

DIRECTORY D8/2016

**FERROUS MINERAL COMMODITIES PRODUCED IN  
THE REPUBLIC OF SOUTH AFRICA  
2016**

**DIRECTORATE: MINERAL ECONOMICS**



**mineral resources**

Department:  
Mineral Resources  
**REPUBLIC OF SOUTH AFRICA**

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## **DISCLAIMER**

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## **SOUTH AFRICA'S FERROUS MINERAL COMMODITIES**

South Africa is host to the world's largest known resources of ferrous minerals, and remains a major producer of chrome, manganese and iron ores.

Chrome ore in South Africa is mined from the Upper Group 2 (UG2) seam, which also contains a significant amount of Platinum Group Metals (PGMs), as well as the Lower Group 6 (LG6) and Middle Group 1 & 2 (MG1/2) seams of the Bushveld Igneous Complex (BIC). As the largest chrome ore producer, South Africa contributes 44 percent to global chrome ore production. Iron ore is mined from the Bushveld Complex as well as the Kalahari basin of which, Thabazimbi in Limpopo Province and Postmasburg/Sishen in Northern Cape Province are the prime hosts. South Africa currently produces 2.5 percent of global iron ore.

The world's largest manganese reserves are found in South Africa in the Kalahari Basin near Hotazel in the Northern Cape Province. The country is the second largest producer of manganese ore after China, contributing 21 percent to global output from about 10 recorded mines.

Ferrous minerals producers have had to operate under exceptionally difficult conditions over the past few years. Low prices as a result of oversupplied markets were the leading cause of non-profitable concerns and, in some instances, contracted production in 2015. Several chrome ore-and manganese ore-producing companies were forced to put operations on care and maintenance, while others opted for a business rescue. As a result, the number of operating ferrous mines which appear in this publication will be less than those in previous editions. Heric Ferrochrome's Bokone and Morula underground chrome ore mines were put on care and maintenance in 2015, while Kumba's Thabazimbi operation is currently instituting closure procedures. Other producers of iron ore such as Lime-Chem resources as well as Foskor have also had to suspend operations, amid unfavourable market conditions. International Ferro Metals South Africa (IFMSA) and ASA Metals, which operate the Sky Chrome and Dilokong mines respectively, both opted for a business rescue and halted production until market conditions improve.

Ferrous minerals are critical inputs in the ferroalloys production and, South Africa is an established ferroalloys producer. Information on South Africa's ferroalloys producers can be found in the H1: South African Ferroalloys Handbook. The purpose of this directory is to provide a single source of information on South Africa's ferrous minerals producers for investors and clients in South Africa and abroad from the department.

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<b>CHROME ORE PRODUCERS</b>					
<b>CONTROLLING COMPANY</b>	<b>MINE CODE</b>	<b>PRODUCER AND LOCATION</b>	<b>MAIN SHAREHOLDER (S)</b>	<b>TYPE OF OPERATION AND PRODUCT SPECIFICATION</b>	<b>MARKETING COMPANY</b>
<b>CHROMEX MINING COMPANY (PTY) LTD</b> PO BOX 11368 CENTURION 0046  Tel: +27 (0) 11 765 2885 Fax: +27 (0) 11 675 2323	15042	Mecklenburg Chrome Mine  Tel: +27 (0) 11 668 3800 Fax: +27 (0) 11 668 3899  <i>Farm, Province</i> Mecklenburg 112 KT <b>Limpopo</b>	Synergy Africa JV 74%  BEE Partners 26%	Opencast  Metallurgical Lumpy (10mm Cr <sub>2</sub> O <sub>3</sub> 40% min)  Metallurgical Fines (-10mm Cr <sub>2</sub> O <sub>3</sub> 40% min)	Chromex Mining Company (PTY) LTD P O Box 11368 Centurion 0046  Tel: +27 (0) 11 668 3800 Fax: +27 (0) 11 668 3899
	14310	Stellite Chrome Mine  Tel: +27 (0) 11 668 3800 Fax: +27 (0) 11 668 3899  <i>Farm, Province</i> Stellite 255 JQ <b>North West</b>	Synergy Africa JV 80.5%  BEE Partners 19.5%	Opencast  Metallurgical Lumpy and Concentrates (Cr <sub>2</sub> O <sub>3</sub> 40% min)	Chromex Mining Company (PTY) LTD P O Box 11368 Centurion 0046  Tel: +27 (0) 11 668 3800 Fax: +27 (0) 11 668 3899



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CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p>ASSMANG LIMITED 24 IMPALA ROAD CHISLEHURSTON SANDTON 2146</p> <p>Tel: +27 (0) 11 779 1000 Fax: +27 (0) 11 779 1031</p>	13444	<p>Dwarsrivier Chrome</p> <p>Tel: +27 (0) 13 230 5300 Fax: +27 (0) 13 230 5318</p> <p>Mpumalanga Province Dwarsrivier 372 KT</p>	<p>ASSMANG - 50% ASSORE LIMITED 50%</p>	<p>Opencast LG6 Metallurgical plant</p> <p>RPC 1200 kt/a Crush, wash, screen, DMS, Mill, Spirals</p> <p>Metallurgical lumpy &amp; fines, (Cr<sub>2</sub>O<sub>3</sub> 40-46%;</p>	<p>Ore &amp; Metal Company Ltd. 15 Fricker Road Illovo Boulevard Johannesburg 2196</p> <p>Tel: +27 (0) 11 770 6800 Fax: +27 (0) 11 268 6440</p>
	13139	<p>Nkomati Polymetallic Mine</p> <p>Tel: +27 (0) 13 712 8200 Fax: +27 (0) 13 712 8300</p> <p>Mpumalanga Province Nkomati 0 Slaaihoek 540 JT 0</p>	<p>ARM PLATINUM 50% NORILSK NICKEL 50%</p>	<p>Underground RPC 900kt/a DMS, Mill, Spirals screens</p> <p>Metallurgical Concentrates</p>	<p>Ore &amp; Metal Company Ltd. 15 Fricker Road Illovo Boulevard Johannesburg 2196</p> <p>Tel: +27 (0) 11 770 6800 Fax: +27 (0) 11 268 6440</p>

