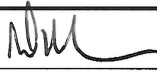





Baffinland Iron Mines LP
Mary River Expansion Stage 3
Definitive Study Report
Section 6 – Process Definition

						
2017-05-01	0	Approved for Use	N. Mason	M. Dionne	S. Heiner	BIM
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HATCH						

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6. Process Definition

Ore handling systems are required to crush, screen and stockpile the mined ore as two products, lump and fines, and to reclaim the stockpiled ore for feed to the ship loading systems. The system will be designed to maximise the ratio of lump produced and ensure products comply with BIM product specifications.

The ore handling system proposed for the 12 Mtpa expansion is shown in Figure 6-1 and includes:

- Primary crushing and train loading at the Mine Site.
- Secondary crushing and product screening at the Port Site.
- Stockpiling of fines in the existing stockpile area for Ship Loader #1; reclaimed using the existing mobile equipment reclaim.
- Stockpiling of lump in a new stockpile area for Ship Loader #2 using an automated boom stacker; reclaimed with a bucketwheel reclaimer.
- Ship loading of ore from two docks during a summer shipping season.

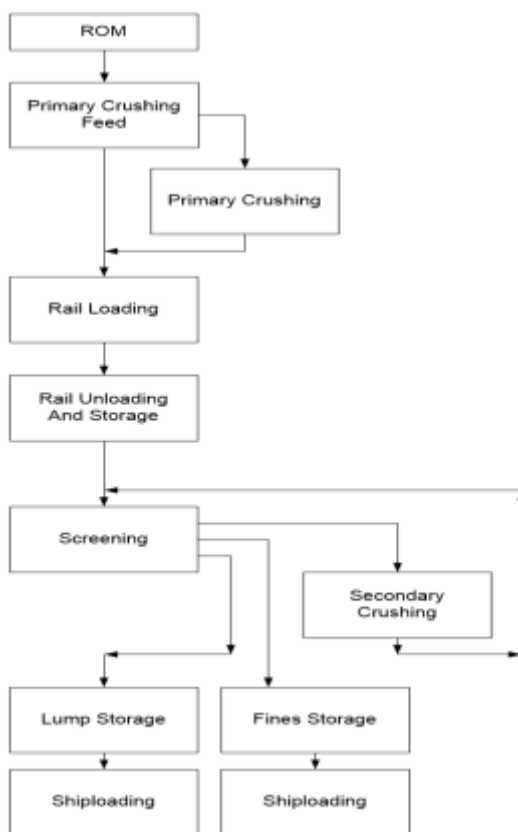


Figure 6-1: 12 Mtpa Simplified Process Block Flow Diagram

The fundamental design of the process has not changed since the STAGE 2 STUDY. The vendor bidding process sought further process optimisation. Process optimisation alternatives received and accepted for inclusion in this Study are described in the following.

Design information provided by vendors during the Stage 3 Study have been used to confirm process design decisions made in the Stage 2 Study.

12 Mtpa Expansion Process Definition Overview

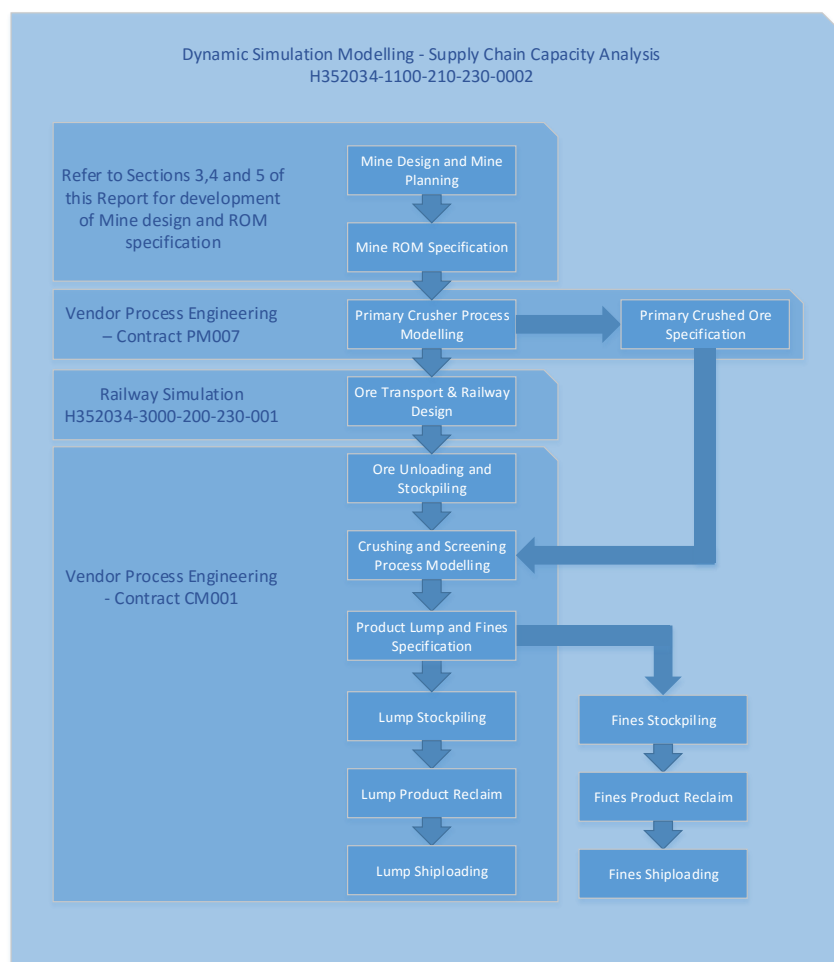


Figure 6-2: Stage 3 Study - Process Definition Work Flow and Responsibilities

A detailed process design criteria which includes basis for availability and other key operating parameters was developed (refer Appendices A6-1 and A6-2). This forms the basis of the process definition provided to vendors and contractors for them to provide process details and against which to validate vendor proposals for equipment supply.

The contracting strategy adopted for the Stage 3 Study is based upon obtaining firm bids for the design supply of the major process plant elements (primary crushing, rail unloading through ship loading). At the completion of the Stage 3 Study firm bids capable of being converted into execution contracts for the execution phase have been received. Equipment proposed by vendors represents equipment that will be bought and installed, hence represents the process that will be built. Process performance provided by vendors in response to competitive bid processes therefore represents the expected process performance of the Project.

The workflow for definition of the process and its functional requirements follows.

To define the operating requirements of each of the mining, primary crushing, ore transport (by rail), unloading, stockpiling, secondary crushing and screening through ship loading elements of the project a dynamic simulation model has been created to enable definition of steady state materials flow rates and stockpile sizes required to support 12Mtpa of DSO shipping. The input criteria for the simulation model is defined in the model functional specification (ref Appendix A6-4). Supporting this specification is a Process Design Basis – Ore Handling (Appendix A6-1) and the Process Design Report (Appendix A6-2). The data contained within these documents provides the basis on which functional performance specifications have been prepared and submitted to vendors for them to complete detailed process design and equipment selections to support their firm bid offers.

