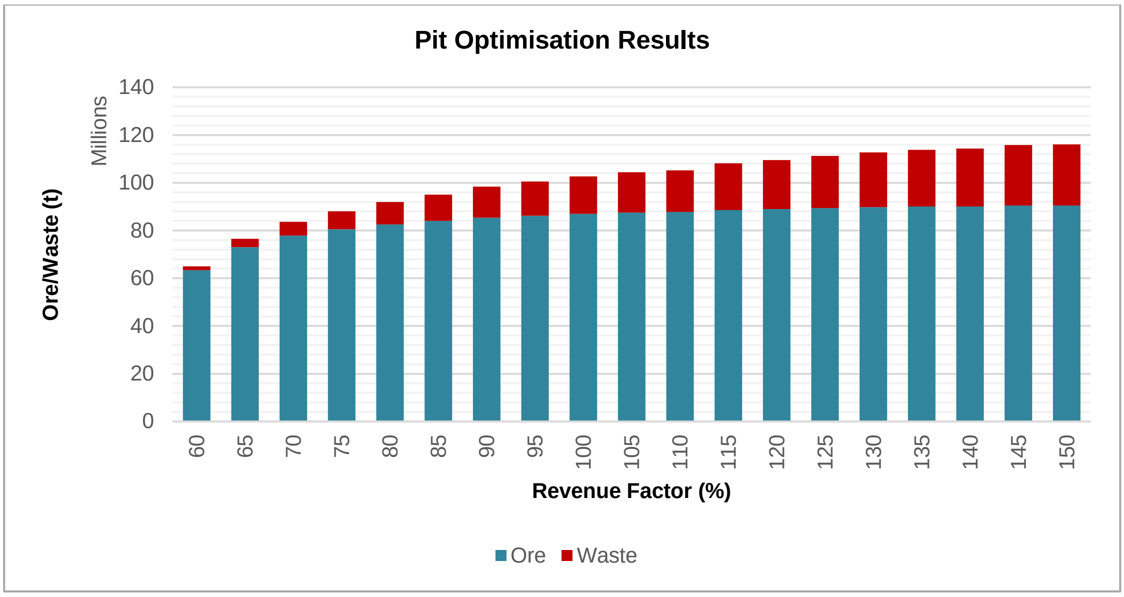


Figure 5-2: Pit Optimisation Results for Ore and Waste

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.

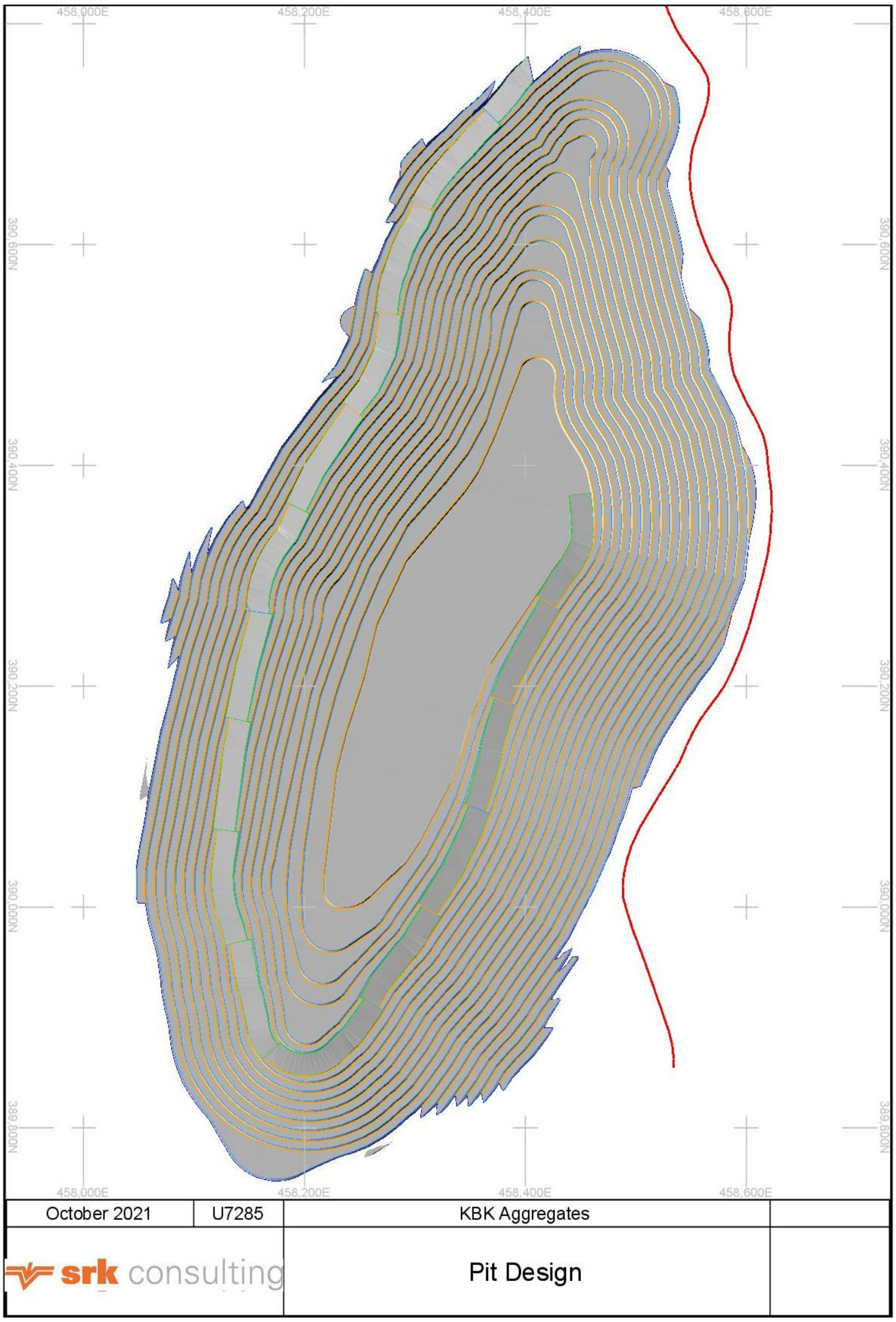


Figure 6-1: Proposed Pit Design with exit ramp to the north of the permit

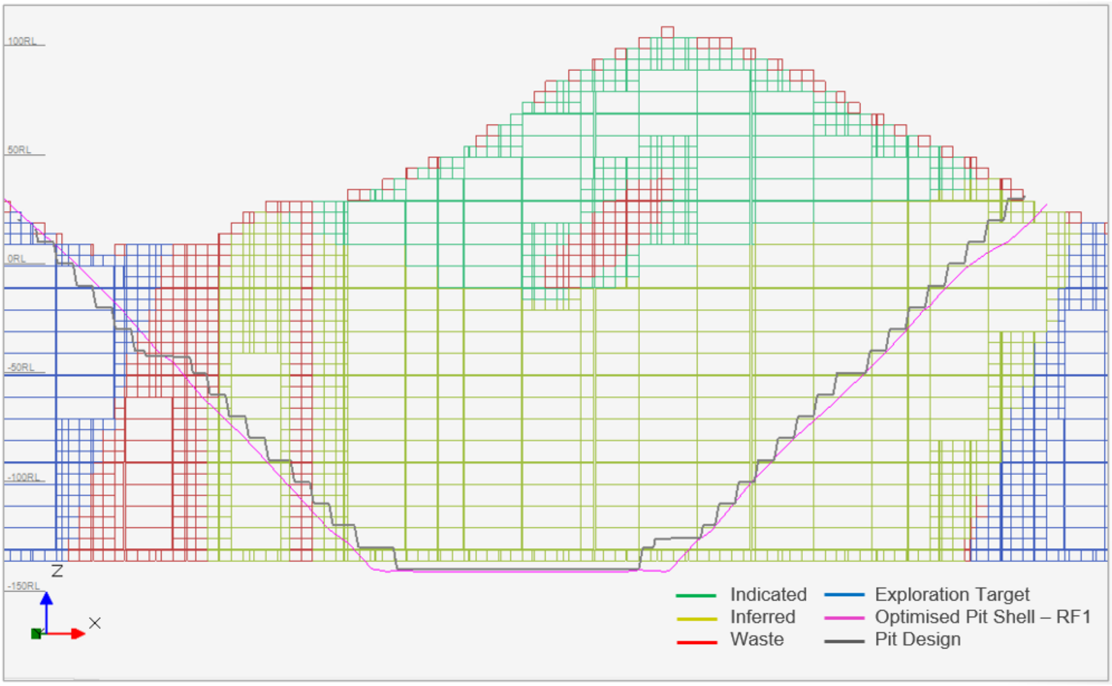


Figure 6-2: Pit Design and Pit Shell Cross-Section

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 (%)	Loadi ng 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.

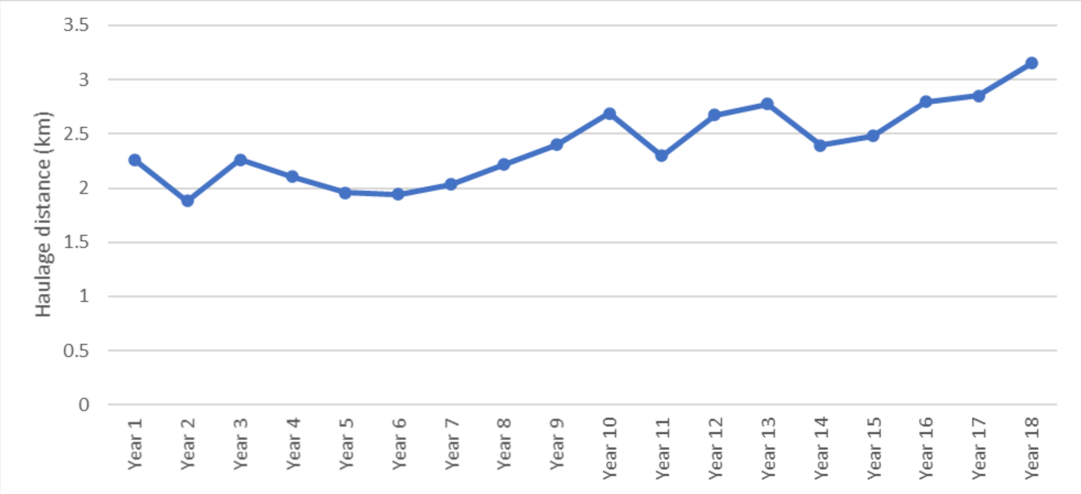


Figure 6-3: Haulage Distance (one-way)