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CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p>RUSTENBURG PLATINUM MINES 55 MAIN STREET JOHANNESBURG 2001</p> <p>Tel: +27 (0) 11 373 6111 Fax: +27 (0) 11 373 5111</p>	14606	<p>Thembelani/Waterval CRP</p> <p>Tel: +27 (0) 14 598 2360 Fax: +27 (0) 14 591 5008</p> <p>North West Province Farm 303 JQ 0; Waterval 307 JQ 0</p>	Anglo American Platinum (AAP)	<p>Spiral Plant (UG2 Chrome Conc)</p> <p>Met Grade % Cr<sub>2</sub>O<sub>3</sub> 40.5</p> <p>Chem Grade % Cr<sub>2</sub>O<sub>3</sub> 43</p> <p>%SiO<sub>2</sub> &gt;1</p>	<p>Anglo American Platinum Ltd 55 Marshall Street Johannesburg 2001</p> <p>Tel: +27 (0) 11 373 6111 Fax: +27 (0) 11 373 5111</p>
<p>MASA CHROME COMPANY RSA 81 MAIN STREET JOHANNESBURG 2107</p> <p>Tel: +27 (0) 11 832 2543 Fax: +27 (0) 11 832 2761</p>	10554	<p>Union Section Mine</p> <p>Tel: +27 (0) 14 786 1366 Fax: +27 (0) 86 594 4984</p> <p>Limpopo Province Brakspruit 299 JQ; Haakdoring 6 JQ; Hoedspruit 298 JQ; Klipfontein 300 JQ; Klipgat 281 JQ; Paardekraal 279 JQ; Rustenburg Townlands 272 JQ; Turfbult 404 KQ; Turffontein 302 JQ; Waterval 303 JQ; Zwartklip 405 KQ; Farm 504 KG</p>	<p>AAP ..... 74%</p> <p>Siyanda chrome investments 26%</p>	<p>Spiral plant (UG2 Chrome Conc)</p> <p>Met Grade % Cr<sub>2</sub>O<sub>3</sub>.....42 SiO<sub>2</sub> .....2.2 FeO .....27.5 Cr: Fe .....1.4 Size, AFS 70-80</p> <p>Chem Grade % Cr<sub>2</sub>O<sub>3</sub> 43 SiO<sub>2</sub> 1.2 FeO 27.5 Cr: Fe 1.39 Size, AFS 100-115</p> <p>Met Grade % Cr<sub>2</sub>O<sub>3</sub> 43 SiO<sub>2</sub> 1 FeO 27.38 Cr: Fe 1.40 Size, AFS 50-65</p>	<p>Siyanda Chrome (Pty) Ltd PO Box 62203 Marshalltown 2107</p> <p>Tel: +27 (0) 11 832 2543 Fax: +27 (0) 11 832 2761</p>

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CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p>AFRICAN MINING AND TRUST COMPANY LTD 15 FRICKER ROAD ILLOVO BOULEVARD JOHANNESBURG 2196</p> <p>Tel: +27 (0) 11 770 6800 Fax:+27 (0) 11 268 6440</p>	<p>10079</p>	<p>Rustenburg Minerals Development Company</p> <p>Tel: +27 (0)14 506 1002 Fax: +27 (0)14 506 1000</p> <p>North West Province Grootfontein 138JP Tweelaagte 175JP (Vogelstruisnek 173JP)</p>	<p>Assore Limited</p>	<p>Opencast LG6 Tailings MG1 + MG4 (ROM)</p> <p>Lumpy (R.O.M) 4 % Cr<sub>2</sub>O<sub>3</sub> 33,0 38,0 SiO<sub>2</sub> 4,0 Al<sub>2</sub> O<sub>3</sub> 12,3 FeO 22,0 MgO 12,0 Cr: Fe 1,30-1,3</p> <p>Concentrate % Cr<sub>2</sub>O<sub>3</sub> 40-44 SiO<sub>2</sub> 2.5-3.0 Al<sub>2</sub> O<sub>3</sub> 12,5 FeO 22,0 MgO 10,6 Cr: Fe 1.59</p> <p>Lumpy LG 6</p>	<p>Ore &amp; Metal Company Ltd 15 Fricker Road Illovo Boulevard Johannesburg 2196</p> <p>Tel: +27 (0)11 770 6800 Fax:+27 (0)11 268 6440</p>
<p>PLATCRO MINERALS PRIVATE BAG 20761 PROTEA PARK 0305</p> <p>Tel: +27 (0) 82 809 8415 Fax: +27 (0) 86 582 1597</p>	<p>14814</p>	<p>Platcro Minerals</p> <p>Tel: +27 (0)82 809 8415 Fax: +27 (0)86 582 1597</p> <p>North West Province Bokfontein 448 JQ PRTN 14; 52; 64; 65; 66; 67; 68 Lekkersukkel 454 JQ PRTN 1 &amp; 2</p>	<p>Chemstof (PTY) LTD</p>	<p>Opencast( MG 1, MG 2, MG 3, MG 4)</p> <p>UG 1 Crushing, washing, Screening and spirals</p> <p>Spiral Plant Concentrate % Cr<sub>2</sub>O<sub>3</sub> 40.85% SiO<sub>2</sub> 2.69 FeO 27.47 Cr: Fe 1.31:1 Size -30mm+10mm</p>	<p>Chemstof (Pty) Ltd PO Box 20761 Protea Park 0305</p> <p>Tel: +27 (0)82 809 8415 Fax: +27 (0)86 582 1597</p>