The approach adopted to definition of the process is outlined in Figure 6-2 and outlined in the following.

Overall functional definition of the process is driven by three major project elements:

1. Mining rate and operating philosophy for the primary crushers at Mary River.
2. Railing of ore from Mary River to Milne. Ore will be loaded and transported to Milne in discrete amounts, set by train length and train frequency. The non-continuous nature of rail transport defines the need for primary crushed ore stockpiles at the mine as well as Milne and also the production rates for the crushing and screening plant and stacking rates for lump and fines product.
3. Limited windows for shipping product, outside the ice season. The shipping window definition applied to this Study is shown in Table 6-1. Ore shipments are planned for the Open Water Season. The shipping window sets the parameters for the ship loading, reclaim and product stockpile elements of the project.

Table 6-1: Shipping Seasons Summary

Season		Dates	Days	Ship Classification
Shoulder Season		Jul 1 – Jul 24	24	Polar Class
Open Water	Early Season	Jul 25 – Aug 14	21	Ice Class
	Mid-Season	Aug 15 – Sep 20	37	No ice classification
	Late Season	Sep 21 – Oct 15	25	Ice Class
Shoulder Season		Oct 16 – Dec 20	66	Polar Class
Winter Season		Dec 21 – Jun 30	192	No Shipping ¹

The sections that follow describe the functional requirements arising from each of these drivers and the results of vendor technical definition work.

6.1 Mining Rate and Primary Crusher Operating Philosophy

6.2 Mine Materials Handling

6.2.1 Process Definition

The flow sheets developed for the mine incorporating primary crushing and screening are driven by the material flow requirements for the project and have not changed since the Stage 2 Study. Alternative approaches to re-configuring the existing three crusher lines to produce a coarse (p90 passing 150mm) product to be railed to Milne for further crushing and screening to meet Direct Shipping Ore (DSO) specifications have not been identified during the Stage 3 Study.

The process at the mine site for ore processing is shown in Appendix A6-6.

6.2.2 In Loading

Ore will be delivered to the Run of Mine (ROM) stockpiles from the Mine according to the Mine Production Schedule detailed in Section 5 of this report. Mine haul trucks will deliver ore to a pad located upstream of the primary crushing strings. Front End Loaders (FEL) will be used to reclaim material dumped before the primary crusher strings and feed to the primary crushers.

It is planned that mining and ore movements in the Mine, including ROM ore delivery to the ROM pad occurs at a uniform average rate 24hrs/day, 365 days/year.

FEL equipment on site has been used as the basis for specifying equipment type and duty and as the basis for dynamic simulations used to define project scope.

¹ The Stage 3 Study has not considered shipping during the winter season. Use of Polar Class vessels during the winter season may be considered in future project phases.

6.2.3 *Run of Mine Stockpiles*

Primary Crushers will operate in accordance with the schedule shown in Table 6-2 (Appendix A6-4).

Table 6-2: Primary Crushing Operation

Item	h/a/unit	Notes
Calendar time	8760	365 d/a x 24 h/d
Weather delays	120	5 d x 24 h/d
Annual shutdown during Freshet (all units down)	240	10 d x 24 h/d
Available time	8400	8760-120-240
Daily inspection/PM (1 unit down at a time)	700	(8400/24)d x 2 h/d
Weekly maintenance (1 unit down at a time)	700	(8400/168)w x 14 h/w
Scheduled time	7000	8400-700-700
Required operating hours	5698	12Mt / 2106 t/h
Unplanned maintenance	855	5698 x 15%
Free time	447	7000-5698-855
Expected utilization – scheduled time	81.4%	5698/7000
Expected utilization – calendar time	65%	5698/8760
Expected availability – scheduled time	87.8%	(5698+447)/7000
Expected availability – calendar time	70.1%	(5698+447)/8760

When operating (required operating time) the primary crushers will have a throughput of 700tph.

For periods when the crushers are down for maintenance, weather or other seasonal time, ROM ore will be stockpiled either at the mine face, or pad area currently occupied by the three primary, secondary and crushing strings; the 12 Mtpa expansion scope will relocate the primary crusher strings to a new location adjacent to the rail line.

When more than 100,000 tonne of ROM ore has been stockpiled, crushers and the rail system is available, a single mine haul truck and production loader will be assigned to reclaim stockpiled material until the ROM stockpile is depleted. 1228 hrs per year are available for crushers to operate to process recovered ROM material.

A typical build up and drawdown curve for the ROM ore stockpile is shown in Figure 6-3.

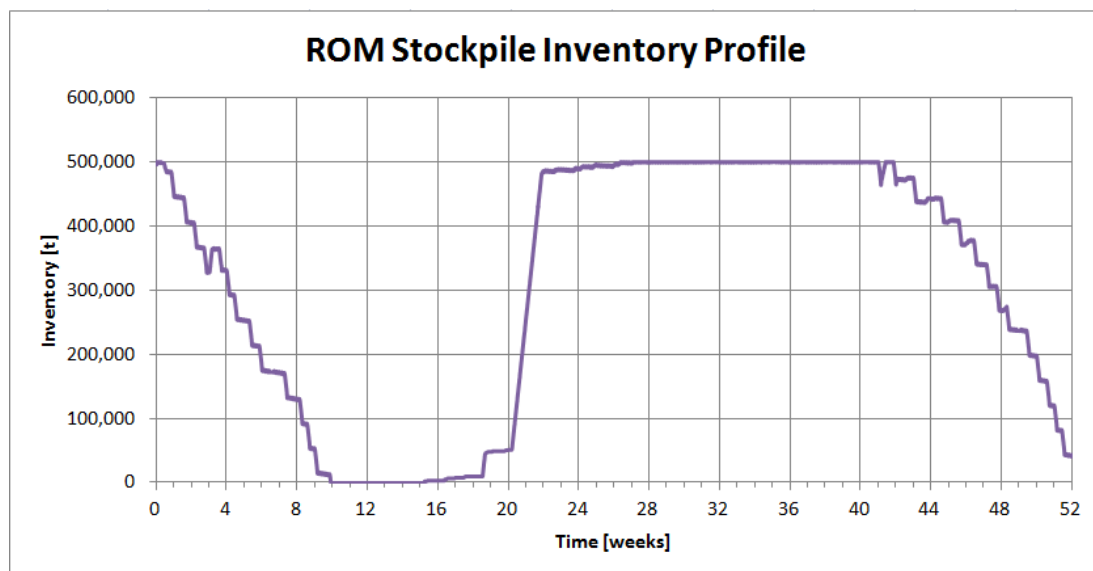


Figure 6-3: ROM Ore Stockpile Ore Profile (typical year profile)

In addition to the bulk ROM stockpile (described above) a smaller surge capacity is provided immediately before the primary crushers. Once the ROM stockpile is depleted, circa week 8 in Figure 6-3, crusher feed is directly fed to the primary crusher pad by Mine Haul Trucks. A 10 kt primary crusher feed stockpile has been selected which is located ahead of the three primary crusher strings.