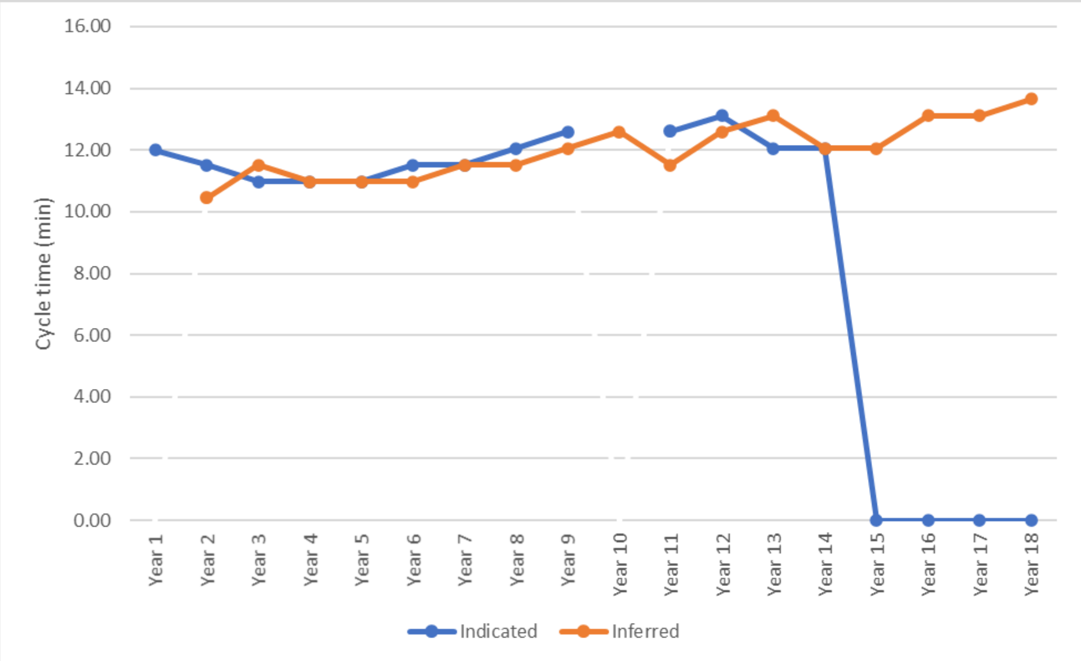


Figure 6-4: Estimated Cycle Times

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**

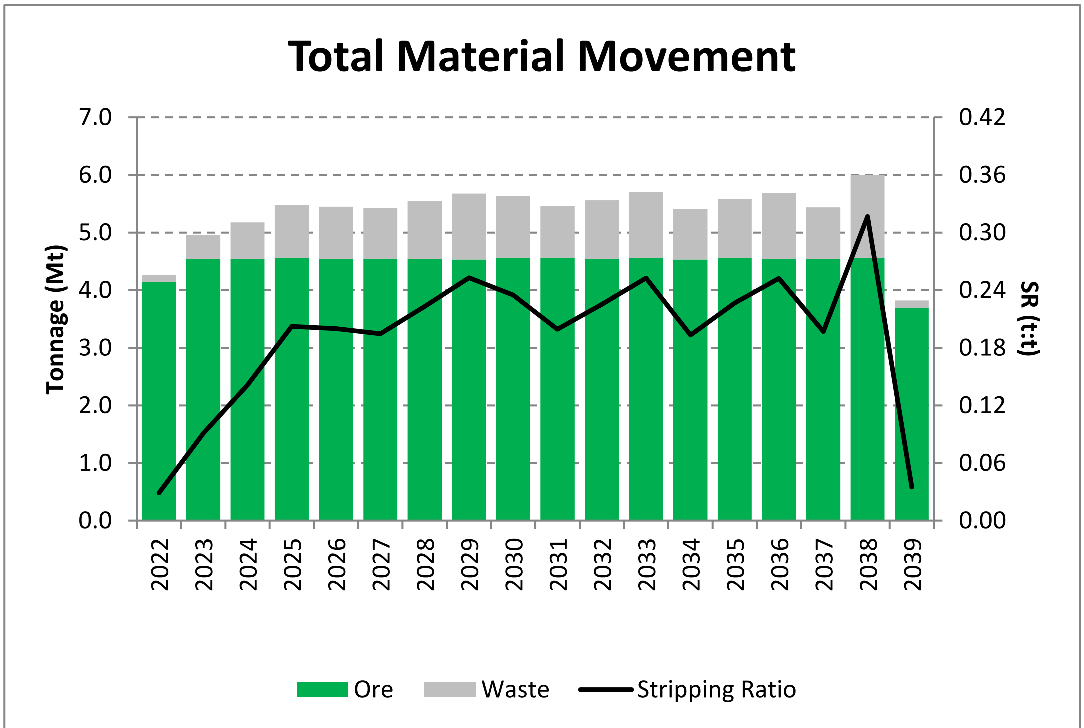


Figure 7-1: LoM Material Movement

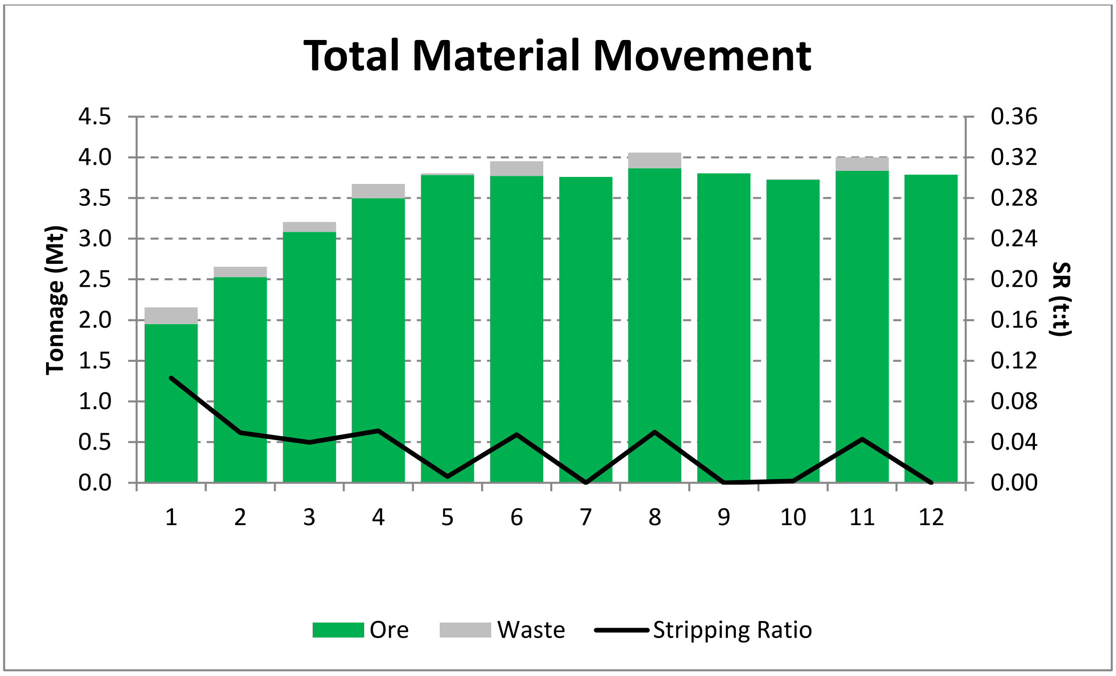


Figure 7-2: Year 1 Material Movement

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.

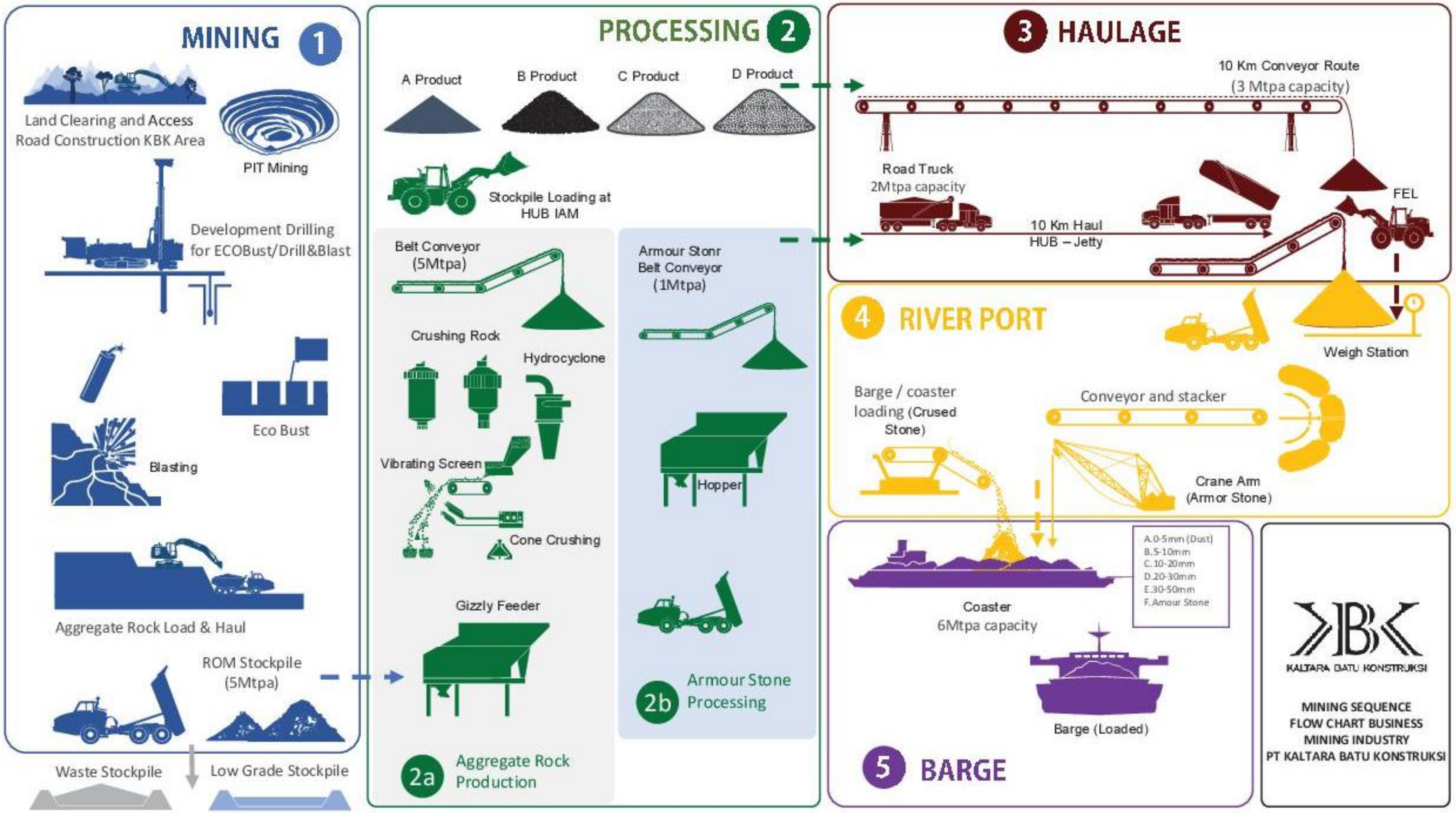
For and on behalf of SRK Consulting (UK) Limited

Dean McMinn,
Senior Consultant
(Mining Geology / Mineral Economics),
SRK Consulting (KZ) Limited

