Massive resource - multiple growth pathways...

Dense Media Separation Bulk Trial Achieves 9-30% Grade Uplift on Butcherbird Ores

- Bulk Dense Media Separation (**DMS**) trial conducted on Butcherbird manganese ores confirms the potential for improved processing using a DMS drum circuit vs ore sorters.
- Approximately 280 tonnes of material from the current operational areas transported to existing DMS facility for batch processing to evaluate DMS process effectiveness.
- Programme conducted as part of option evaluation for future plant expansion.
- Results indicate potential product **grade improvement of 9-30%.**
- More consistent separation of ore and waste achieved compared to ore sorters.
- Potential commercial benefits include a reduction in ore haulage and shipping costs and improvements in payability (achieved price/dmtu) due to higher grades.
- Butcherbird expansion studies will review options to incorporate a DMS drum in the processing circuit in future planned upgrades to the existing facility.

Element 25 Limited (**E25** or **Company**) (**ASX:E25**) is pleased to announce that it has completed a bulk trial, processing approximately 280 tonnes of Butcherbird manganese ores through the Dense Media Separation (**DMS**) plant located at the Bootu Creek Manganese Mine in the Northern Territory.

The Bootu Creek Mine is owned by E25's off-take partner, OM Holdings Limited (**OMH**). The test programme was undertaken in mid-June 2022.

The 280 tonne trial parcel, made up of six parcels of between 44 to 49 tonnes each, was transported to the Bootu Creek Manganese Mine via road train for processing through the existing production DMS facility.

Figure 1. Bootu Creek DMS processing plant (ref: DRA Global)

COMPANY SNAPSHOT

Market Summary		Board of Directors:	
ASX code:	E25	Seamus Cornelius	Chairman
Shares on issue:	153M	Justin Brown	MD
Share price:	$0.565	John Ribbons	NED

Element 25 Limited is developing the world class Butcherbird Manganese Project in Western Australia to produce high quality manganese concentrate and high purity manganese products for traditional and new energy markets.

The six parcels were processed through the DMS drum plant using three different media densities of 2.7, 2.9 and 3.1 g/cm^3, to provide data on the optimal processing design parameters for Butcherbird material.

The trial results clearly indicate that the use of a DMS drum can meaningfully improve manganese product grades by improving the elimination of waste and gangue materials from the product stream.

Manganese pricing is positively impacted by higher grades and eliminating sub-grade waste material also reduces the overall haulage and shipping costs of transporting the concentrate to market, thereby reducing overall operating costs, .

Figure 2. Butcherbird feed material on the wash screen after densimetric separation showing a clear delineation product and waste.

Trial Programme Results

Six parcels of ore were processed. **Sample A** consisted of five parcels of low-grade Butcherbird post ore-sorter manganese product with the primary feed material sourced from current operational mining faces to provide material for the test programme. **Sample B** consisted of a single sample of post- scalper ore which had undergone primary screening for the removal of fines material, with the coarse fraction used for the test programme through the DMS circuit. This was then compared to material from the same parcel of scalped ore which was further processed at Butcherbird via the existing process plant.

The results from the DMS processing of **Sample A** resulted in the **removal of an additional 3.5-7.3%** of waste material by weight from the run-of-mine feed that had undergone processing using the current production circuit. All cut densities yielded a similar result with a slightly better result at the highest cut density of 3.1 g/cm^3.

The net result is an increase in the final manganese grades from 28.3% Mn to up to 30.9% Mn, equivalent to a 9.1% improvement. Importantly this demonstrates that even for material where the ore-sorters struggle to achieve the optimum product grades, the DMS process is likely to deliver a higher product grade.

	DMS Density (g/cm^3)	Product Grade (% Mn)	Grade Uplift (%)	Product Volume Saving compared to Ore Sorter (%)
Ore Sorter Grade	-	28.30		-
DMS Grade	2.7	30.84	9.0	3.5
	2.9	30.85	9.0	4.5
	3.1	30.88	9.1	7.3

Figure 3. DMS test results for Sample A

Sample B comprised sub-grade material which was treated using two different methods. The bulk of the parcel was processed through the existing plant at Butcherbird, and yielded a below specification grade of 24.4% Mn due to presence of clays and other factors which impacted the effective operation of the ore sorter and its ability to remove the waste material.

Figure 4. Butchebrird ore post DMS processing

The ore sorters work using optical colour sensors which measure the Red-Green-Blue (**RGB**) colour of each feed particle. The sorters classify each particle as either ore or waste according to the algorithm that is currently being used. Consequently, it is very important that material is presented as cleanly as possible as any surficial clays or other debris can negatively impact the ore sorter effectiveness.

The DMS process relies on particle density so surface contamination should have only a minor detrimental impact. Importantly and as expected, the DMS plant was not effected by the presence of clays and other surface effects and successfully upgraded the relatively poor ore-sorter result of 24.4% Mn to an significantly improved grade of 32-33.4% Mn depending on the cut density.