6.2.4 Primary Crushing and Stockpile

6.2.4.1 Run of Mine Sizing

During the Stage 2 Study data collection to establish a Run of Mine (ROM) feed specification was completed and reported within the Process Design Basis – Ore Handling (Appendix A6 1). Mining definition work completed over the duration of this study confirms the specification of Run of Mine (ROM) material to be unchanged from that reported in the basis of design.

The ROM particle size distribution curve is used as the basis for the crushing simulations and equipment sizing. It plays a key role in the plant performance since it influences the proportion of lump and fines generated. Recent operation data were used to update the ROM curve and assess the variability impact on process equipment design.

The Wipfrag data from 18 different samples covering the period between February and July 2016 were received from BIM. Wipfrag data are obtained based on a camera that capture images of the ROM and evaluate the size distribution. Wipfrag data are known to be accurate at coarser size (+20 to 1000 mm) but inaccurate at finer size (-20 mm). They provide relatively accurate measurement of ROM F80 which is a measurement at coarser size.

The Wipfrag data were adjusted using the Swebrec formula (see report H352034-1000-210-230-0001 for details). After the correction, it is estimated that the amount of particles below 6.3 mm should account for 6 to 10% of the total ROM. The new corrected average, minimum and maximum curves shown on Figure 6-4 were used for equipment design and sizing.

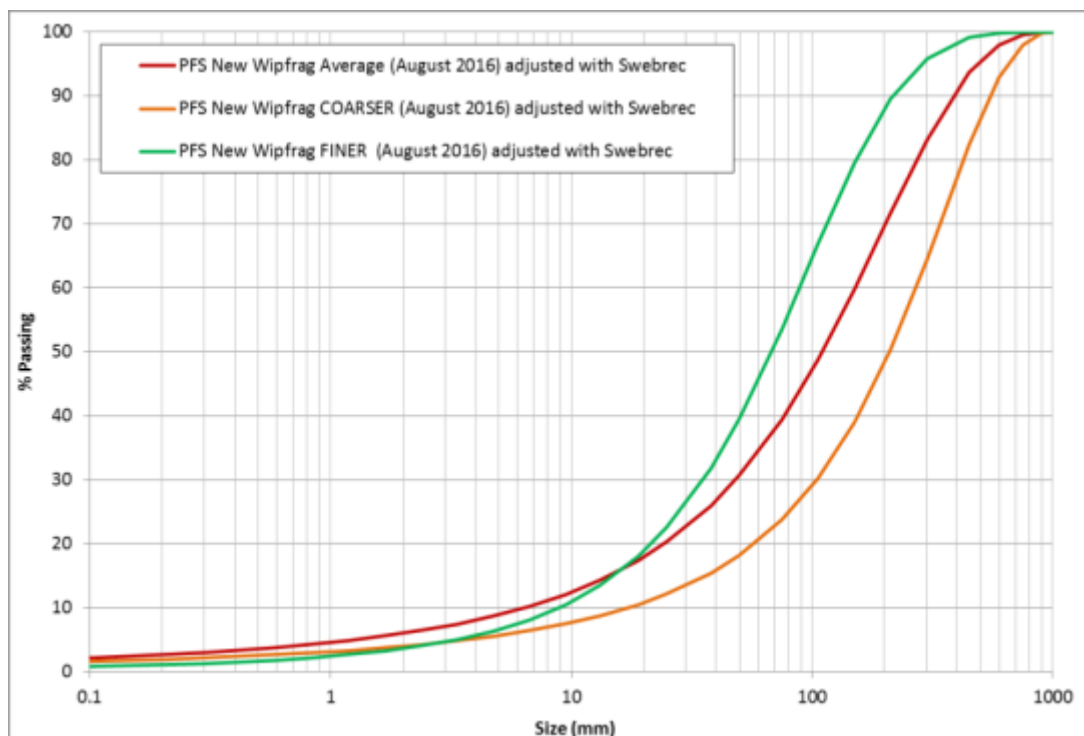


Figure 6-4: ROM Minimum, Average and Maximum PSD

The process design (crushing and screening concepts) were developed in the Stage 2 Study. The design considered reconfiguration of the existing crushing and screening lines so they produce a nominal -150 mm product (p90 passing) which is then railed to Milne for final sizing to meet DSO specifications.

Design parameters defined in this study provided the basis for setting the specifications for primary crushing, crushed ore screening and secondary crushing duties.

The Stage 3 Study execution plan defined in the Stage 2 Study Report noted the equipment and plant required for the project was typically off the shelf designs provided by reputable and large mining industry equipment suppliers. The execution plan adopted for Stage 3 included preparation of functional operating specifications for the design and supply of the majority of the equipment required for the project. During the Stage 3 Study, process equipment was defined using a functional specification approach, with equipment design and specification undertaken by experienced equipment vendors. The equipment vendors undertook detailed process design and equipment specification and proposed equipment in aligned to the functional requirements defined during the Stage 3 Study.

The crusher strings were considered special equipment having been previously supplied by MASABA. MASABA has provided a budget bid for relocating and performing modifications to the crushers in accordance with a functional specification based upon predictions for production of a -100 mm Primary Crushed Ore from ROM materials.

MASABA has confirmed a single modified crusher string is capable ore processing ROM ore at a rate of 700 tph. The 700 tph rate is the rate required for processing of 12Mtpa of ore with a crusher availability of 65% over an entire year (8760 hours). For the typical size distribution of ROM feed, only 248 tph will be processed by the crusher with the remaining 452 tph bypassing the crusher after pre-screening on the grizzly ahead of the jaw crusher. A feed rate of 700tph aligns with the required and predicted feed rate for three crusher units of 2107 tph or 700 tph for a single unit.