Filip Orzechowski,
Senior Consultant
(Mining Engineering)
SRK Consulting (UK) Limited

APPENDIX A

A. Proposed Mining Sequence - Flow chart


MINING 1
Land Clearing and Access
Road Construction KBK Area
PIT Mining
Development Drilling
for ECOBust/Drill&Blast
Eco Bust
Blasting
Aggregate Rock Load & Haul
ROM Stockpile
(5Mtpa)
Waste Stockpile
Low Grade Stockpile
PROCESSING 2
A Product
B Product
C Product
D Product
Stockpile Loading at
HUB IAM
Belt Conveyor
(5Mtpa)
Crushing Rock
Hydrocyclone
Vibrating Screen
Cone Crushing
Gizzly Feeder
2a Aggregate Rock
Production
Armour Stonr
Belt Conveyor
(1Mtpa)
Hopper
2b Armour Stone
Processing
3 HAULAGE
10 Km Conveyor Route
(3 Mtpa capacity)
Road Truck
2Mtpa capacity
10 Km Haul
HUB – Jetty
FEL
4 RIVER PORT
Weigh Station
Barge / coaster
loading (Crused
Stone)
Conveyor and stacker
Crane Arm
(Armor Stone)
A.0-5mm (Dust)
B.5-10mm
C.10-20mm
D.20-30mm
E.30-50mm
F.Amour Stone
Coaster
6Mtpa capacity
Barge (Loaded)
5 BARGE
KBK
KALTARA BATU KONSTRUKSI
MINING SEQUENCE
FLOW CHART BUSINESS
MINING INDUSTRY
PT KALTARA BATU KONSTRUKSI

APPENDIX - B

B. Examples of Nonexplosive Products


WHAT IS ECOBUST ?
ECOBUST is an Expansive Demolition Agent for safely breaking rock or concrete without the use of explosives or jack hammering!
ECOBUST is the fastest, most powerful & economical non explosive agent of its kind. It is eco-friendly, reliable and completely silent.
ECOBUST is made of a powdered mixture that when mixed with cold water and poured into pre-drilled holes, has an incredible 20,000 PSI expansive power.
ECOBUST saves time and increases safety.
Rock & Concrete Breaking in 3 Easy Steps
1 drill
2 mix
3 pour
44 Lbs fills 35 linear feet of 1.5" diameter hole
www.ecobust.com
ECOBUST
NATURALLY INNOVATIVE
EASY TO USE, SAFE, NON-EXPLOSIVE
NO DUST, NO NOISE, NO VIBRATION
REDUCES COSTS & SAVES TIME
www.ecobust.com
WWW.ECOBUST.COM
THE MOST POWERFUL & ECO-FRIENDLY DEMOLITION SOLUTION

ECOBUST

NATURALLY INNOVATIVE

DRILL GUIDE

READ THE DRILL GUIDE AND FOLLOW INSTRUCTIONS IN THE USER GUIDE AND SAFETY GUIDE.

Drill Guide	CONCRETE (Mass)	CONCRETE (Reinforced)	ROCK
Hole Spacing	12" to 14"	8" to 10"	12 to 18"
Hole Diameter	1.50"	1.50"	1.50"
Hole Depth	80%	90%	90%*

The drill pattern required will depend on the object you are breaking and desired size of broken pieces. For further information please contact your local dealer or visit ecobust.com. **Equipment required for drilling:** rock drill, core drill or substitute, drill bit 1.50" in diameter, P.P.E. including safety glasses, gloves, and dust mask.

STEP 1: Determine the size of the rock or concrete pieces that are desired for removal. Refer to the drill guide table above for concrete, reinforced concrete and rock.

STEP 2: Using a box grid (#) adjust the grid to suite your needs.

STEP 3: Drill holes along the grid lines using the drill guide table. Ensure that the 'hole spacing' conforms to the suggested drill guide table.

HOLE SPACING: Tshe hole spacing refers to the space between the holes along the grid lines. Adjust the spacing based on the hardness of the material. The harder the material, the closer the holes need to be.

HOLE DEPTH: 80% to 90% of the depth. In benching, drill 105% of the depth. Do not drill holes less than 3" in depth.

FREE SPACE: Always ensure that ECOBUST has a free space to expand into. Create empty relief holes if necessary or drill holes on a minimum 45 degree angle to the substraight.

HOLE DIAMETER: For best results use 1.50" drill bit. (do NOT exceed 2.0" diameter hole).

REFERENCE EXAMPLES

EXAMPLE 1: CONCRETE	
Dimensions	4' W X 4' L X 16" H
Job:	Concrete Pad Removal
Completion time	1 day (Vs. 3 days conventional)
Hole diameter	1.50"
Drill Depth	90%
# of Holes Drilled	17
Product Used	1 box (44Lbs)

EXAMPLE 2: REINFORCED CONCRETE	
Dimensions	14"W X 19'L X 8"H
Job:	Reinforced Concrete Pad
Completion time	3.5 hours (Vs. 2 days conventional)
Hole diameter	1.50"
Drill Depth	90%
# of Holes	36
Product Used	1 box (44Lbs)

EXAMPLE 3: ROCK	
Dimensions	4' W X 7' L X 10" to 36" H
Job:	Rock Excavation
Completion time	1 day (Vs. 2 days conventional)
Hole diameter	1.50"
Drill Depth	10 to 36"
# of Holes	25
Product Used	1.25 boxes (55Lbs)

DATA SHEET page 1/8

DYNACEM® non-explosive demolition agent

DYNACEM is a highly expanding mortar for non-explosive demolition. It expands soundlessly, tears apart structural elements, separates reinforcing steel from concrete and it's easy to use:

1. Begin by drilling the holes:

2. Mix DYNACEM with water and pour or insert into the holes:

3. DYNACEM expands, BREAKS and TEARS APART boulders, rock and reinforced concrete:

DYNACEM IS SEVERAL TIMES QUICKER THAN HAMMERING!

Appropriate distribution of holes allows:

- breaking into large, or small pieces:

- splitting into sizes suitable for transport:

ADVANTAGES:

- accelerates demolition,
- no noise, vibrations, sparks and exhausts,
- no heavy machinery,
- less hammering and energy consumption,
- no flying debris, fire and toxic gases,
- controlled path/run and pattern of cracking,
- controlled demolition zones,
- "cutting" along designated lines,
- breaking into desired sizes,
- no precautions and qualifications for handling explosive materials are required.

APPLICATIONS:

- concrete demolition, rock breaking,
- rock excavation, splitting stones and boulders,
- dividing beams and foundations into pieces,
- breakouts and openings in slabs and walls,
- tunneling, trenching and rock excavation,
- removal of rocky humps and boulders,
- exposing and releasing steel reinforcement from surrounding concrete,
- cutting concrete piles,
- quarrying stone blocks with minimal waste.

IDEAL SOLUTION when machines, noise, or vibrations are undesirable.

DYNACEM®

MATERIAL PROPERTIES AND HANDLING

DYNACEM is a grey powder that needs to be thoroughly mixed with water prior to filling the holes previously drilled in the element intended for demolition. As a result of a chemical reaction (hydration with heat evolution) DYNACEM hardens, anchors itself within the holes and expands. Volume increase is accompanied by an increase in pressure[1] exerted by DYNACEM on the walls of the hole. Pressure exerted by DYNACEM is a couple of times higher than the tensile strength of concrete, mineral construction materials and rocks. Once the pressure exceeds the tensile strength of the element, it breaks – gets torn apart as cracks form. They keep on growing as DYNACEM keeps on expanding. Further propagation of cracks lasts for a couple of days and can be accelerated by moisturising the holes with warm water once the product solidifies.

DYNACEM versions[2] are: STANDARD for temperatures -10 - 15 °C, SUMMER for 10 - 30 °C, and SUMMER+ for 30 - 50 °C.

The time to crack formation usually ranges from a few to 24 hours[2]. The key factors are: hole size, hole spacing, temperature and properties of the material being splitted. Hard and rigid materials (e.g. high strength concrete) usually fracture more easily than soft materials (e.g. lean concrete) that tend to deform, rather than break under pressure.

30 - 40 mm diameter holes spaced 5 - 15 diameters away (15 - 60 cm) **provide effective breaking capabilities in most practical applications.** It is, however, safest to account for element temperature (measured within the hole) and the type of material being cracked (concrete, r.c., rocks) in each case individually following the guidelines in the Table:

Set-up depending on temperature and type of material being cracked:		element temperature measured within the hole				
		below 0 °C - 10 °C - 15 °C			10 °C - 30 °C	30 °C - 50 °C
- DYNACEM type		STANDARD			SUMMER	SUMMER+
- hole diameter[3]	reinforced concrete, granite, basalt, hard rock	5 cm	4 cm	4 cm	4 cm	4 cm
	concrete, soft rock	4 cm	4 cm	3 cm	3 cm	3 cm
- mixing water temperature[4]		warm	cold			
- mixing water per 5 kg of powder		see packaging				
- hole spacing	reinforced concrete, granite, basalt, hard rock	5 - 10 hole diameters				
	concrete / soft rock	10 - 15 / 10 - 20 hole diameters				
- minimum hole depth		5 hole diameters				

CAUTION, increased hole diameter will result in increased DYNACEM reaction rate, higher temperature and stronger expansion. A diameter, which is too large, or using Dynacem above its application temperature range, may cause boiling, water vapour disengagement and sudden, dangerous hole blow-out, especially in the summer or on sunny days.

In order to decelerate the reaction and delay the formation of cracks: decrease the hole diameter, mix DYNACEM with cold water and increase the hole spacing.

In order to accelerate the reaction and formation of cracks: increase the hole diameter, mix DYNACEM with warm water and decrease the hole spacing.

[1] Dynacem expansion pressure is thoroughly tested by our laboratory for each produced batch of product before it is qualified for sale - see Appendix to Dynacem Data Sheet on the end of this document.