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<p>PLATCRO MINERALS PRIVATE BAG 20761 PROTEA PARK 0305</p> <p>Tel: +27 (0) 82 809 8415 Fax: +27 (0) 86 582 1597</p>	14814	<p>Platcro Minerals</p> <p>Tel: +27 (0)82 809 8415 Fax: +27 (0)86 582 1597</p> <p>North West Province Bokfontein 448 JQ PRTN 14; 52; 64; 65; 66; 67; 68 Lekkersukkel 454 JQ PRTN 1 &amp; 2</p>	Chemstof (PTY) LTD	<p>Opencast( MG 1, MG 2, MG 3, MG 4)</p> <p>UG 1 Crushing, washing, Screening and spirals</p> <p>Spiral Plant Concentrate % Cr<sub>2</sub>O<sub>3</sub> 40.85% SiO<sub>2</sub> 2.69 FeO 27.47 Cr: Fe 1.31:1 Size -30mm+10mm</p> <p>Refractory-grade Concentrate % Cr<sub>2</sub>O<sub>3</sub> 00% SiO<sub>2</sub> 00 FeO 00 Cr: Fe 00</p>	<p>Chemstof (Pty) Ltd PO Box 20761 Protea Park 0305</p> <p>Tel: +27 (0)82 809 8415 Fax: +27 (0)86 582 1597</p>

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<p>CRONIMET CHROME MINING SA (PTY) LTD 15 VAN HOOFF CLOSE LITTLE FALLS 1735</p> <p>Tel: +27 (0) 11 958 0544 Fax: +27 (0) 11 958 0467</p>	<p>14152</p>	<p>Thaba Chronimet Chrome Mine</p> <p>Tel: +27 (0) 11 958 0544 Fax: +27 (0) 11 958 0467</p> <p>Limpopo Province Schildpadnest 385 KQ Zwartkop 369 KQ, Roodedam 368 KQ Middellaagte 382 KQ and Elandskuil 382 KQ</p>	<p>Cronimet chrome mining SA (PTY) LTD</p>	<p>Opencast</p> <p>Concentrates Cr<sub>2</sub>O<sub>3</sub>% 42min SiO<sub>2</sub>%</p>	<p>Cronimet Chrome Mining SA (Pty) Ltd. PO Box 3319 Witkoppen 2068</p> <p>Tel: +27 (0) 11 958 0544 Fax: +27 (0) 11 958 0467 moritz.hill@ccmsa.co.za</p>
<p>MERAFE RESOURCES 68 WIERDA ROAD EAST WIERDA VALLEY SANDTON 2196</p> <p>Tel: +27 (0)11 783 4780 Fax: +27 (0) 11 783 4789</p>	<p>13861</p>	<p>Helena Mine</p> <p>Tel: +27 (0) 13 230 6663 Fax: +27 (0) 230 6502</p> <p>Mpumalanga Province Thorncliffe section Thorncliffe 374 PTN 1 KT</p>	<p>Glencore... 74%</p> <p>Merafe Resources 26%</p>	<p>Opencast &amp; Underground, Board &amp; PillarMG1/UG2</p> <p>Met lumpy Cr<sub>2</sub>O<sub>3</sub>% 38 Met chips Cr<sub>2</sub>O<sub>3</sub>% 37, Met. Fines: Cr<sub>2</sub>O<sub>3</sub>% 44.5 Foundry Sands Cr: Fe 1.5 - 1.55:1</p>	<p>Glencore (Pty) Ltd PO Box 117 Sandton 1930</p> <p>Tel: +27 (0) 14 536 0075 Fax: +27 (0) 14 536 0002</p>

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<p>MERAFE RESOURCES 68 WIERDA ROAD EAST WIERDA VALLEY SANDTON 2196</p> <p>Tel: +27 (0)11 783 4780 Fax: +27 (0) 11 783 4789</p>	13263	<p>Horizon Mine</p> <p>Tel: +27 (0) 14 513 0255 Fax: +27 (0) 14 513 0260</p> <p>North West Province Ruighoek 169 JP; Vogelstruisnek 173 JP 169</p>	<p>Glencore.....74% Merafe Resources 26%</p>	<p>Opencast &amp; underground LG6</p> <p>Metallurgical lumpy, Metallurgical chips Met. Concentrates Chem. Concentrates Foundry Sands</p> <p>Cr: Fe 1.5 - 1.55:1</p>	<p>Glencore (Pty) Ltd PO Box 117 Sandton 1930</p> <p>Tel: +27 (0) 14 536 0075 Fax: +27 (0) 14 536 0002</p>
	10748	<p>Kroondal Chrome Mine</p> <p>Tel: +27 (0) 14 536 0000 Fax: +27 (0) 14 536 0002</p> <p>North West Province Kroondal 304 JQ Waterval 306 JQ Brakspruit 299 JQ Spruitfontein 341 JQ</p>	<p>Glencore.....74% Merafe Resources 26%</p>	<p>Opencast &amp; underground LG6 Underground Board &amp; pillar Crush, screen, DMS &amp; spirals</p> <p>Metallurgical Lumpy Metallurgical chips Met. Concentrates Chem. Concentrates Foundry sands Cr: Fe 1,5-1,55:1</p>	<p>Glencore (Pty) Ltd PO Box 117 Sandton 1930</p> <p>Tel: +27 (0) 14 536 0075 Fax:+27 (0) 14 536 0002</p>

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<p>MERAFE RESOURCES 68 WIERDA ROAD EAST WIERDA VALLEY SANDTON 2196</p> <p>Tel: +27 (0)11 783 4780 Fax: +27 (0) 11 783 4789</p>	14797	<p>Magareng Mine</p> <p>Tel: +27 (0) 13 230 6602 Fax: +27 (0) 13 230 6502</p> <p>Mpumalanga Province Thorncliffe Section Thorncliffe 374 PTN 1 KT</p>	Glencore.....74% Merafe Resources 26%	<p>Opencast &amp; Underground (MG1) Crushing, Washing, Screening, Spirals.</p> <p>Solvent Plant Concentrate % Cr<sub>2</sub>O<sub>3</sub> 46,8% SiO<sub>2</sub> 5,0 FeO 20,0 Cr: Fe 2:1 Size -30mm+10mm</p> <p>Refractory-grade Concentrate % Cr<sub>2</sub>O<sub>3</sub> 49,0% SiO<sub>2</sub> 0,7 FeO 22,0 Cr: Fe 2,03:1</p>	<p>Glencore (Pty) Ltd PO Box 117 Sandton 1930</p> <p>Tel: +27 (0) 14 536 0075 Fax: +27 (0) 14 536 0002</p>
	13057	<p>Thorncliffe Chrome Mine</p> <p>Tel: +27 (0) 13230 6600 Fax: +27 (0) 86 628 7901</p> <p>Mpumalanga Province Thorncliffe section Thorncliffe 374 PRTN1 KT, STEELPOORT</p>	Glencore.....74% Merafe Resources 26%	<p>Opencast &amp; underground MG1 Board &amp; Pillar Met Lumpy: Cr<sub>2</sub>O<sub>3</sub> 38% Met: Cr<sub>2</sub>O<sub>3</sub> 37%</p> <p>Foundry sands Cr: Fe 1,54:1</p>	<p>Glencore (Pty) Ltd PO Box 117 Sandton 1930</p> <p>Tel: +27 (0) 14 536 0075 Fax: +27 (0) 14 536 0002</p>