As the cut density increases, the product grade increases, also as expected, however there is an associated recovery loss. The optimal density cut is still to be defined, however it is clear from these results that a relatively easily achievable medium density of 2.7 is adequate and the optimal density may be even lower, potentially reducing media costs.

	DMS Density (g/cm^3)	Manganese Grade (%Mn)	Mn Recovery (%)	Rejects Volume (%)	Extra Rejects Removed compared to Ore Sorting alone (%)
Scalper Feed	-	9.8	-	-	-
Ore Sorter Feed	-	21.5	100.0	-	-
Ore Sorter Product	-	24.4	82.1	27.8	-
DMS Grade	2.7	32.0	92.2	36.5	8.7
	2.9	32.2	88.6	39.7	11.9
	3.1	33.4	72.2	59.5	31.7

Figure 5. DMS test results for Sample B

Sample B shows that the use of a DMS circuit can increase the manganese grade by an extra 7.55 to 8.92% by the removal of material which is currently part of the tonnage of waste in the Ore Sorter product. This allows manganese grades to increase from 24.4% Mn to between 32.0 and 33.4% Mn for that material, equivalent to at least a 30% improvement.

Element 25's, Managing Director Justin Brown, said "*The DMS trial has demonstrated that there are significant potential improvements and costs savings available to Element 25 by using a DMS drum circuit as an alternative to the current ore sorting stage of the manganese processing flow sheet. A modified process including DMS should result in more consistent grades and recoveries which in turn should attract higher premiums on price and reduce operating costs. The Company is currently undertaking engineering work to include a DMS drum in a future plant reconfiguration at Butcherbird.*"

About the Butcherbird Manganese Project

E25's Butcherbird Manganese Project is a world-class manganese resource with current JORC resources of more than 263Mt of manganese ore[1]. In May 2020, the Company completed a Pre-Feasibility Study (**PFS**)[2] with respect to developing the deposit to produce manganese concentrate for export to generate early cashflow with a modest capital requirement[3]. Stage 1 of the Project development plan is complete and E25 has commenced shipping ore to offtake partners.

The PFS also highlighted the Project's potential for significant growth beyond the initial Stage 1 production volumes (the studies examined the potential for a 2X and 3X expansion to Stage 1 within 12 months of initial commissioning), and the Company plans to expedite the expansion of the Project as soon as practicable once final process optimisation work is completed and relevant approvals are in place.

In addition to the concentrate export business, the Company has completed extensive research & development and laboratory test work into the production of high purity manganese products including battery grade manganese sulphate (**HPMSM**) and High Purity Electrolytic Manganese Metal (**HPEMM**). The work has highlighted that the Butcherbird ores are highly amenable to an ambient temperature, atmospheric pressure leach process, resulting in a very efficient extraction of the manganese into solution, the key requirement for the cost effective and sustainable production of HPMSM and HPEMM.

The Project straddles the Great Northern Highway and the Goldfields Gas Pipeline, providing turnkey logistics and energy solutions. The Company plans to integrate renewable energy into the power solution over time to target a zero-carbon footprint for the Project, which is expected to also reduce energy costs. A cleaner, lower carbon flowsheet and high penetration renewable energy will place Butcherbird at the forefront of sustainable high purity manganese production.

Mineral Resources

Category	Tonnes (Mt)	Mn (%)	Si (%)	Fe (%)	Al (%)
Measured	16	11.6	20.6	11.7	5.7
Indicated	41	10.0	20.9	11.0	5.8
Inferred	206	9.8	20.8	11.4	5.9
Total	**263**	**10.0**	**20.8**	**11.4**	**5.9**

Notes:
- Reported at a 7% Mn cut-off for the Measured and Indicated categories and an 8% Mn cut-off for the Inferred categories.
- All figures rounded to reflect the appropriate level of confidence (apparent differences may occur due to rounding)

[1] Reference: Company ASX release dated 17 April 2019.
[2] Reference: Company ASX release dated 19 May 2020.
[3] Reference: Company ASX release dated 3 December 2020.

Mining Reserve

Based on the results of the Pre-Feasibility Study completed in May 2020, E25 has published a Maiden Ore Reserve for the Project of 50.55Mt in the Proved and Probable categories[4].

Classification	Tonnes (Mt)	Grade (Mn%)	Contained Mn (Mt)	Recovered Mn (Mt)
Proved	14.4	11.5	1.65	1.35
Probable	36.2	9.8	3.56	2.92
Total	50.6	10.3	5.21	4.27

Justin Brown

Managing Director

Company information, ASX announcements, investor presentations, corporate videos and other investor material in the Company's projects can be viewed at: http://www.element25.com.au.