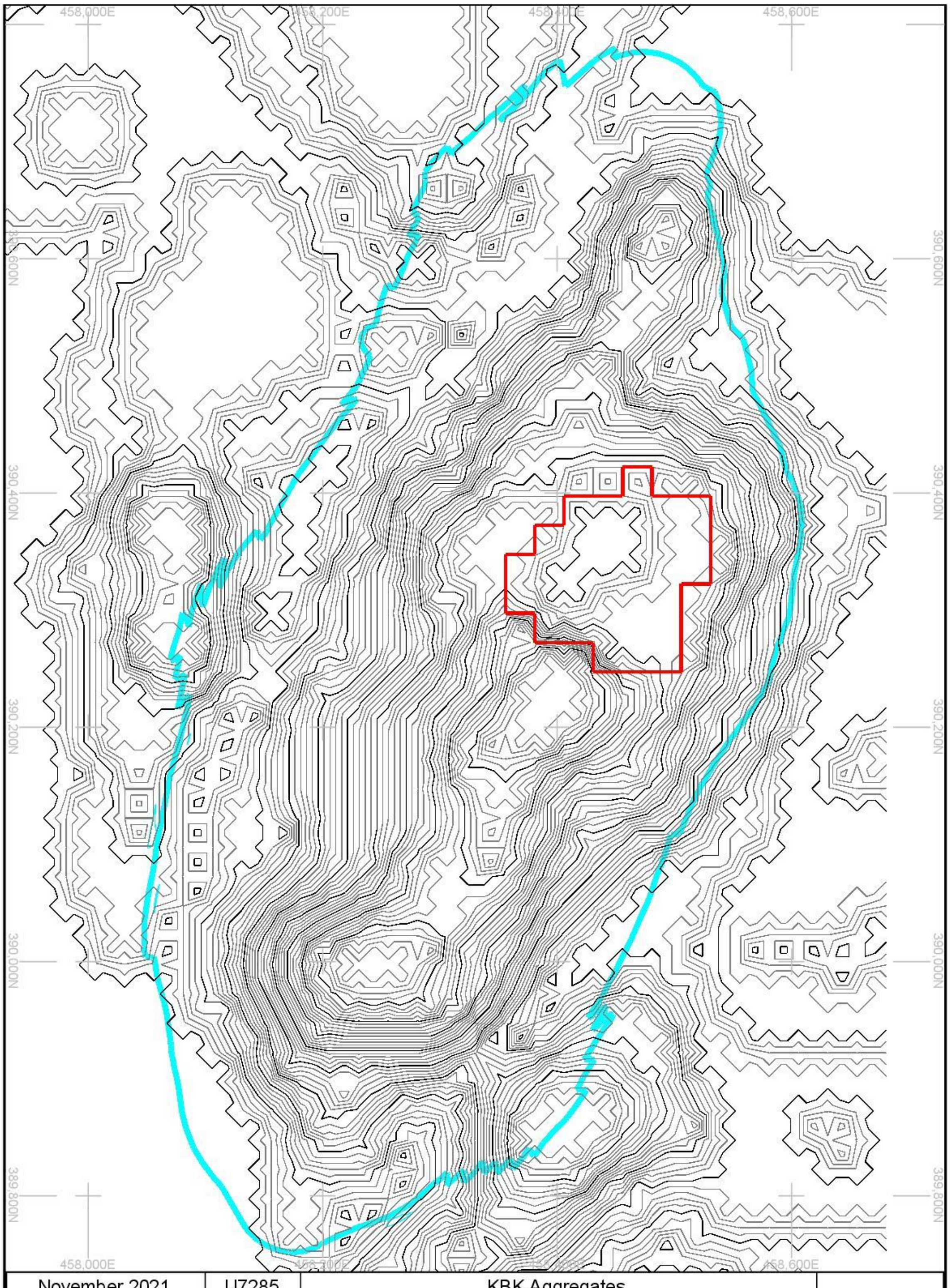
[2] each version is fast performing at the top of its application temperature range (breaks rock within 6-18 hours typically, at hole diameter of 40 mm) and may cause dangerous blow-outs above its maximum application temperature. Reaction slows down and breaking time increases almost 2 times with every 5 deg C drop in temperature, or with a hole diameter reduction to 30 mm.

[3] when dealing with non-reinforced elements DYNACEM expansive grout can sometimes be successfully applied to holes of a diameter smaller than those given in the Table, especially when it's warm outside and the the holes are arranged in a linear pattern (e.g. when temperature exceeds 10/20 °C, holes of 30/25 mm are used in granite applications), or when increased cracking time is acceptable.

[4] adjust to keep the mixture of water and STANDARD version below 15 °C, water and SUMMER version below 30 °C.

APPENDIX - C

C. 15 year Estimated LoMp period surfaces for KBK



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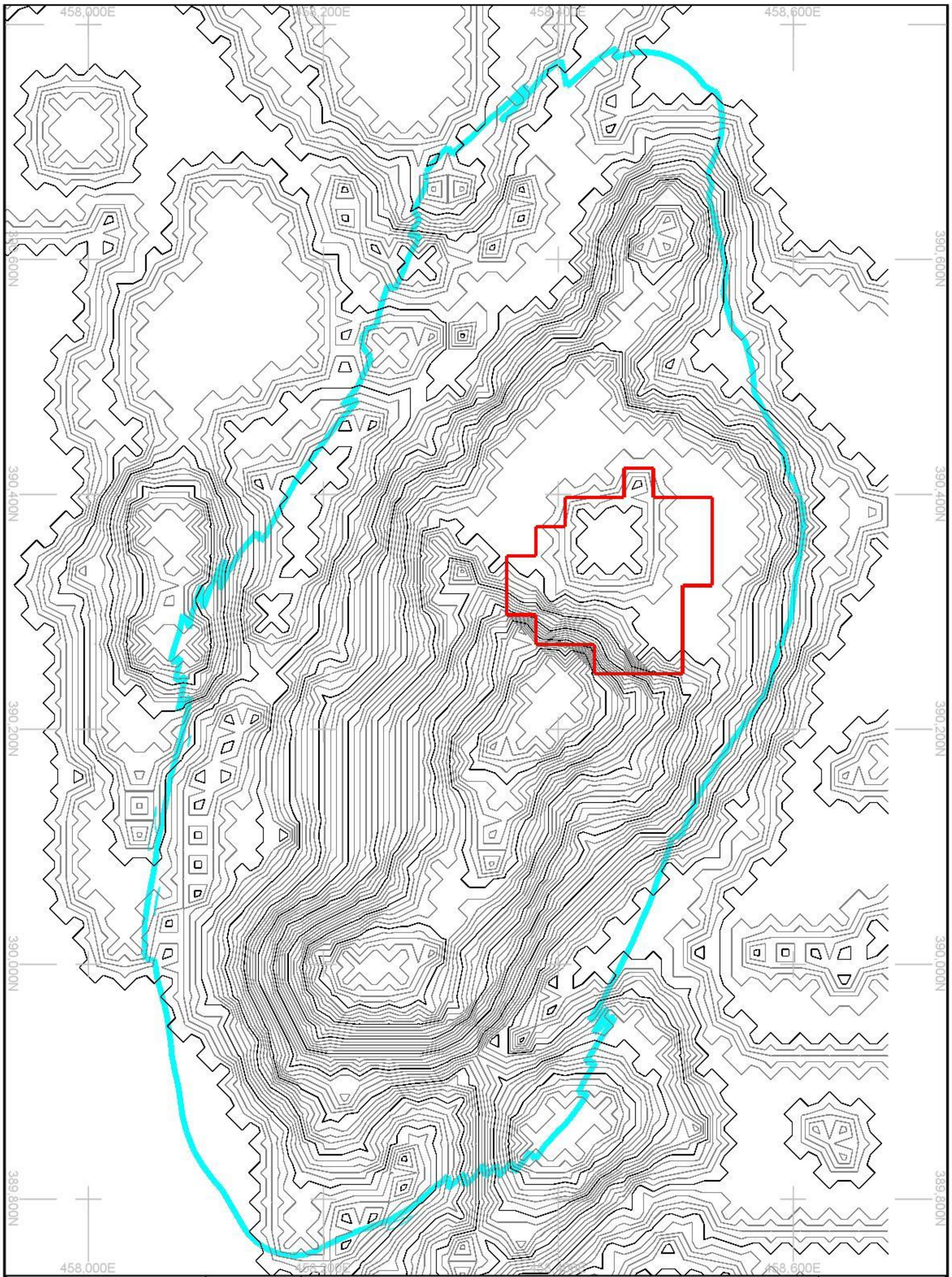
srk consulting		Surface Month 3



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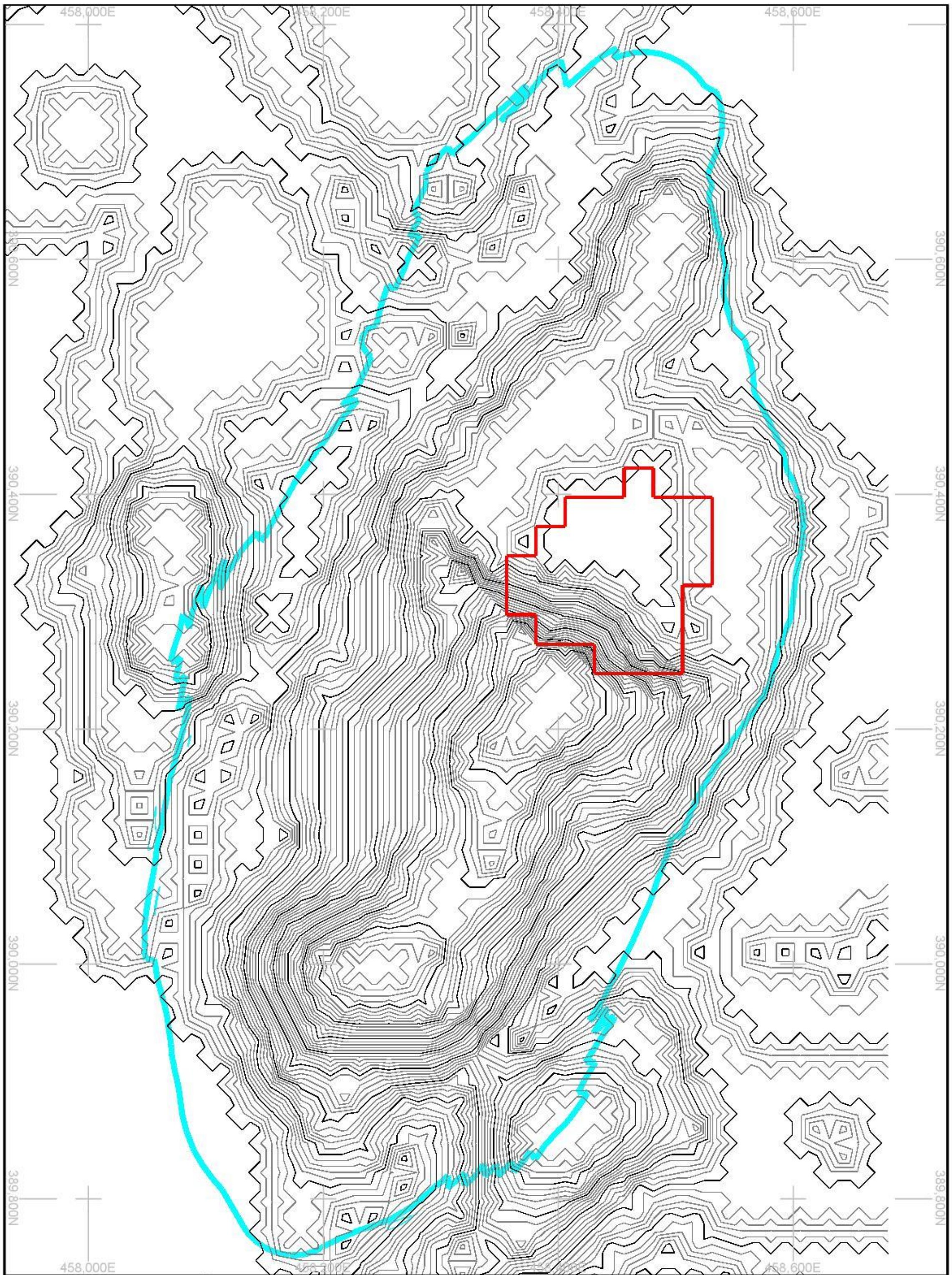
srk consulting		Surface Month 6	