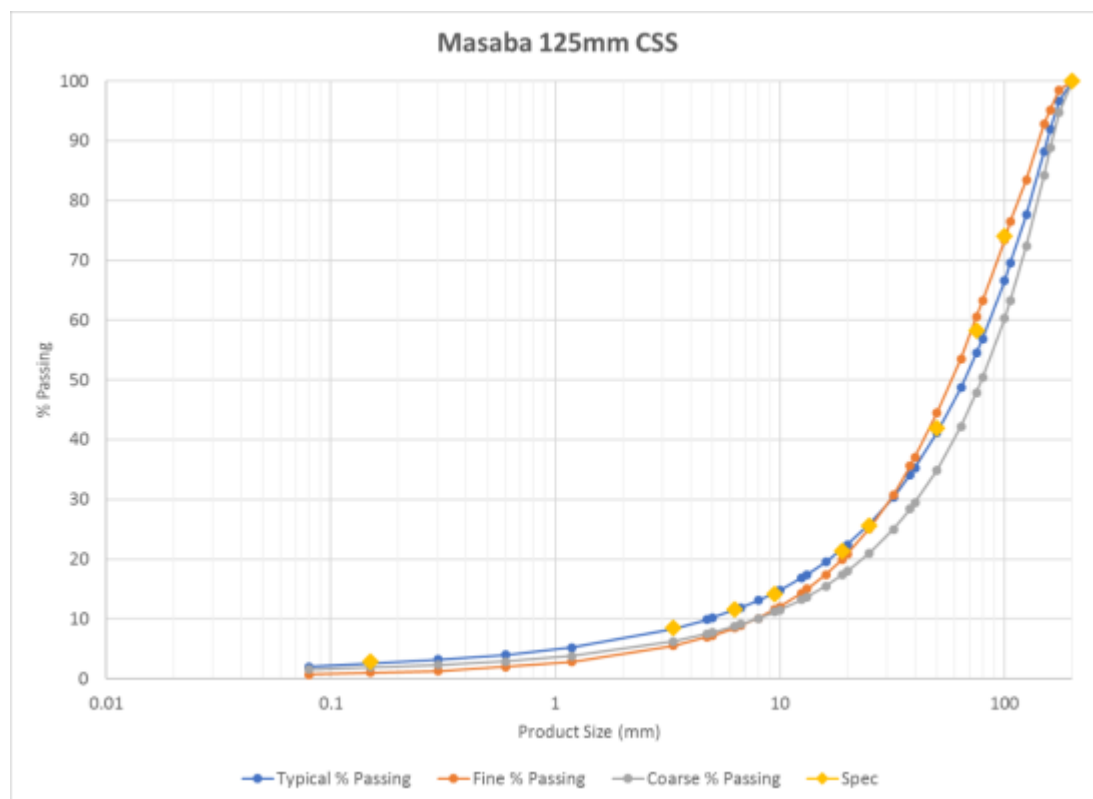


Figure 6-5: MASABA Modified Primary Crusher Performance

MASABA's offering (Appendix A6-8) increases the Closed Side Set (CSS) of the jaw crusher from 100 mm to 125 mm in their proposal. At 125mm CSS the crusher system (ref Figure 6-5 and Appendix A6-8) produces a product which is marginally more coarse than the typical size fraction defined in the Stage 2 Study. For the +32 mm fraction this maximises lump production from the primary crusher, offering potential for increasing lump produced from the downstream product crushing and screening plant. During detailed design fine tuning of the

CSS and robust integration with the detailed specification of the crushers and screens for the secondary crushing and screening plan will be required.

6.2.4.2 Train Load Out Inventory

The primary crushing circuit is expected to operate at full capacity for all designed operating hours. Appendix A6-4 presents the results of annualized rail system outages and their impact upon train load out inventories at the mine. These results are presented in Figure 6-6. The figure shows inventory levels typically between 5 kt to 7 kt will arise at the mine. Larger scale inventories as high as 20kt and 35 kt may arise in exceptional circumstances.

Provision has been made for construction of a primary crushed ore stockpiles downstream of each of the three crusher strings. Each pile has a capacity of 10 to 12 kt. The stockpile build up before arrival of a train and the crusher string throughput during train loading provides the requisite -100 mm material for loading to each train.

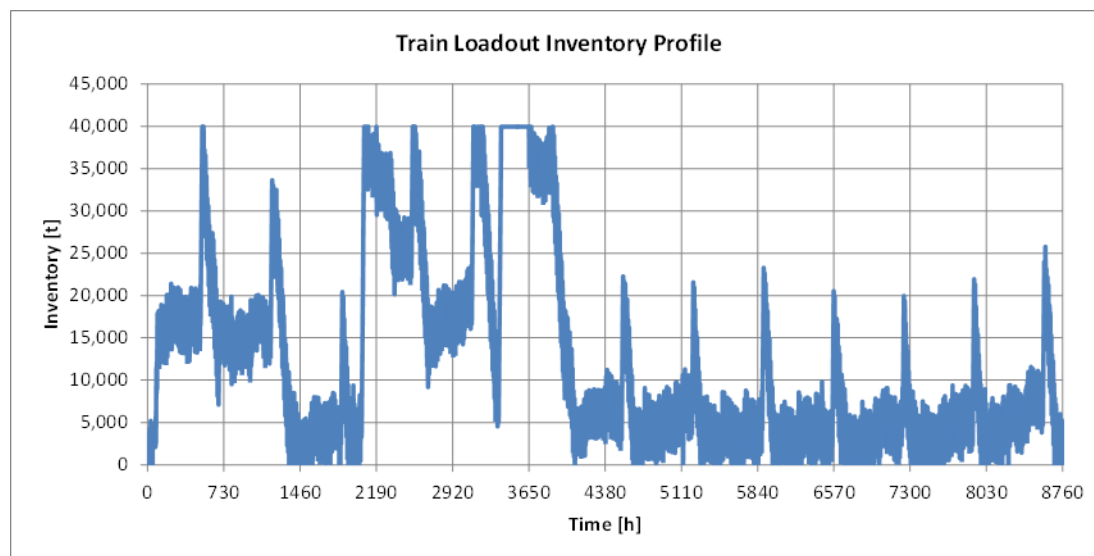


Figure 6-6: Train Loadout Inventory Profile

6.3 Ore Transport and Rail Operations

Appendix A6-1 defines the outcomes of the operations simulation defining the needs for the rail system to haul 12 Mtpa of -100 mm material from Mary River to the port at Milne. The report notes the need for:

- Two trains to be in service each comprising two locomotives with 72 ore cars with each ore car having a capacity of 106 tonne.
- Trains running on a run when ready basis.
- Single track with a single passing loop.

During the Stage 3 study a discrete Rail Operations – Static and dynamic modelling analysis was completed which undertook a detailed assessment of train operations which considered

the alignment (vertical and horizontal) of the track, rolling stock performance, rolling stock characteristics, locomotive performance factors, and other factors (refer to Appendix A6-9). The approach taken is shown in **Figure 6-7**.