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<p>MERAFE RESOURCES 68 WIERDA ROAD EAST WIERDA VALLEY SANDTON 2196</p> <p>Tel: +27 (0)11 783 4780 Fax: +27 (0) 11 783 4789</p>	<p>12581</p>	<p>Waterval Chrome</p> <p>Tel: +27 (0) 14 597 8000 Fax: +27 (0) 14 597 8052</p> <p>North West Province Portion 27 Of the Farm Waterval 306 JQ</p>	<p>Glencore.....74% Merafe Resources 26%</p>	<p>Crushing Circuit DMS, Screening, Spirals</p> <p>Met grade concentrate Cr<sub>2</sub>O<sub>3</sub> 44% SiO<sub>2</sub> 3,5% Cr: Fe 2:1%</p> <p>Chemical grade Concentrate % Cr<sub>2</sub>O<sub>3</sub> 46% SiO<sub>2</sub> 1,0 Cr: Fe 2:1</p> <p>Lumpy% Cr<sub>2</sub>O<sub>3</sub> 38% SiO<sub>2</sub> 8.5% Cr: Fe 2:1</p> <p>Chips% Cr<sub>2</sub>O<sub>3</sub> 38% SiO<sub>2</sub> 9.0% Cr: Fe 2:1</p>	<p>Glencore (Pty) Ltd PO Box 117 Sandton 1930</p> <p>Tel: +27 (0) 14 536 0075 Fax: +27 (0) 14 536 0002</p>



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<p><b>Controlling Company</b>                      HFSA Investments B.V.                      PO BOX 4534                      BRITS                      0250</p> <p>Tel: +27 (0) 12 381 1100                      Fax: +27 (0) 12 381 1111</p>	<p>12701</p>	<p>Hernic Ferrochrome (Pty) Ltd</p> <p>Tel: +27 (0) 12 381 1100                      Fax: +27 (0) 12 381 1111</p> <p>North West Province                      De Kroon 444 JQ                      Elandsfontein 440 JQ                      Buffelsfontein 465 JQ                      Waterval 306 JQ</p>	<p><b>Main Shareholder(s)</b></p> <p>Mitsubishi corporation                      50.98%</p> <p>IDC                      21.25%</p> <p>Elg haniel gmbh 7.78                      Mmakau mining                      6.5%</p> <p>Matlapeng resources                      6.5%</p>	<p>Opencast – Drill &amp; Blast                      MG0/1/2/3/4</p> <p>Lumpy</p> <p>Cr<sub>2</sub>O<sub>3</sub> 38,0%                      SiO<sub>2</sub> 7,5-9,5%                      Al<sub>2</sub>O<sub>3</sub> 14,9%                      FeO 23,5%                      MgO 11,5%                      CaO 1,6%                      P 0,002%                      S 0,004%                      Cr:Fe 1,48:1                      size 150mm+6mm</p> <p>Metallurgical conc.</p> <p>Cr<sub>2</sub>O<sub>3</sub> 45,0%                      SiO<sub>2</sub> 2,5%                      Al<sub>2</sub>O<sub>3</sub> 15,3%                      FeO 26,0%                      MgO 8,7%                      CaO 0,3%                      P 0,002%                      S 0,003%                      Cr: Fe 1,48:1</p> <p>Chemical conc.</p> <p>Cr<sub>2</sub>O<sub>3</sub> 46,0%                      SiO<sub>2</sub> 1,0%                      Al<sub>2</sub>O<sub>3</sub> 15,2%                      FeO 26,0%                      MgO 8,7%                      CaO 0,3%                      P 0,002%                      S 0,003%                      Cr:Fe 1,55:1</p>	<p>Hernic Ferrochrome                      PO Box 4534                      Brits                      0250</p> <p>Tel: +27 (0) 12 381 1100                      Fax: +27 (0) 12 381 1111</p>

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<p>IMPALA PLATINUM HODLINGS LTD PRIVATE BAG X18 NORTHLANDS 2116</p> <p>Tel: +27 (0) 11 731 9000 Fax: +27 (0) 11 731 9254</p>	<p>15017</p>	<p>Impala Chrome Plant</p> <p>Tel: +27 (0) 14569 7157 Fax: +27 (0) 14 569 8171</p> <p>North West Province Beerfontein</p>	<p>Impala Platinum LTD – 70% Chrome Traders (pty) ltd – 30%</p>	<p>Screening and spirals</p> <p>Met grade: Cr<sub>2</sub>O<sub>3</sub> – 41% min</p>	<p>Impala Chrome (Pty) Ltd Postnet Suite 1212 Private Bag X82329 Rustenburg 0300</p> <p>Tel: 014 597 0854 Fax: 014 592 9359</p>
<p>MAKGOMO MAKGOMO COMMUNITY TRUST c/o Marula Platinum Mine Gamanyaka Steelpoort 1133</p> <p>Tel: +27 (0) 11 731 9000 Fax: +27 (0) 11 731 9254</p>	<p>15016</p>	<p>Makgomo Chrome (Pty) LTD</p> <p>Tel: +27 (0) 14 569 8166 Fax: +27 (0) 14 569 8171</p> <p>Limpopo Province Winnaarshoek 250KT Steelpoort</p>	<p>Impala Platinum LTD 30% Marula Platinum LTD 20% Marula community 50%</p>	<p>Screening and spirals</p> <p>Met grade: Cr<sub>2</sub>O<sub>3</sub> – 41% min</p>	<p>Makgomo Chrome (Pty) Ltd Postnet Suite 1212 Private Bag X82329 Rustenburg 0300</p> <p>Tel: 014 597 0854 Fax: 014 592 9359</p>