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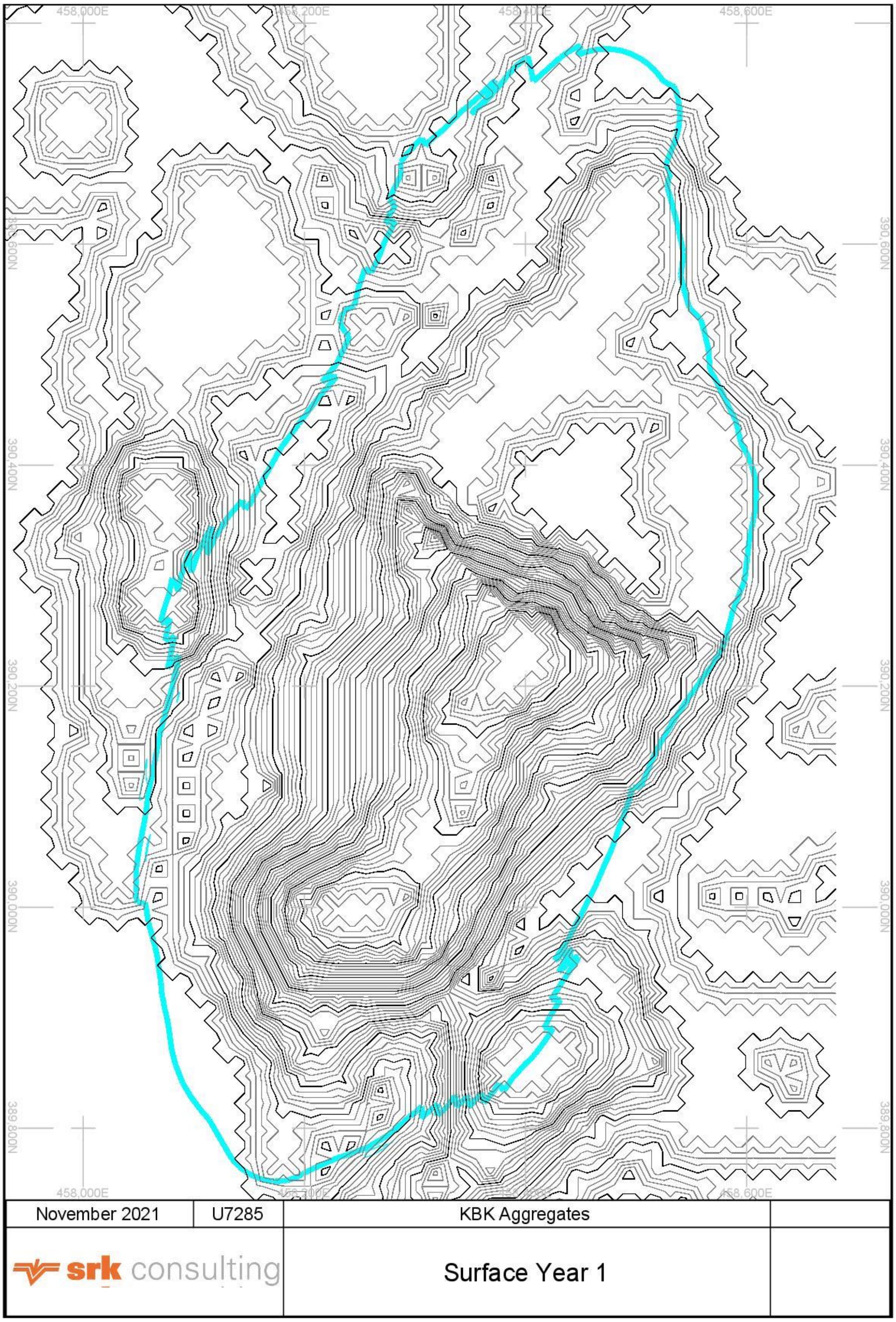
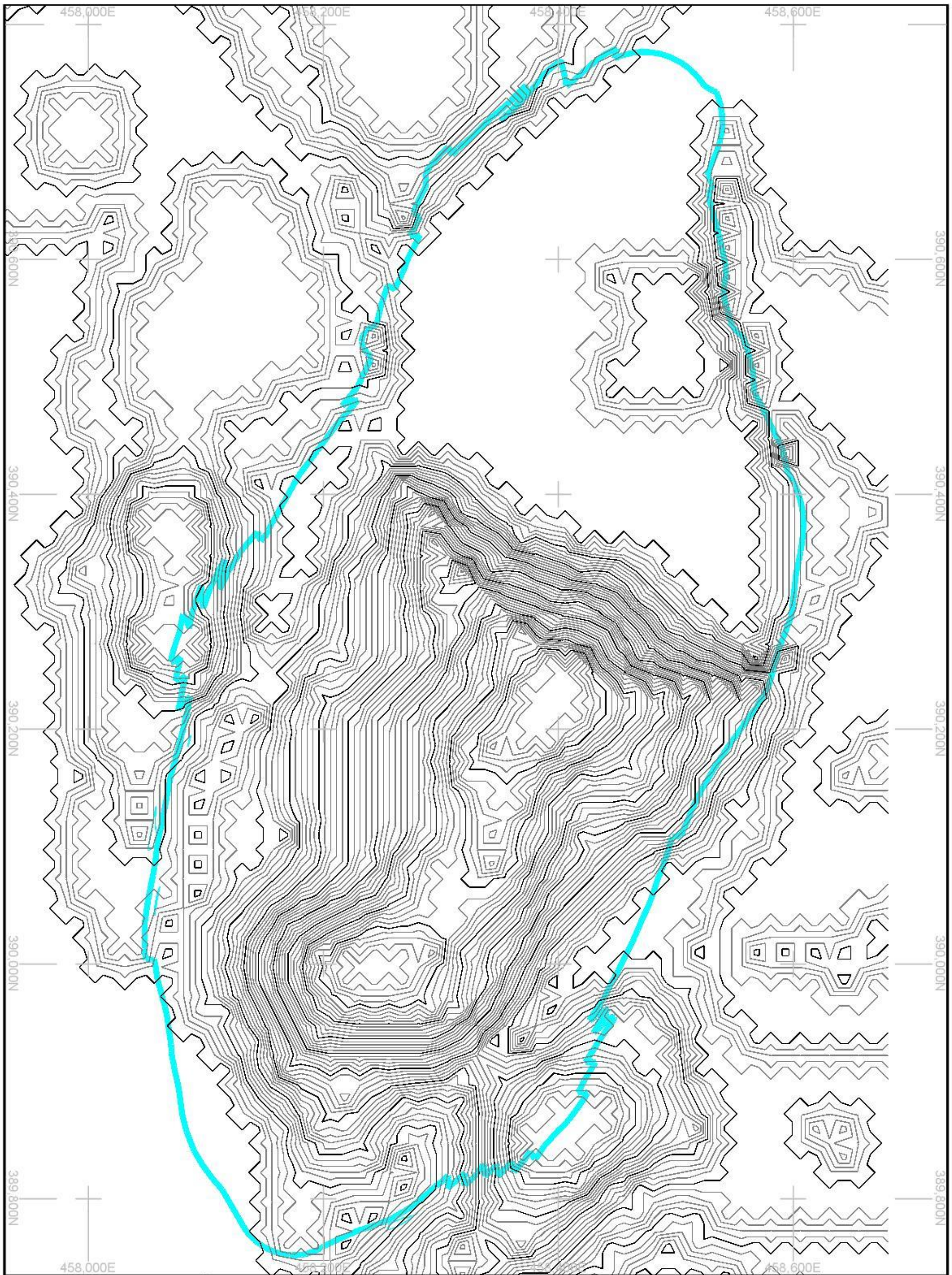
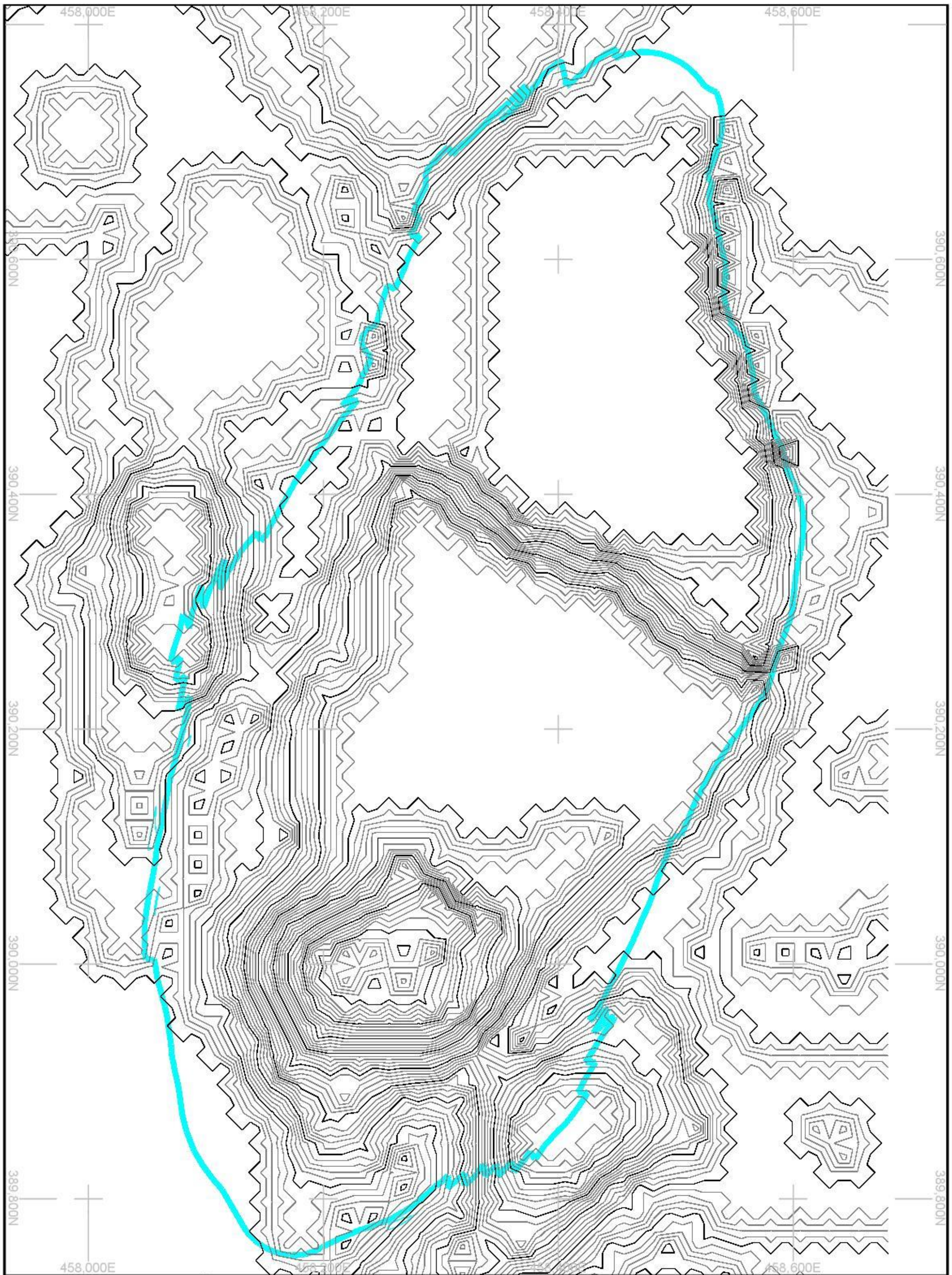
srk consulting		Surface Month 9	