Competent Persons Statement

The company confirms that in the case of estimates of Mineral Resource or Ore Reserves, all material assumptions and technical parameters underpinning the estimates in the market announcements dated 17 April 2019 and 19 May 2020 continue to apply and have not materially changed. The company confirms that the form and context in which the competent person's findings are presented has not been materially modified from the original market announcements.

The information in this report that relates to Exploration Results and Exploration Targets is based on information compiled by Mr Justin Brown who is a member of the Australasian Institute of Mining and Metallurgy. At the time that the Exploration Results and Exploration Targets were compiled, Mr Brown was an employee of Element 25 Limited. Mr Brown is a geologist and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Brown consents to the inclusion of this information in the form and context in which it appears in this report.

This announcement is authorised for market release by Element 25 Limited's Board of Directors.

[4] Reference: Element 25 Limited Reserve Statement lodged with ASX 19 May 2020.

Appendix 1 - JORC Code, 2012 Edition – Table 1 – Butcherbird Project Exploration Drilling

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	• Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling. • Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. • Aspects of the determination of mineralisation that are Material to the Public Report. • In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems.	• Samples were selected for from cones of product or waste using a hand-held scoop. • The geology of the manganese mineralisation at Butcherbird comprises interlayered bands of manganese and non manganese clay and shale. • Composite samples for assay were split using a riffle splitter from composite samples collected from ore-piles using a hand-help scoop to provide a representative sub-sample for assaying.
Drilling techniques	• Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	• N/A. Samples were from mining.
Drill sample recovery	• Method of recording and assessing core and chip sample recoveries and results assessed. • Measures taken to maximise sample recovery and ensure representative nature of the samples. • Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	• N/A. Samples were from mining.
Logging	• Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. • Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. • The total length and percentage of the relevant intersections logged.	• N/A. Samples were from mining. Geological logging was not relevant to the processing test work.
Sub-sampling techniques and sample preparation	• If core, whether cut or sawn and whether quarter, half or all core taken. • If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. • For all sample types, the nature, quality and appropriateness of the sample preparation technique. • Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. • Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling. • Whether sample sizes are appropriate to the grain size of the material being sampled.	• Samples were from mining. Scooped samples were subsampled for assay using a riffle splitter. • QAQC is limited to the internal lab procedures. Duplicates were not collected for this sampling programme. • The samples are believed to be representative for the purposes for which they were collected.
Quality of assay data and laboratory tests	• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. • For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. • Nature of quality control procedures adopted (eg standards, blanks, duplicates, external	• Samples were assayed using the on-site laboratory via XRF assay processing.

Criteria	JORC Code explanation	Commentary
	laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	
Verification of sampling and assaying	• The verification of significant intersections by either independent or alternative company personnel. • The use of twinned holes. • Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	• N/A. Samples were from mining.
Location of data points	• Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. • Specification of the grid system used. • Quality and adequacy of topographic control.	• Sample locations were taken from the operational mining faces within the current pit.
Data spacing and distribution	• Data spacing for reporting of Exploration Results. • Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. • Whether sample compositing has been applied.	• N/A. Samples were from mining.
Orientation of data in relation to geological structure	• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. • If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	• N/A. Samples were from mining. Geological horizons are flat lying. Test parcels were from vertical mining faces. • There is no known sample biasing.
Sample security	• The measures taken to ensure sample security.	• The samples were transported to the site laboratory via a reputable transport company.
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	• No audit was undertaken for this programme.

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. • The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	• The Butcherbird Project consists of granted exploration licenses E52/2350 and 3606 and Mining Lease M52/1074. • The tenure is 100% owned by Element 25 Ltd.
Exploration done by other parties	• Acknowledgment and appraisal of exploration by other parties.	• The historical exploration data has been collected by Element 25 Limited and has been reported to high standards. • The methods of exploration and techniques used are considered appropriate for the deposit types sought (Mn)

Criteria	JORC Code explanation	Commentary
Geology	• Deposit type, geological setting and style of mineralisation.	• The geological target is supergene enriched zones of a regional manganiferous subtidal marine shale.
Drill hole Information	• A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: o easting and northing of the drill hole collar o elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar o dip and azimuth of the hole o down hole length and interception depth o hole length.	• These details are provided in tabulated form in the body of this report.
Data aggregation methods	• In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated. • Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail. • The assumptions used for any reporting of metal equivalent values should be clearly stated.	• Widths and grades are reported based on established experience with mining at the Butcherbird Project which has typically used a 7% resource cut-off for economic mineralisation. • No top-cut is applied as it is not appropriate for this style of mineralisation.
Relationship between mineralisation widths and intercept lengths	• If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. • If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').	• The mineralisation is flat lying. Test parcels were taken from 2m mining faces.
Diagrams	• Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	• N/A. Samples were from existing mining areas.
Balanced reporting	• Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	• All relevant assays have been reported.
Other substantive exploration data	• Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	• All relevant geological information has been reported.
Further work	• The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling). • Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	• N/A. Samples were from existing mining areas.