**CHROME ORE PRODUCERS**

CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p>INTERNATIONAL FERRO METALS LTD (RSA)                      BUFFELSFONTEIN JQ465                      MOOINOOI</p> <p>Tel: +27 (0) 14 574 6300                      Fax: +27 (0) 14 574 6401</p>	<p>11615</p>	<p>Buffelsfontein Mine</p> <p>Tel: +27 (0) 14 574 6300                      Fax: +27 (0) 14 574 6401</p> <p>North West Province                      Buffelsfontein 465JQ                      PRTN 11 &amp; 12</p>	<p>International ferro metals LTD (AUS)</p>	<p>Opencast 300kt/a ( MG 1/2/3/4)                      Underground 400kt/a MG 1/2)</p> <p>Crush, wash, screen, DMS, Mill, Spirals, smelter                      Met lumpy (65mm)</p> <p>Cr<sub>2</sub>O<sub>3</sub> 40% min                      SiO<sub>2</sub> 4% max                      Met chips (-8mm)                      Cr<sub>2</sub>O<sub>3</sub> 40% min                      SiO<sub>2</sub> 4% max                      Met. Concentrates                      Cr<sub>2</sub>O<sub>3</sub> 40% min                      SiO<sub>2</sub> 4% max</p>	<p>IFM SA Ltd                      Buffelsfontein JQ 465                      Mooinooi</p> <p>Tel: +27 (0) 14 574 6300                      Fax: +27 (0) 14 574 6401</p>
<p>SAMANCOR CHROME HOLDINGS (PTY) LTD                      CULLINAN CLOSE                      MONINGSIDE                      2196</p> <p>Tel:+27 (0)11 245 1000                      Fax:+27 (0) 11 245 1200</p>	<p>10727</p>	<p>Eastern Chrome Mines</p> <p>Tel: +27 (0) 13 230 7074                      Fax: +27 (0) 13 230 7003</p> <p>Mpumalanga Province                      Winterveld 293 KT                      Doornbosch 294 KT</p>	<p>International Mineral Resources 70%                      Batho barena (pty) Ltd 28%                      Hanwa co. Ltd (2%)</p>	<p>Underground, - LG6                      crushing, screening DMS, and spirals                      RPC 2,0Mt/a (marketable)</p> <p>Met lumpy                      Met. Conc</p> <p>Refractory conc.</p> <p>Foundry sands                      Cr<sub>2</sub>O<sub>3</sub> 38,0-45,0%                      Cr: Fe 1,40-1,60:1                      Non-beneficiated</p>	<p>Samancor Chrome                      PO Box 8186                      Johannesburg 2000</p> <p>Tel: +27 (0) 11 376 9111                      Fax: +27 (0) 11 376 3155</p>

CHROME ORE PRODUCERS					
CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
SAMANCOR CHROME HOLDINGS (PTY) LTD CULLINAN CLOSE MONINGSIDE 2196  Tel:+27 (0)11 245 1000 Fax:+27 (0) 11 245 1200	10727	1.1 Steelpoort section	International Mineral Resources 70%  Batho barena (PTY) LTD 28% Hanwa co. LTD 2%	Underground, MG1 Crushing, screening DMS, and spirals  Foundry sand %: Cr <sub>2</sub> O <sub>3</sub> 44,0 min	Samancor Chrome PO Box 8186 Johannesburg 2000  Tel: +27 (0) 11 376 9111 Fax: +27 (0) 11 376 3155
		1.2 Tweefontein section 1 Mpumalanga Tweefontein 360 KT		Underground, MG1 Crushing, screening DMS, and spirals Foundry sand %: Cr <sub>2</sub> O <sub>3</sub> 44,0 min	
		1.3 Tweefontein Section 2 <b>Mpumalanga</b> Tweefontein 360 KT		Opencast  SiO <sub>2</sub> 0,8 max Cr: Fe >1,50:1 Size: AFS 45/49	
		1.4 Lannex Section 1 <b>Mpumalanga</b> Grootboom 336KT Annex Grootboom 335KT		Underground, MG1, Refractory conc % Cr <sub>2</sub> O <sub>3</sub> 46,0 min SiO <sub>2</sub> 0,8 max Cr: Fe >1,55:1	
		1.5 Lannex Section 2 <b>Mpumalanga</b> Annex Grootboom 335 KT		Chemical % Cr <sub>2</sub> O <sub>3</sub> 46,2 min SiO <sub>2</sub> 0,8 max Cr: Fe >1,50:1	
CHROME ORE PRODUCERS					

CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p>SAMANCOR CHROME HOLDINGS (PTY) LTD CULLINAN CLOSE MONINGSIDE 2196</p> <p>Tel:+27 (0)11 245 1000 Fax:+27 (0) 11 245 1200</p>	12891	<p>Western Chrome mines Millsell mine</p> <p>Tel: +27 (0) 14 574 6061 Fax: +27 (0) 14 574 3255</p> <p>North West, Province Waterkloof 305JQ Waterval 306JQ Kroondal 304 JQ</p>	<p>International Mineral Resources 70%</p> <p>Batho barena (PTY) LTD 28%</p> <p>Hanwa co. LTD 2%</p>	<p>Underground, Mechanised LG6, Trackless – Room &amp; Pillar</p> <p>Met Lumpy Cr<sub>2</sub>O<sub>3</sub> 38,0% min SiO<sub>2</sub> 11% typical Cr: Fe &gt;1,44:1 Size: &lt;100mm</p> <p>Chips Cr<sub>2</sub>O<sub>3</sub> 38,0% min SiO<sub>2</sub> 10,0% Cr: Fe &gt;1,46:1 Size: +1mm-6mm</p> <p>Met. Concentrate Cr<sub>2</sub>O<sub>3</sub> 44% Min SiO<sub>2</sub> 30% Max Cr: Fe &gt; 1,50:1 Size: &lt;2mm</p> <p>Foundry Sand Cr<sub>2</sub>O<sub>3</sub> 46,0% Min SiO<sub>2</sub> 0.8% Max Cr: Fe &gt; 1,50:1 AFS 48/60</p>	<p>Samancor Chrome Ltd PO Box 8186 Johannesburg 2000</p> <p>Tel: +27 (0) 11 376 9111 Fax: +27 (0) 11 376 3155</p>