458,000E
458,200E
458,600E
390,600N
390,400N
390,200N
390,000N
389,800N
November 2021
U7285
KBK Aggregates
srk consulting
Surface Year 1



November 2021	U7285	KBK Aggregates
srk consulting		Surface Year 2



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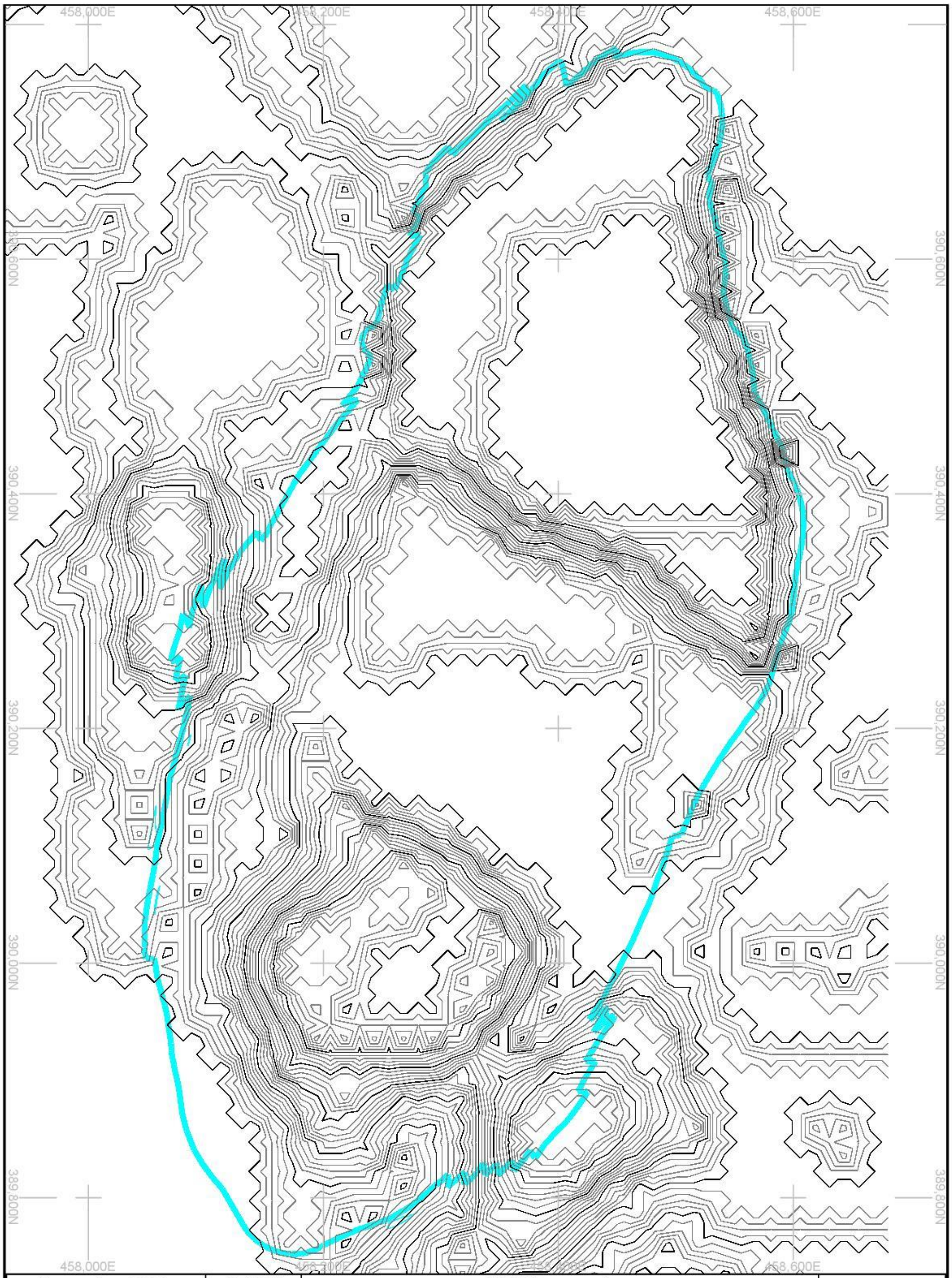
srk consulting		Surface Year 3	



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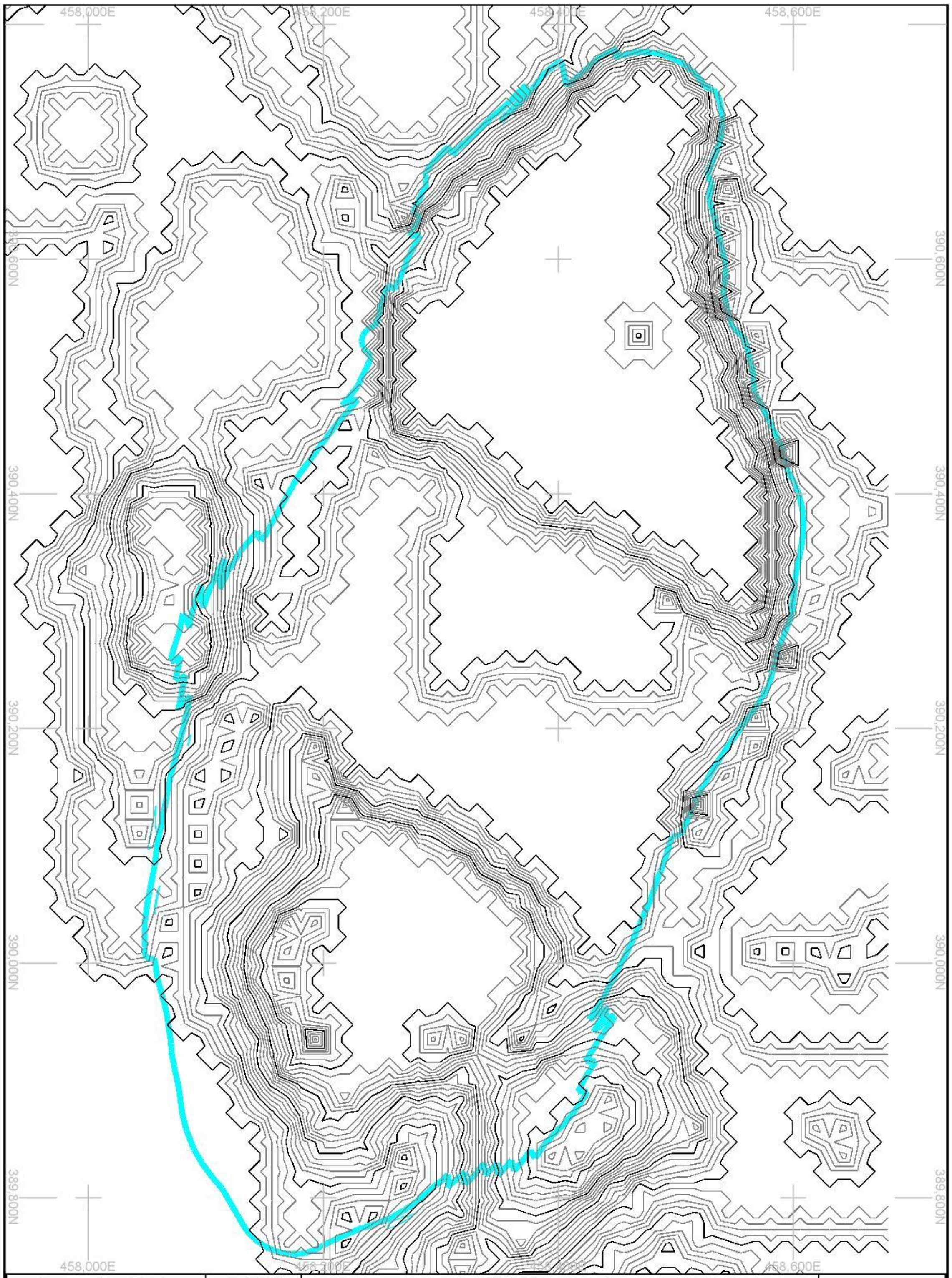
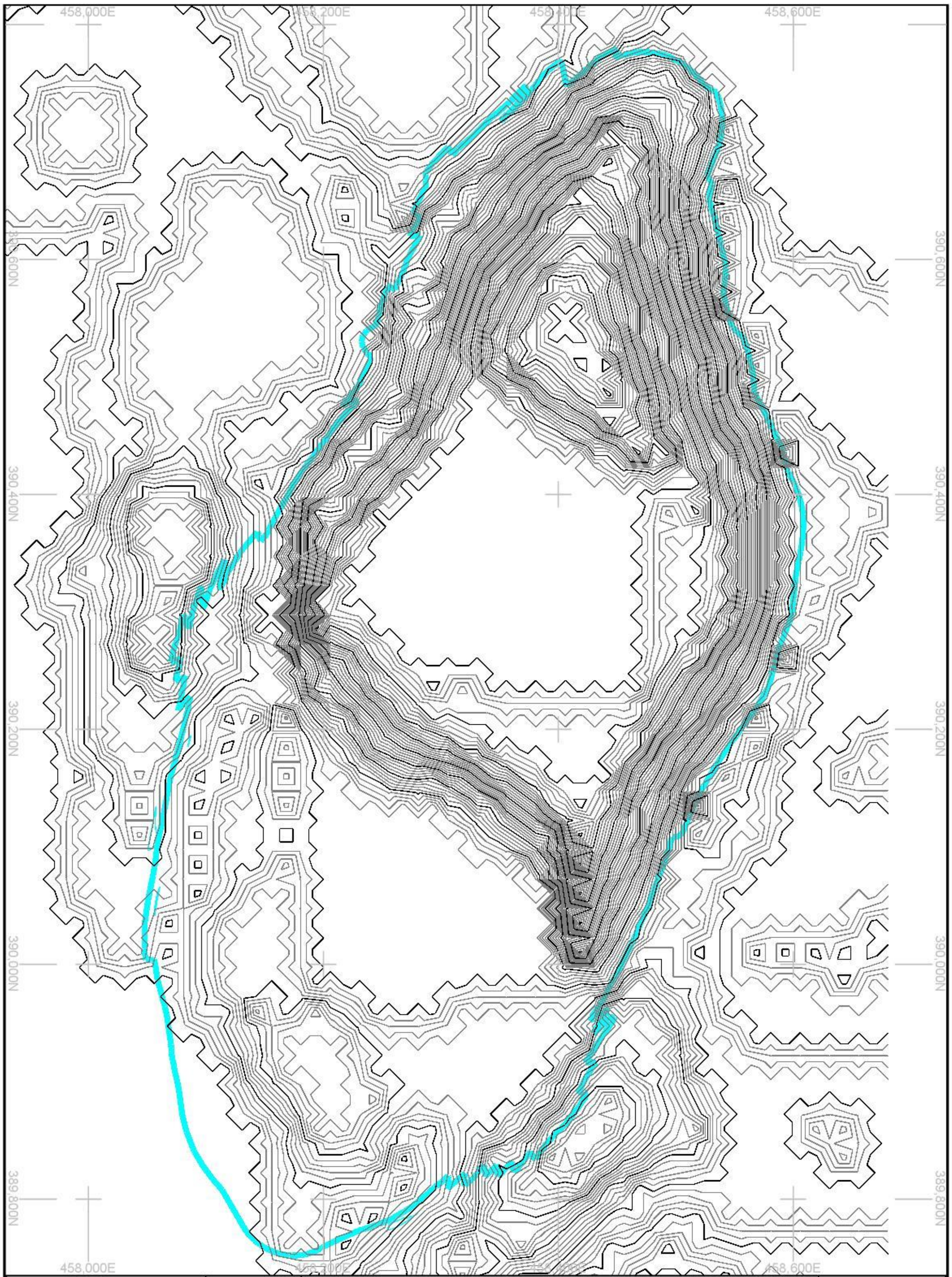
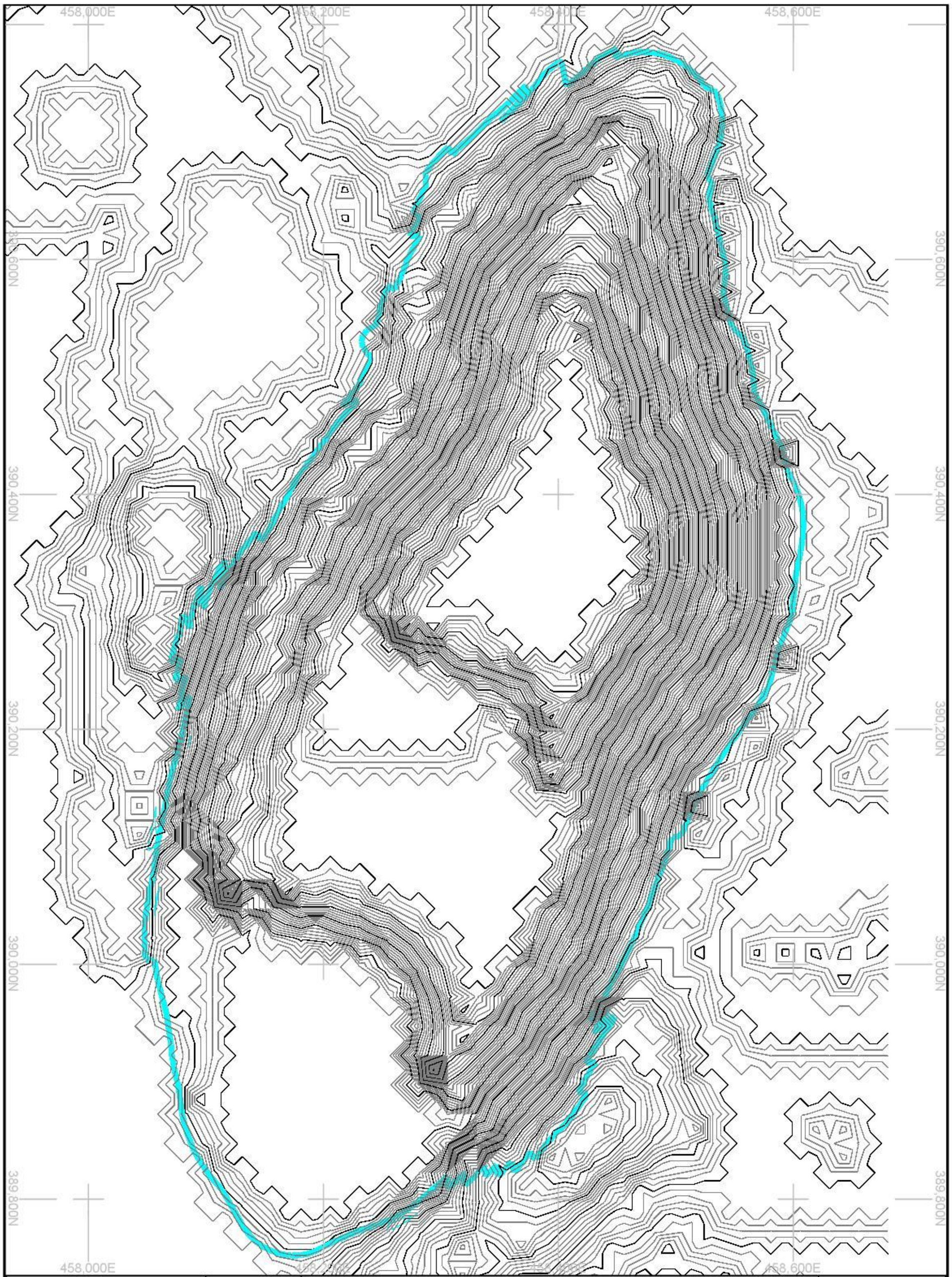
srk consulting		Surface Year 4	