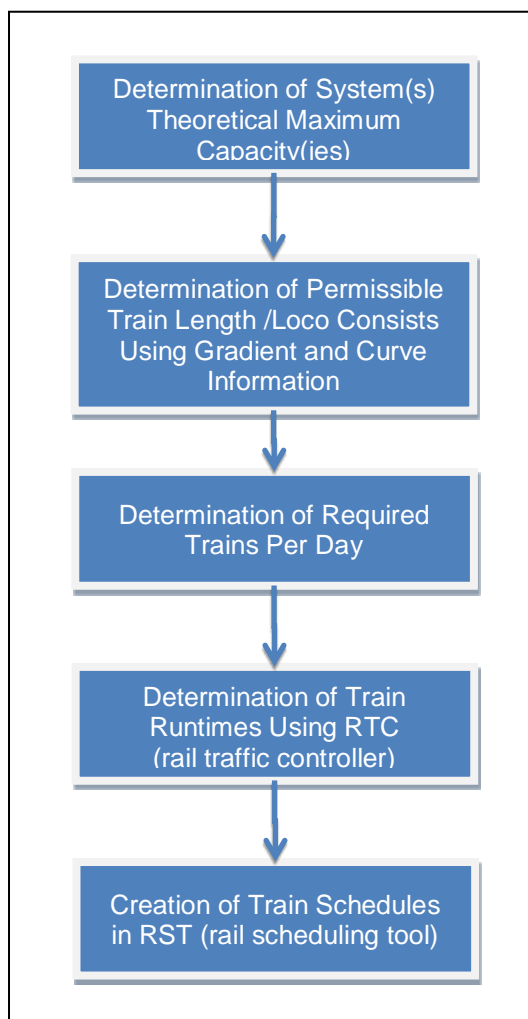


Figure 6-7: Rail Study Approach

The report confirmed the outputs of the overall materials management process reported in Appendix A6-3.

Figure 6-8 shows that approximately 5 trains (72 cars, 106t payload) per 24 hour period will meet the production requirements of the project with the track geometry defined for the project and described in Section 8 and 10 of this report.

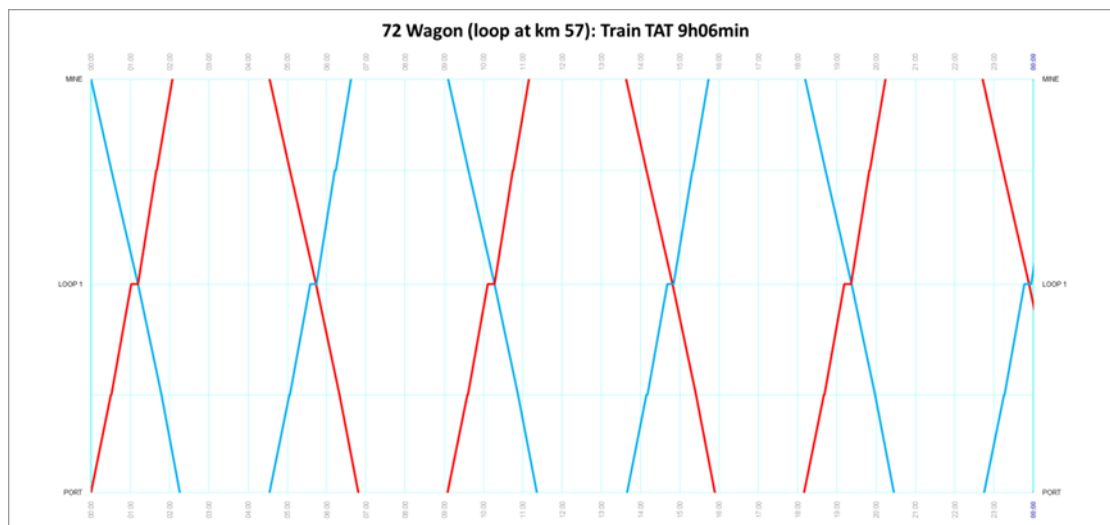


Figure 6-8: Two Train-Set, 72 Car Train Schedule

With this schedule expected ore deliveries to Milne will follow the profile shown in Figure 6-9. A period of 12 days for a rail outage circa week 21 has been allowed for a rail system shut down during the seasonal freshet and allows for planned maintenance work on the rail line.

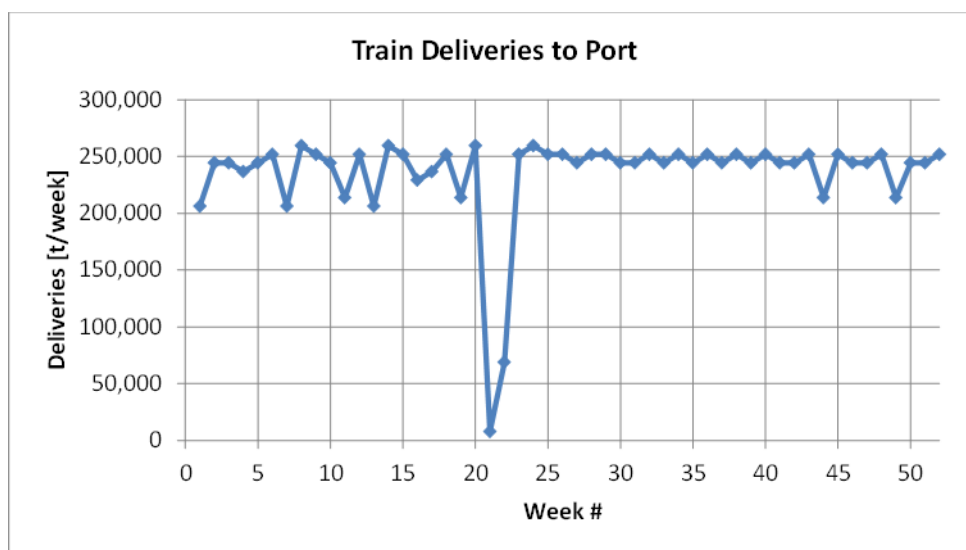


Figure 6-9: Train Deliveries to Milne from Appendix A6-3

6.4 Iron Ore Process Plant, Onsite Infrastructure and Port

6.4.1 Process Definition

The flow sheets developed for the Milne port area in which will be located train unloading, product crushing, product screening, product stacking, reclaim and shiploading are driven by the material flow requirements for the project and have not changed since the Stage 2 Study.

Development of the process plant for processing facilities at Milne has been driven by:

1. Arrival and unloading times for trains.
2. Achieving constant year round steady state operation of the product crushing and screening plant and stacking operations.
3. Seasonal reclaim of both lump and fines product to match arrival of ships sized from Panamax to Cape during the defined shipping season.

The process at the Milne Port processing area for ore processing is shown in Appendix A6-10 and Appendix A6-11.

Definition of supporting infrastructure elements (Water, sewage and fuel) have been defined and are shown in Appendix A6-12 and Appendix A6 -13.

The definition of the processing requirements have been developed through the bid of design, supply and install contracts on a firm price basis. The work for the port has been combined into a single package, CM001 – Bulk Materials Handling & Processing. This scope of this package includes design, fabrication, supply and construction related to:

- Rail car unloader.
- Primary crushed ore stockpile.
- Primary crushed ore reclaim tunnel.
- Primary crushed ore screening and secondary crushing plant.
- Lump ore stacker for stockpile #2 (fine ore will be stacked by way of wheeled mobile equipment to stockpile #1).
- Automated lump ore reclaiming plant.
- Ship loading plant, including bins for balancing ship loader downtime for hatch changes.
- Conveyors to connect the rail unloading system to the crushing and screening plant, stockpile, reclaim, and ship loader.