**CHROME ORE PRODUCERS**

CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p>SAMANCOR CHROME HOLDINGS (PTY) LTD CULLINAN CLOSE MONINGSIDE 2196</p> <p>Tel:+27 (0)11 245 1000 Fax:+27 (0) 11 245 1200</p>	12891	<p>Western Chrome Mines : Mooinooi Mine</p> <p>Tel: +27 (0) 14 574 6061 Fax: +27 (0) 14 574 3255</p> <p>North West Province Elandskraal 469JQ Middelkraal 466JQ</p>	<p>International Mineral Resources 70%</p> <p>Batho barena (PTY) LTD 28% Hanwa co. LTD 2%</p>	<p>MG1 – Board &amp; Pillar ; MG2 – Conventional mining.</p> <p><b><u>Metal. Lumpy</u></b> Cr<sub>2</sub>O<sub>3</sub> 38,0% Min SiO<sub>2</sub> 10% Typical Cr: Fe &gt;1,48:1 Size: +15 – 100mm</p> <p><b><u>Chips</u></b> Cr<sub>2</sub>O<sub>3</sub> 38,0 min SiO<sub>2</sub>: 10% Cr: Fe &gt;1,46:1 Size: +1mm – 6mm</p> <p><b><u>Metal. concentrates</u></b> Cr<sub>2</sub>O<sub>3</sub> 44,0 % Min SiO<sub>2</sub> 3,0% Max Cr: Fe &gt;1,50:1 Size: 95% @&lt;2mm</p> <p><b><u>Chem. Grade</u></b> Cr<sub>2</sub>O<sub>3</sub> 46,0% Min SiO<sub>2</sub> 0,8 % Max Cr: Fe &gt; 1,50:1 Size: 100% @ &lt; 1mm AFS Type 65</p>	<p>Samancor Chrome Ltd PO Box 8186 Johannesburg 2000</p> <p>Tel: +27 (0) 11 376 9111 Fax: +27 (0) 11 376 3155</p>

**CHROME ORE PRODUCERS**

CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
SEFATENGCHROME MINE (PTY) Ltd PO BOX 760 LEBOWAKGOMO 0737  Tel: +27 (0) 15 633 4700 Fax: +27 (0) 11 633 4854	14772	Sefateng Chrome Mine  Tel: +27 (0) 13 235 4845 Fax: +27 (0) 13 235 4837  Mpumalanga Province Zwartkopies 413 Ks,	Limpopo Development Agency	Opencast LG6  Lumpy (ROM) Concentrate % Cr <sub>2</sub> O <sub>3</sub> 39.5% SiO <sub>2</sub> 8% FeO 20% Cr:Fe 2:1 Size -30mm +10mm	Corridor Mining Resources (Pty) Ltd PO BOX 760 Lebowakgomo 0737  Tel: +27 (0) 15 633 4700 Fax: +27 (0) 11 633 4854
GLENCORE/MERAFE RESOURCES JV 68 WIERDA ROAD EAST WIERDA VALLEY SANDTON 2196  Tel: +27 (0)11 783 4780 Fax: +27 (0) 11 783 4789	P22R	Rowland Plant Lonmin Rowland shaft  North West Province	Lonmin Glencore/Merafe Resources JV	Spiral Plant Cr <sub>2</sub> O <sub>3</sub> 41.6% SiO <sub>2</sub> 3.50% FeO 28,0% Cr: Fe 1.31	Glencore (Pty) Ltd PO Box 117 Sandton 1930  Tel: +27 (0) 14 536 0075 Fax: +27 (0) 14 536 0002
	P22Y	EPL Plant Lonmin Eastern Plats  North West Province		Spiral Plant Cr <sub>2</sub> O <sub>3</sub> 41.5% SiO <sub>2</sub> 3.50% FeO 27,0% Cr: Fe 1.35	
	P22S	K4 Plant Lonmin Karee K4 Concentrator  North West Province		Spiral Plant Cr <sub>2</sub> O <sub>3</sub> 41.5% SiO <sub>2</sub> 3.50% FeO 27,4% Cr: Fe 1.34	
CHRONMIN (PTY) LTD NO4 HARROWDENE OFFICE PARK WESTERN SERVICE ROAD WOODMEAD 2152 Tel : +27 (0) 11 233 7300 Fax : +27 (0) 11 233 7380		K3 Plant Lonmin Karee K3 concentrator  North West Province	Lonmin	Spiral plant:: Met grade Cr <sub>2</sub> O <sub>3</sub> – 42% min (41.8% typical) SiO <sub>2</sub> – 4% max ) Cr: Fe – 1.3 min  Chemical grade Cr <sub>2</sub> O <sub>3</sub> – 43% min (43.2% typical)	Chronmin (Pty) Ltd No4 Harrowdene Office Park Western Service Road Woodmead 2152  Tel : +27 (0) 11 233 7300