November 2021	U7285	KBK Aggregates	
srk consulting		Surface Year 5	



November 2021	U7285	KBK Aggregates
srk consulting		Surface Year 10



November 2021	U7285	KBK Aggregates	
srk consulting		Surface Year 15	

APPENDIX

I CASHFLOW SUMMARIES Scenario 1-2-3

(Base Case) = 3Mtpa KBK Production (~20 LoM) w 50% Inf adjustment (Valmin), contracted mining, 1Mtpa Amour Stone + 2Mtpa Crushed Aggregates, 3Mtpa installed crusher (O&O), jetty upgrade, truck haulage direct from mine site or retail hub, sales both domestic and export via upgraded jetty, and conveyor phase 2 for export

Scenario 1 - Mid Case

Date/Period			12/21	12/22	12/23	12/24	12/25	12/26	12/27	12/28	12/29	12/30	12/31	12/32	12/33	12/34	12/35	12/36	12/37	12/38	12/39	12/40
PRODUCTION	UNITS	AVE/TOTALS																				
Total Production																						
Production Armour Stone Local Sales	Mt	19.1	0.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Production Rock Local Sales	Mt	18.3	0.1	0.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Production Rock Export Sales	Mt	17.5	0.0	0.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total RoM Production	Mt	54.9	0.2	1.2	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Cumulative Tonnes	Mt tot	54.9	0.2	1.4	3.9	6.9	9.9	12.9	15.9	18.9	21.9	24.9	27.9	30.9	33.9	36.9	39.9	42.9	45.9	48.9	51.9	54.9
SALES/REVENUE																						
Total Assumed Production Available for Sale	Mt	55	0	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Sales Summary																						
Amour Stone Local Sale 1t (per piece) price	USDM	605	3	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Sub-total Local Sales Revenue (incl. crushed & amourstone)	USDM	1,081	6	37	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
Sub-total Export Sales Revenue	USDM	546	0	0	16	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Total Revenue	**USDM**	**1,627**	**6**	**37**	**73**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**
Local Sales	Mt	37	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Export Sales	Mt	18	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Average Local Sales Prices	USD/t prod	28.90	28.84	30.74	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84
Average Export Sales Prices	USD/t prod	31.18	0.00	0.00	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18
Mining	USDM	256	1	9	12	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Processing	USDM	36	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Infrastructure	USDM	110	0	2	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Export & Logistics	USDM	181	0	0	5	7	13	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
G&A	USDM	55	0	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Other	USDM	31	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Extraction Tax	USDM	163	1	4	7	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Total Estimated Cost Operations	**USDM**	**832**	**3**	**17**	**35**	**42**	**48**	**46**	**46**	**46**	**46**	**46**	**46**	**46**	**46**	**46**	**46**	**46**	**46**	**46**	**46**	**46**
CAPEX SUMMARY																						
Project Capital																						
Mining	USDM	6	4.6	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Processing	USDM	12	12.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Infrastructure	USDM	10	1.0	4.8	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Export & Logistics	USDM	42	0.0	1.5	19.5	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	USDM	13	8.2	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0
Contingency	USDM	13	2.6	1.3	4.7	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sustaining Capital	USDM	13	0.0	0.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Working Capital	USDM	0	-0.5	-2.7	-3.1	-1.4	1.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Estimated Capital	USDM	108	27.9	10.1	28.9	26.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	3.2	0.7
TAXATION																						
Revenue	USDM	1,627	6	37	73	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89
Opex	USDM	832	3	17	35	42	48	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46
EBITDA	USDM	795	3	20	38	47	41	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
Losses Brought Forward	USDM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Profit after Loss BF	USDM	795	3	20	38	47	41	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
Depreciation (LoM)	USDM	108	0	3	4	7	9	9	10	10	10	10	10	7	6	3	1	1	1	1	1	1
EBIT	USDM	687	3	17	35	40	32	34	34	33	33	33	33	36	37	40	42	42	42	42	42	42
Taxable Income	USDM	693	3	17	35	40	32	34	34	33	33	33	33	36	37	40	42	42	42	42	42	42
Corporate Tax Rate	%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Corporate Tax Paid	USDM	173	1	4	9	10	8	8	8	8	8	8	8	9	9	10	11	11	11	11	11	11
Profit/Loss	USDM	622	2	15	30	37	33	35	35	35	35	35	35	34	34	33	32	32	32	32	32	33
Tax Liability	USDM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CASHFLOWS																						
Revenue	USDM	1,627	6	37	73	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89
Opex	USDM	832	3	17	35	42	48	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46
Capex	USDM	108	28	10	29	27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1
Net Profit Before Tax	USDM	687	-25	9	9	20	40	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42
Tax	USDM	173	1	4	9	10	8	8	8	8	8	8	8	9	9	10	11	11	11	11	11	11
Cashflow	USDM	514	-25	5	1	10	32	34	34	34	34	34	34	33	33	32	32	32	32	32	29	32
Cumulative cashflow	USDM	0	-25	-20	-19	-9	23	57	91	125	159	193	227	260	293	326	358	389	421	453	482	514
NPV (@15%) Post Tax	USDM	119																				
	Payback Year		4																			

NPV Results	Mid Case		
Discount Rate	Pre-tax	Post-tax	Units
0%	687	514	USDM (2021)
5%	404	297	USDM (2021)
10%	254	182	USDM (2021)
15%	168	116	USDM (2021)
20%	116	76	USDM (2021)
25%	83	51	USDM (2021)
30%	60	33	USDM (2021)
IRR%	71%	51%	