Firm bids have been received from five vendors. At the completion of the Stage 3 Study, two vendor submissions have been eliminated. Offers from Thyssen Krupp, Sandvik and DF will require further work to finalise negotiations to form and execution contract. Notwithstanding the three remaining bidders (DF, Thyssen Krupp and Sandvik) have presented technical solutions which are compliant with the functional requirements of issued functional specifications for contract CM001.

6.4.2 Material Properties

Substantial testwork has been completed to assess the material handling properties of the Mary Rive Iron Ore. Details of prior testwork, provided to contractors bidding package

CM001 is contained in Appendices A6 -13 to A6 – 22. Of importance in this material are the following:

- Mary River iron ore extremely hard and abrasive. Contractor's completing design contracts shall ensure designs are adequate for the specified material properties.
- Based on the Employers current operations Primary Crushed Ore and Lump Ore will remain flowable in all weather conditions without heating of chutework or equipment.

6.4.3 Ore Unloading and Stockpile

Appendix A6-1 noted the need for a rail car unloading system with the ability to unload a single rail car in 61 seconds per car. Appendix A6-9 demonstrates how the operation of the rail unloader integrates with the train system. Appendix A6-9 includes the 61 second train loader cycle time into calculations to demonstrate the viability of a train consist and schedule as defined in Section 6.3, above.

Bids received show that car unloading cycle times of 61 seconds per car are achievable. Thyssen Krupp notes a cycle time of 80 to 95 seconds. Adoption of the Thyssen Krupp proposal will alter the train cycle time requiring addition of two ore cars per train to ensure project throughput. This change represents a minor process variation with Thyssen Krupp which does not materially change the process design proposed for the Project.

To maintain constant operation of the crushing and screening plant and batch wise operation of the train unloading system (i.e. it operates continuously 5 times per day) a stockpile is required to decouple the train unloading process and the downstream crushing and screening plant.

The dynamic process modelling recognised the need to install a stockpile after the train unloading station, refer to Figure 6-10 from Appendix A6-5.

The figure reflects a need for approximately 10 kt with long term peak of approximately 25 kt of buffer storage ahead of the crushing plant. Designs provided by Thyssen Krupp and Sandvik have validated this modelling outcome with both contractors recommending a crushed ore stockpile with a live capacity of 8-10 kt with a dead capacity of 25 kt. Access to the dead zone of the stockpile will be granted through use of a dozer or Front end loader when access to the dead zone is required.

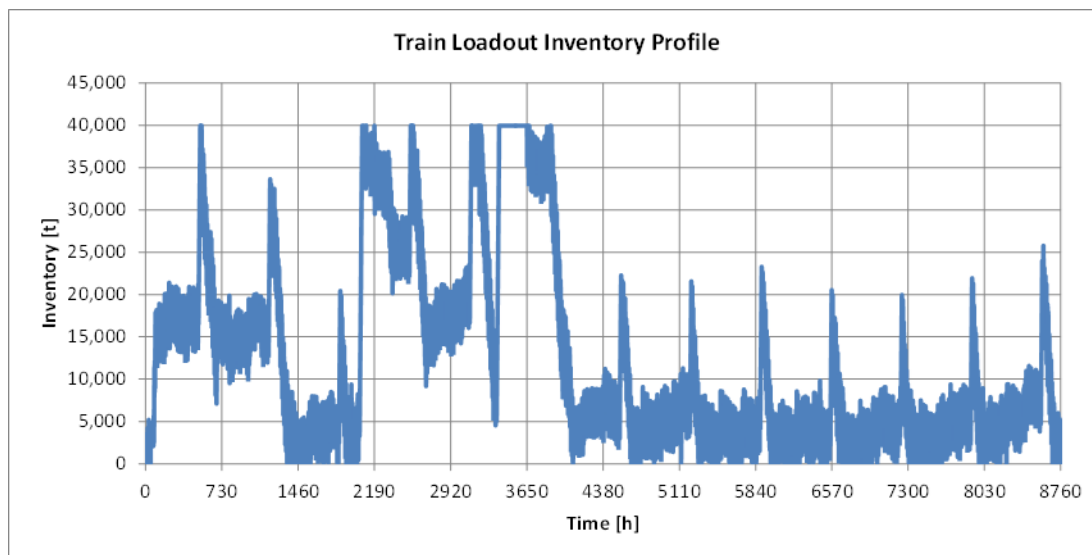


Figure 6-10: Milne Primary Crushed Ore Stockpile Capacity

The throughput of the reclaim system has been set to match the required federate to the crushing and screening plant.

6.4.4 Secondary Crushing and Screening

The crushing and screening process has been designed such that ore reclaimed from the Primary Crushed Ore Stockpile is first screened to scalp out fines and lump product sized material from the -100 mm primary crushed ore. Over size material (+32 mm) is directed to a secondary crusher to produce material with a top size of -32 mm. Crusher product is directed to the screen feed belt as a recirculation flow to be rescreened and recover lump and fines product.

Process simulations show that with an average feed of 2107 tph will generate a recirculating load of 2645 tph which becomes the design feed rate to the screens. The plant defined in Appendix A6-10 was intended to produce 77% lump and 27.5% fines with a fines in lump (-6.3 mm content) ratio of no more than 8%. The fines product should contain no more than 15% +6.3 mm material.

Process plant proposed by during the bid process show plant to be able to produce between 68 & 74% lump. Fines in lump levels less than 1% and lump levels in fines approaching 0% have been proposed. Variations in plant configurations for the options tendered give rise to a variation in internal flows when compared to the process design issued for bid. At a crushing and screening plant battery limit, plants proposed align with the mass flow requirements contained in the bid documents and as defined in Appendix A6- 1.

6.4.5 **Stockpiling**

Definition of stockpile volumes derives directly from dynamic simulations of ship loading, reclaiming and stacking activities. Appendix A6-3 defines the total on ground stockpile needs to be 9.4 Mt (lump and fines), see Figure 6-12.

The operating methodology is that whilst ships are at berth and loading, ore from the lump yard conveyor bypasses the stacker is direct loaded. Lump ore from the screening plant is supplemented by ore reclaimed from the bucket wheel reclaimer.

Dimensions of the new lump stockpile have been set according to physical repose data collected from site. The need to constrain the length of the stockpile within permit boundaries requires that the stacker have reach to stack to the full width required to achieve required stockpile volumes. Use of machines with 60m booms limits the live capacity of the lump pile to less than the total volume of the lump pile. Design of the stockpile has been completed so that quantity of ore available for live reclaim is maximised and only 1.4 Mt will need front end loaders to move this ore to be accessible by the reclaimer, refer to Figure 6-11.