				SiO <sub>2</sub> – 1% max (0.7% typical) Cr: Fe – 1.3 min (1.32 typical)	Fax : +27 (0) 11 233 7380
<b>CHROME ORE PRODUCERS</b>					
<b>CONTROLLING COMPANY</b>	<b>MINE CODE</b>	<b>PRODUCER AND LOCATION</b>	<b>MAIN SHAREHOLDER (S)</b>	<b>TYPE OF OPERATION AND PRODUCT SPECIFICATION</b>	<b>MARKETING COMPANY</b>
NORTHAM PLATINUM LTD 1A Albury Park Magalieszicht Avenue Dunkeld West 2196  Tel: +27 (0) 11 759 6000 Fax: +27 (0) 11 759 6013	14801	Booyensdaal Mine  Tel: +27 (0) 11 759 6000 Fax: +27 (0) 11 759 6013  Mpumalanga Province Booyensdal 43 JT 0; Buttenshope 51 JT 0; Der Brochen 7 JT 0; Draaikraal 48 JT 0; Hebron 5 JT 0; Hermansdal 3 JT 0; Johannesburg 45 JT 0; Kliprivier 73 JT 0; Pietersburg 44 JT 0; Sheeprun 50 JT 0; Uysedoorns 47 JT 0	Northam Platinum Ltd	Underground UG2 mine. Gravity separation  Spiral Plant Concentrate 100 % Cr <sub>2</sub> O <sub>3</sub> 42% Basis SiO <sub>2</sub> 3,2 Max FeO 27,0% Cr: Fe 1,34:1 Typical Size –1mm	Northam Platinum Ltd PO Box 412694 Craighall 2024  Tel: +27 (0) 11 759 6000 Fax: +27 (0) 11 759 6013
NORTHAM CHROME PRODUCERS (PTY) LTD PO BOX 441 THABAZIMBI 0380  Tel: +27 (0) 14 784 3000 Fax: +27 (0) 14 785 0141	11853	Northam Chrome Producers (Pty) Ltd (Zondereinde Mine)  Tel: +27 (0) 14 785 0430 Fax: +27 (0) 86 688 1613  Limpopo Province Zondereinde 384 KQ	Northam Platinum Ltd	Spiral Plant Concentrate 100 % Cr <sub>2</sub> O <sub>3</sub> 42% Basis SiO <sub>2</sub> 3,2% Max FeO 27,0% Cr: Fe 1,34:1 Typical Size –1mm	Northam Chrome Producers (Pty) Ltd PO Box 531 Thabazimbi 0380  Tel: +27 (0) 14 785 0430 Fax: +27 (0) 86 688 1613



**CHROME ORE PRODUCERS**

CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
ASA METALS PTY LTD SINOSTEEL PLAZA 159 RIVONIA ROAD MORNINGSIDE EXT. 2146  Tel.: +27 (0) 11 666 6000 Fax: +27 (0) 11 666 6194	10856	Dilokong Chrome (Pty) Ltd  Tel: +27 (0) 13 230 7600 Fax: +27 (0) 13 230 7754  Limpopo Province Maandagshoek 254KT Mooihoek 255KT	Sinosteel Corporation 60% Limdev 40%	Underground, board and pillar LG6 Crushing, washing, screening and spiral concentration  Metallurgical (Lumpy, chips), chemical concentrates & foundry sands  Typical fines Cr <sub>2</sub> O <sub>3</sub> 47,5% max; SiO <sub>2</sub> 0,5-1,5% Cr: Fe 1,55:1	ASA Metals (Pty) Ltd. PO Box 3952 Polokwane 8600  Tel: +27 (0) 11 666 6000 Fax: +27 (0) 11 666 6194

CHROME ORE PRODUCERS					
CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p>THARISA PLC ELAND HOUSE THE BRAES 3 EATON AVENUE BRYANSTON 2191</p> <p>Tel: +27 (0) 11 9963500 Email: info@tharisa.com</p>	14572	<p>Tharisa Minerals (Pty) Ltd</p> <p>Tel: +27 (0) 14 572 0856 Fax: +27 (0) 14 572 0710</p> <p>North West Province Kafferskraal 342 JQ Marikana Elandsdrift 467 JQ Brits</p>	Tharisa Resources	<p>Opencast (MG 1/2/3/4) Crushing, Washing, Screening, Spirals</p> <p>Metallurgical Fines Cr<sub>2</sub>O<sub>3</sub> 42% SiO<sub>2</sub> 4% FeO 28% Size 750mm</p>	<p>Arxo Resources Limited 3 Alkiviades Street Paphos Cyprys 8011</p> <p>Tel: +357-26-257055 Email: sales@arxo.eu</p>
<p>MARICO CHROME CORPORATION BARRAGE ROAD VEREENIGING 1930</p> <p>Tel: +27 (0) 16 450 6111 Fax: +27 (0) 16 4212481</p>	0387	<p>Marico Chrome Corp Ltd</p> <p>Tel: +27 (0) 18 350 9906 Fax: +27 (0) 86 628 7901</p> <p>North West Province Goudini 30 JP Driekop 14 JP Strydfontein 12 JP (Allewynspoort 290 JP)</p>	<p>Vereeniging Refractories 50% Samancor chrome 50%</p>	<p>Opencast (LG1&amp;2) Crushing, Washing, Screening, Spirals</p> <p>Solvent Plant Concentrate % Cr<sub>2</sub>O<sub>3</sub> 46,8% SiO<sub>2</sub> 5,0% FeO 20,0% Cr: Fe 2:1 Size -30mm+10mm Refractory-grade Concentrate % Cr<sub>2</sub>O<sub>3</sub> 49,0% SiO<sub>2</sub> 0,7% FeO 22,0% Cr: Fe 2,03:1</p>	<p>Vereeniging Refractories (Pty) Ltd PO Box 117 Vereeniging 1930</p> <p>Tel: +27 (0) 16 450 6111 Fax: +27 (0) 16 421 2481</p>
IRON ORE PRODUCERS					
CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT	MARKETING COMPANY

				SPECIFICATION	
<p>KUMBA IRON ORE (KIO) CENTURION GATE 124 AKKERBOOM STREET CENTURION 0157</p> <p>Tel: +27 (0) 12 683 7000 Fax: +27 (0) 86 295 0746</p>	14672	<p>Kolomela Mine</p> <p>Tel: +27 (53) 313 9000 Fax: +27 (86) 570 3305</p> <p>Northern Cape Province Farm 476 0; Farm 485 0; Farm 486 0; Kapstevel 541 Rem &amp; Ptns 1 2 3 0; Klipbankfontein 489 Rem 0; Leeufontein 488 Rem 0; Ploegfontein 487 0; Strydfontein 614 0</p>	Anglo American PLC	<p>Opencast Crushing, washing, screening &amp;beneficiation</p> <p>Haematite % Fe 63,0-65,0%</p>	<p>Kumba Resources Iron Ore Division P. O. Box 9679 Centurion 0046</p> <p>Tel: +27 (0) 12 683 7000 Fax: +27 (0) 86 295 0746</p>
	10587	<p>Sishen Iron ore Mine</p> <p>Tel: +27 (0) 53 739 2911 Fax:+27 (0) 53 739 2000</p> <p><i>Farm, Province</i> Sishen 543; Lyleveld 178 VRQ; Gamagara 541 Sacha 468; Sekgame 461 Simms 462 <i>Northern Cape</i></p>	Opencast RPC 28,0Mt/a Crushing, washing, screening & beneficiation	<p>Haematite % Fe 65,0-66,5%</p>	<p>Kumba Resources Iron Ore Division P. O. Box 9679 Centurion 0046</p> <p>Tel: +27 (0) 12 683 7000 Fax: +27 (0) 86 295 0746</p>