KBK_TEM_2021_v10.xlsx

(Base Case) = 3Mtpa KBK Production (~20 LoM) w 50% Inf adjustment (Valmin), contracted mining, 1Mtpa Amour Stone + 2Mtpa Crushed Aggregates, 3Mtpa installed crusher (O&O), jetty upgrade, truck haulage direct from mine site or retail hub, sales both domestic and export via upgraded jetty, and conveyor phase 2 for export

Scenario 1 - Mid Case		Date/Period	12/21	12/22	12/23	12/24	12/25	12/26	12/27	12/28	12/29	12/30	12/31	12/32	12/33	12/34	12/35	12/36	12/37	12/38	12/39	12/40
PRODUCTION	UNITS	AVE/TOTALS																				
Total Production																						
Production Armour Stone Local Sales	Mt	36.1	0.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Production Rock Local Sales	Mt	18.4	0.1	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9
Production Rock Export Sales	Mt	17.4	0.0	0.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9
Total RoM Production	Mt	71.9	0.2	2.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	1.7
Cumulative Tonnes	Mt tot	71.9	0.2	2.7	6.2	10.2	14.2	18.2	22.2	26.2	30.2	34.2	38.2	42.2	46.2	50.2	54.2	58.2	62.2	66.2	70.2	71.9
SALES/REVENUE																						
Total Assumed Production Available for Sale	Mt	72	0	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2
Sales Summary																						
Amour Stone Local Sale 1t (per piece) price	USDM	1,144	3	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	0
Sub-total Local Sales Revenue (incl. crushed & amourstone)	USDM	1,623	6	75	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	23
Sub-total Export Sales Revenue	USDM	542	0	0	16	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	27
Total Revenue	**USDM**	**2,165**	**6**	**75**	**105**	**121**	**121**	**121**	**121**	**121**	**121**	**121**	**121**	**121**	**121**	**121**	**121**	**121**	**121**	**121**	**121**	**50**
Local Sales	Mt	55	0	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1
Export Sales	Mt	17	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Average Local Sales Prices	USD/t prod	29.77	28.84	30.64	29.79	29.79	29.79	29.79	29.79	29.79	29.79	29.79	29.79	29.79	29.79	29.79	29.79	29.79	29.79	29.79	29.79	25.99
Average Export Sales Prices	USD/t prod	31.18	0.00	0.00	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18
OPEX SUMMARY																						
Mining	USDM	379	1	17	20	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	4
Processing	USDM	36	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Infrastructure	USDM	140	0	5	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	3
Export & Logistics	USDM	180	0	0	5	7	13	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9
G&A	USDM	72	0	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2
Other	USDM	40	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
Extraction Tax	USDM	216	1	8	10	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	5
Total Estimated Cost Operations	**USDM**	**1,063**	**2**	**34**	**49**	**56**	**62**	**60**	**60**	**60**	**60**	**60**	**60**	**60**	**60**	**60**	**60**	**60**	**60**	**60**	**60**	**26**
CAPEX SUMMARY																						
Project Capital																						
Mining	USDM	7	4.6	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Processing	USDM	12	12.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Infrastructure	USDM	2	0.7	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Export & Logistics	USDM	52	2.5	26.6	22.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	USDM	19	16.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0
Contingency	USDM	13	3.1	5.7	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sustaining Capital	USDM	14	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0
Working Capital	USDM	0	-0.6	-6.3	-2.4	-1.4	1.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2
Total Estimated Capital	USDM	119	38.9	34.8	28.1	2.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	3.3	0.0
TAXATION																						
Revenue	USDM	2,165	6	75	105	121	121	121	121	121	121	121	121	121	121	121	121	121	121	121	121	50
Opex	USDM	1,063	2	34	49	56	62	60	60	60	60	60	60	60	60	60	60	60	60	60	60	26
EBITDA	USDM	1,102	3	42	56	65	59	61	61	61	61	61	61	61	61	61	61	61	61	61	61	24
Losses Brought Forward	USDM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Profit after Loss BF	USDM	1,102	3	42	56	65	59	61	61	61	61	61	61	61	61	61	61	61	61	61	61	24
Depreciation (LoM)	USDM	119	0	4	7	10	10	11	11	11	11	11	11	7	4	1	1	1	1	1	1	1
EBIT	USDM	983	3	38	49	55	48	50	50	50	50	50	50	54	57	60	60	60	60	60	60	23
Taxable Income	USDM	989	3	38	49	55	48	50	50	50	50	50	50	54	57	60	60	60	60	60	60	23
Corporate Tax Rate	%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Corporate Tax Paid	USDM	247	1	9	12	14	12	13	13	13	13	13	13	13	14	15	15	15	15	15	15	6
Profit/Loss	USDM	855	3	32	44	51	47	48	48	48	48	48	48	47	47	46	46	46	46	46	46	18
Tax Liability	USDM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CASHFLOWS																						
Revenue	USDM	2,165	6	75	105	121	121	121	121	121	121	121	121	121	121	121	121	121	121	121	121	50
Opex	USDM	1,063	2	34	49	56	62	60	60	60	60	60	60	60	60	60	60	60	60	60	60	26
Capex	USDM	119	39	35	28	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	0
Net Profit Before Tax	USDM	983	-36	7	28	62	58	60	60	60	60	60	60	60	60	60	60	60	60	60	58	24
Tax	USDM	247	1	9	12	14	12	13	13	13	13	13	13	13	14	15	15	15	15	15	15	6
Cashflow	USDM	736	-36	-3	16	48	46	48	48	48	48	48	48	47	46	45	45	45	45	45	43	18
Cumulative cashflow	USDM	0	-36	-39	-23	25	71	119	167	214	262	309	357	404	450	495	540	585	630	675	718	736
NPV (@15%) Post Tax	USDM	190																				
	Payback Year		3																			

NPV Results	High Case		
Discount Rate	Pre-tax	Post-tax	Units
0%	983	736	USDM (2021)
5%	596	440	USDM (2021)
10%	386	280	USDM (2021)
15%	270	190	USDM (2021)
20%	188	128	USDM (2021)
25%	138	89	USDM (2021)
30%	103	63	USDM (2021)
IRR%	80%	59%	

KBK_TEM_2021_v10.xlsx

(Base Case) = 3Mtpa KBK Production (~20 LoM) w 50% Inf adjustment (Valmin), contracted mining, 1Mtpa Amour Stone + 2Mtpa Crushed Aggregates, 3Mtpa installed crusher (O&O), jetty upgrade, truck haulage direct from mine site or retail hub, sales both domestic and export via upgraded jetty, and conveyor phase 2 for export

Scenario 1 - Mid Case		Date/Period	12/21	12/22	12/23	12/24	12/25	12/26	12/27	12/28	12/29	12/30	12/31	12/32	12/33	12/34	12/35	12/36	12/37	12/38	12/39	12/40
PRODUCTION	UNITS	AVE/TOTALS																				
Total Production																						
Production Armour Stone Local Sales	Mt	19.1	0.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Production Rock Local Sales	Mt	18.3	0.1	0.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Production Rock Export Sales	Mt	17.5	0.0	0.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total RoM Production	Mt	54.9	0.2	1.2	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Cumulative Tonnes	Mt tot	54.9	0.2	1.4	3.9	6.9	9.9	12.9	15.9	18.9	21.9	24.9	27.9	30.9	33.9	36.9	39.9	42.9	45.9	48.9	51.9	54.9
SALES/REVENUE																						
Total Assumed Production Available for Sale	Mt	55	0	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Sales Summary																						
Amour Stone Local Sale 1t (per piece) price	USDM	605	3	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Sub-total Local Sales Revenue (incl. crushed & amourstone)	USDM	1,081	6	37	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
Sub-total Export Sales Revenue	USDM	546	0	0	16	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Total Revenue	**USDM**	**1,627**	**6**	**37**	**73**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**
Local Sales	Mt	37	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Export Sales	Mt	18	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Average Local Sales Prices	USD/t prod	28.90	28.84	30.74	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84	28.84
Average Export Sales Prices	USD/t prod	31.18	0.00	0.00	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18	31.18
OPEX SUMMARY																						
Mining	USDM	256	1	9	12	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Processing	USDM	54	0	0	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Infrastructure	USDM	110	0	2	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Export & Logistics	USDM	179	0	0	5	7	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
G&A	USDM	55	0	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Other	USDM	33	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Extraction Tax	USDM	163	1	4	7	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Total Estimated Cost Operations	**USDM**	**850**	**3**	**17**	**36**	**43**	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**
CAPEX SUMMARY																						
Project Capital																						
Mining	USDM	6	4.6	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Processing	USDM	12	12.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Infrastructure	USDM	10	1.0	4.8	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Export & Logistics	USDM	42	0.0	1.5	19.5	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	USDM	13	8.2	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0
Contingency	USDM	13	2.6	1.3	4.7	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sustaining Capital	USDM	13	0.0	0.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Working Capital	USDM	0	-0.5	-2.7	-3.0	-1.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Estimated Capital	USDM	108	27.9	10.1	28.9	26.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	3.2	0.7
TAXATION																						
Revenue	USDM	1,627	6	37	73	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89
Opex	USDM	850	3	17	36	43	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
EBITDA	USDM	777	3	19	37	46	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
Losses Brought Forward	USDM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Profit after Loss BF	USDM	777	3	19	37	46	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
Depreciation (LoM)	USDM	108	0	3	4	7	9	9	10	10	10	10	10	7	6	3	1	1	1	1	1	1
EBIT	USDM	669	3	17	34	39	33	32	32	32	32	32	32	35	36	39	41	41	41	41	41	41
Taxable Income	USDM	675	3	17	34	39	33	32	32	32	32	32	32	35	36	39	41	41	41	41	41	41
Corporate Tax Rate	%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Corporate Tax Paid	USDM	169	1	4	8	10	8	8	8	8	8	8	8	9	9	10	10	10	10	10	10	10
Profit/Loss	USDM	608	2	15	29	36	34	34	34	34	34	34	34	33	33	32	32	32	32	32	32	32
Tax Liability	USDM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CASHFLOWS																						
Revenue	USDM	1,627	6	37	73	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89
Opex	USDM	850	3	17	36	43	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
Capex	USDM	108	28	10	29	27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1
Net Profit Before Tax	USDM	669	-25	9	9	19	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41
Tax	USDM	169	1	4	8	10	8	8	8	8	8	8	8	9	9	10	10	10	10	10	10	10
Cashflow	USDM	500	-26	5	0	9	33	33	33	33	33	33	33	33	32	32	31	31	31	31	28	31
Cumulative cashflow	USDM	0	-26	-20	-20	-11	22	55	88	121	155	188	221	253	286	317	348	379	410	441	469	500
NPV (@15%) Post Tax	USDM	116																				
	Payback Year		4																			

NPV Results	Low Case		
Discount Rate	Pre-tax	Post-tax	Units
0%	669	500	USDM (2021)
5%	393	289	USDM (2021)
10%	247	177	USDM (2021)
15%	167	116	USDM (2021)
20%	113	74	USDM (2021)
25%	80	49	USDM (2021)
30%	58	32	USDM (2021)
IRR%	69%	50%	

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