Equipment proposed by the remaining bidders for lump stacking do not preclude stacking operations using frequently used stacking methods for ore blending. Bidders have noted the likelihood of using pilgrim step reclaim methods for lump reclaim. The large stockpile size (approximately 600 train loads per lump stockpile) provides substantial linear blending capability in stockpile creation. Use of a pilgrim step reclaim methodology further increases the blending ratio that may be achieved from the stockpile system, such that ore reclaimed from the stockpile will be uniform in grade with a low grade variance, subject to imposition of mine grade control measures in line with accepted practice within the iron ore processing industry. Ore processing grade reporting will be driven by samplers installed at Mine:

- Lump and fines automated sample collection from ore discharging the screen system which is immediately prior to stacking.
- Ship loader samplers to sample ore as it is loaded via Ship loader 1 and the new ship loading system to be installed on the new dock.

Ore sampling at Milne will capture grade and mineralogy variations on ore presenting to the stockpiles, after selective mining, ROM pad, primary crusher pad, trainloading, train unloading, primary crushed ore stockpile blending and crushing and screening circuit blending operations.

The stockpile and blending operations proposed differ from other comparable operations where grade control is focussed on ship to ship variability and stockpiles being created to suit specific shipment grade targets. The proposed lump piles will provide a consistent grade of product on a year to year basis.

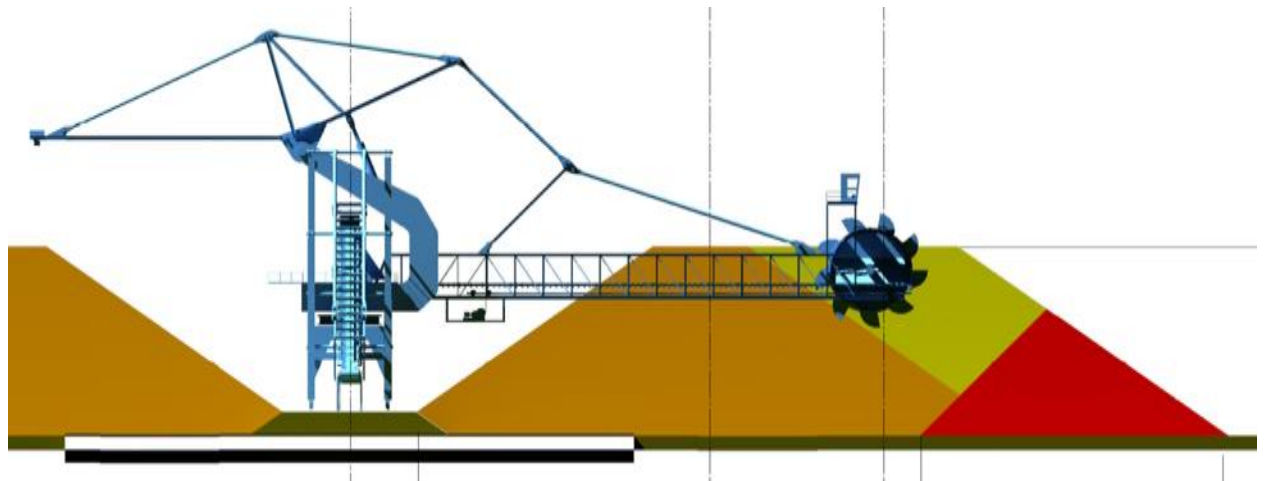


Figure 6-11: Lump Stockpile Geometry

- Orange cross section – standard stockpile cross section = 4.8 Mt.
- Yellow cross section – added live volume² = 1.6 Mt.
- Red cross section – added dead volume = 1.4 Mt.
- Total live volume = 6.4 Mt; total stockpile volume reclaimed with assistance from mobile equipment = 7.8 Mt

Thyssen Krupp and Sandvik have confirmed stockpile sizes and configuration.

² Added live volume based on 45 deg drained angle of repose (compared to 35 deg stacking angle)

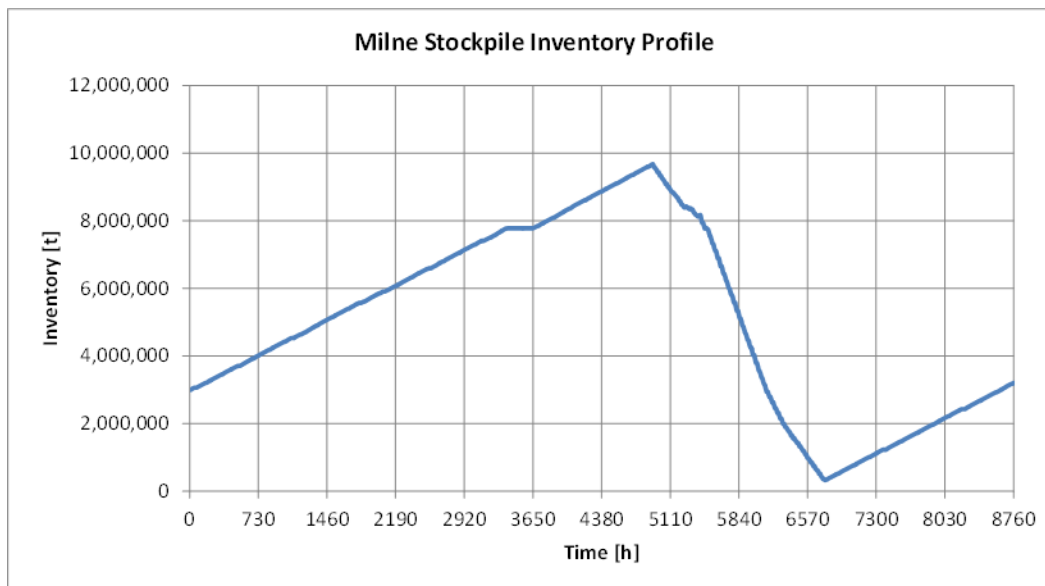


Figure 6-12: Product Stockpile Volumes (lump and fines)

Fine ore will be stockpiled on existing stockpiles using mobile plant. A small stockpile will be created adjacent to the screening plant to allow for FEL reclaim of fines before it is trucked to the existing fines stockpiles. The ratio of lump to fines in the ore mined and processed sets the fines production and stacking rates.

6.4.6 Reclaiming

6.4.6.1 Lump Ore

Appendix A6-5 provides an analysis of port operations and ship loading activities calibrated to data collected in ship movements in 2016. The analysis concludes that to obtain 12 Mtpa of DSO; shipped the lump ship loading facility has to have a capacity of 16,000 tph whilst ship loading during the open water season. The lump ship loading function is directly drives required reclaim rate for lump. Appendix A6-5 shows that maximising berth time and shiploading rate requires lump ship loading at a rate of 16,000 tph. The design rate for the lump reclaim system has been set at this rate and considers shiploading during the summer season must occur at 16,000 tph under conditions when the crushing and screening plant is off line. Reclaimer load during periods when the crushing and screening plant is operational may be relaxed by the amount of ore produced in the crushing and screening plant which will bypass the lump stockpile.

6.4.6.2 Fine Ore

Fines from the screening plant will be transport to a modified stockpile for existing Ship Loader #1.

Required stockpile live capacity for average year production and shipping is 2.1 Mt. The stockpile concept is as per existing operations however the reclaim conveyor will be modified to suit the proposed lump stockpile arrangement as shown in Figure 6-13.

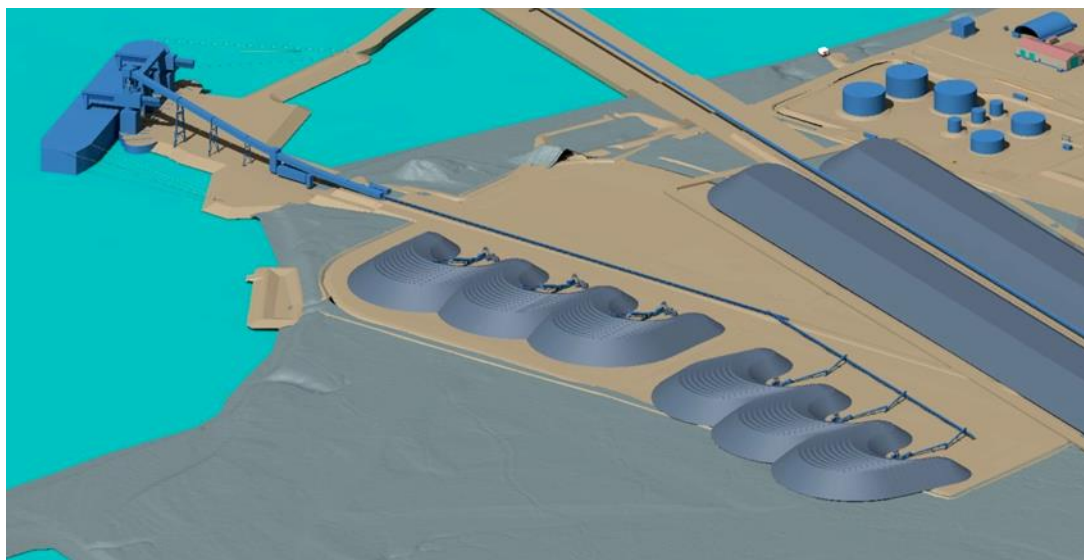


Figure 6-13: Fine Ore Stockpile and Reclaim

Fines from the screening plant are discharged into an intermediate stockpile adjacent to the screening building. Four (4) Heavy Mining Equipment (HME) vehicles (existing CAT 740's) will transport the fines from the intermediate stockpile to the ship loading stockpile where the material will be stacked using the existing radial stackers.

Reclaim from the stockpile to feed Ship Loader #1 will be as per current operations with no upgrade included in the Expansion Project scope. The design reclaim rate is 6,000 t/h with an assumed operating efficiency of 80% (ie. the average reclaim rate achieved during "full rate" operations is $6,000 \times 80\% = 4,800$ t/h). Appendix A6-5 confirms the adequacy of the current ship loading circuit for 12Mtpa project fine ore ship loading requirements.

6.4.7 Ship Loading – Conveyor

Conveyors connecting the reclaimers and ship loading facility for lump export have been sized to suit the maximum duty of the reclaimer and ship loader operations.

6.4.8 Ship Loading

Appendix A6-5 sets the context for defining the number, type of vessel, size of vessel and loading time required to maximise shipping rates during the limited shipping season. To achieve the required export of 12 Mtpa of ore, the existing shiploader #1 will continue to load at a rates define in Section 6.4.6. No work will be undertaken to increase shiploader #1 capacity during the 12 Mtpa expansion.

To achieve lump export consistent with 12 Mtpa of total exports, the shiploaders for dock #2 are required to operate at 16,000 tph.

Bids received confirm analysis contained in Appendix A6-5.

6.5 Reference Documents

Document Number	Title	Revision	Date	Appendix Number
H352034-1000-210-210-0002	Process Design Basis – Ore Handling	2	2017-01-10	A6 - 1
H352034-1000-210-230-0001	Process Design Report	2	2017—1-10	A6 - 2
H353024-2100-210-230-0002	Supply Chain Capacity Analysis	0	2017-15-12	A6 - 3
H352034-1100-210-242-0001	Dynamic Simulation – Model of Supply Chain Operations	0	2017-01019	A6 - 4
H353024-2100-210-230-0001	Port Shipping Capacity Analysis	1	2017-01-10	A6 - 5
H353024-4100-210-282-0001	Mine Site Ore Handling Process Flow Diagram	1	2017-01-23	A6 - 6
H353024-4700-221-282-0001	Mine Site Water and Sewage Process Flow Diagram	2	1/13/2017	A6 - 7
	MASABA Process Outputs – Primary Crushing	157317	March 17 2017	A6 - 8
H352034-3000-200-230-0001	Rail Operations – Static and Dynamic Modelling	2	2017-01-10	A6 - 9
H352024-2100-210-282-0001	Milne Port Ore Crushing and Screening Process Flow Diagram	1	23-01-2017	A6 - 10
H352024-2100-210-282-0002	Milne Port Ore Crushing and Screening Process Flow Diagram	1	23-01-2017	A6 - 11
H353024-2700-221-282-0001	Milne Port Water and Sewage Process Flow Diagram.	2	1/13/2017	A6 - 12
H353004-48000-210-282-0001-0001	Port Site TM001 Fuel system Process Flow Diagram	0	2017-03-27	A6 - 13

Document Number	Title	Revision	Date	Appendix Number
	SGS MINERALS SERVICES. Baffinland Mary River Grindability Summary, Project Number 13831-001, 02/01/2013			A6 - 14
	SGS MINERALS SERVICES. An Investigation into The Characteristics of DSO Samples from The Mary River Deposit, Prepared for Baffinland Iron Mines Corporation, Project Number 13831-001 – Final Report, 15 May 2013			A6 - 15
	SGS MINERALS SERVICES. An Investigation into The Abrasivity Characteristics of Five Samples from the Baffinland Mine, Prepared for Baffinland Iron Mines Corporation, Project Number 15296-001, 23 September 2015			A6 - 16
	Jeneke & Johansen - Flow Property Test Report 9510-1 (28 January 2009) – Flow Property Test Results for Iron Ore			A6 - 17
	Jeneke & Johansen - Flow Property Test Report 9510-2 (August 5, 2009) – Flow Property Test Results for Iron Ore Dust			A6 - 18

Document Number	Title	Revision	Date	Appendix Number
	Jeneke & Johansen - Flow Property Test Report 9719-1 (April 30, 2013) – Flow Property Test Results for Iron Ore			A6 - 19
	Jeneke & Johansen - Flow Property Test Report 9719-2 (June 4, 2013) – Stockpile Drainage Results and Analysis for Iron Ore Fines			A6 - 20
	Metso Minerals, Test Summary Report, Test Code 0600-81 (November 29, 2006)			A6 - 21
	Metso Minerals, Test Report on MP Cone Pilot Crushing Tests (November 28, 2006).			A6 - 22