**IRON ORE PRODUCERS**

CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p>KUMBA IRON ORE (KIO) CENTURION GATE 124 AKKERBOOM STREET CENTURION 0157</p> <p>Tel: +27 (0) 12 683 7000 Fax: +27 (0) 86 295 0746</p>	0635	<p>Thabazimbi Iron Ore Mine</p> <p>Tel: +27 (0) 14 777 3000 Fax: +27 (0) 14 777 3258</p> <p>Limpopo Province Buffelshoek 351 Kq Donkerpoort 344 Kq Kwaggashoek 345 Kq Wachteenbietjiesdraai 750 Kq</p>	Anglo American PLC	<p>Opencast RPC 2,4Mt/a Crushing, washing, screening &amp; beneficiation</p> <p>Haematite % Fe 62,0-64,0%</p>	<p>Kumba Resources Iron Ore Division PO Box 9229 Pretoria 0001</p> <p>Tel: +27 (0) 12 683 7000 Fax: +27 (0)86 295 0746</p>
<p>KUDUMANE MANGANESE RESOURCES OPERATIONAL OFFICE SUITE 401 MELROSE PLACE WILLOWBROOK CLOSE MELROSE NORTH 2196</p> <p>Tel: +27 (0) 11 880 2771 Fax: +27 (0) 11 447 5912</p>	15216	<p>Kudumane Mine P.O Box 341 Hotazel 8490 Tel: +27 (0) 53 742 3500</p> <p><i>Farm, Province</i> Farm 279 York Farm Hotazel <i>Northern Cape</i></p>	Dirleton Mineral & Energy 50% Northern Cape Manganese Company 50%	Opencast production Crush & screen	

ASSMANG LIMITED PO BOX 782058 SANDTON 2146  Tel: +27 (0) 11 779 1000 Fax:+27 (0) 11 779 1029	10026	Beeshoek Iron Ore Mine  Tel: +27 (0) 53 723 8100 Fax:+27 (0) 53 311 4310  Northern Cape Province Beeshoek 448	African Rainbow Minerals Limited  Assore Limited	Opencast RPC 4,5Mt/a Crushing, washing & Screening and the newly DMS Haematite  Fe 66% typical	Ore & Metal Company Ltd. 15 Fricker Road Illovo Boulevard Johannesburg 2196  Tel: +27 (0) 11 770 6800 Fax:+27 (0) 11 268 6440
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IRON ORE PRODUCERS					
CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
ASSMANG LIMITED 24 IMPALA ROAD CHISLEHURSTON SANDTON 2146  Tel: +27 (0) 11 779 1000 Fax:+27 (0) 11 779 1031	14157	Khumani Iron Ore Mine  Tel: +27 (0) 53 723 8100 Fax: +27 (0) 53 311 4310  Northern Cape Province Bruce 544 0; King 561 0; Makaning 560 0; Parsan 564 0	African Rainbow Minerals Limited  Assore Limited	Opencast  Haematite Fe 66% typical	Ore & Metal Company Ltd. 15 Fricker Road Illovo Boulevard Johannesburg 2196  Tel: +27 (0) 11 770 6800 Fax:+27 (0) 11 268 6440

SEDIBENG IRON ORE (PTY) LTD TATA HOUSE 39 FERGUSON ROAD ILLOVO 2196  Tel: +27 (0) 11 459 1750 Fax: +27 (0) 11 507 0836	14940	Sedibeng Iron ore (Pty) Ltd  Tel: +27 (0) 11 459 1750 Fax: +27 (0) 11 459 1722  Northern Cape Province Klipfontein 437 Rem; Farm 445 3	Black Ginger (PTY) LTD	Opencast  Haematite Fe 64% typical	Sedibeng Iron Ore (Pty) Ltd Tata house 39 Ferguson Road Illovo 2196  Tel: +27 (0) 11 459 1750 Fax: +27 (0) 11 507 0836
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IRON ORE PRODUCERS					
CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
DIRO (PTY) LTD PO BOX 8155 CENTURION 0046  Tel: +27 (0) 53 791 9100 Fax: +27 (0) 53 791 9199		Diro Iron Ore (Pty) Ltd  Tel.: +27 (0) 53 791 9100 Fax.:+27 (0) 53 791 9199  Northern Cape Province Demaneng No.546, PRTN2	Diro Iron Ore (PTY) LTD	Opencast  Fe(tot) - 64.0 SiO <sub>2</sub> - 5.9 Al <sub>2</sub> O <sub>3</sub> - 1.8 P - 0.07 K <sub>2</sub> O - 0.19 S - 0.026 CaO - 0.08 Mn - 0.1 Moisture - 2.0	Diro (Pty) Ltd 1303 Heuwel Avenue Centurion 0157  Tel:+27 (0) 12 643 0118 Fax:+27 (0) 86 681 8808

LIME-CHEM RESOURCES (PTY) LTD 3 MAIN ROAD PRETORIA 0157 TEL: +27 (0) FAX: +27 (0)		Lime-Chem Resources (Pty) Ltd  Tel: +27(0) 12 667 1919  Limpopo Province Cairntail 189 and Nek 106, Hay District		Opencast Crushing and screening Haematite Iron Ore Fe% 58	Lime-chem resources (PTY) Ltd
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IRON ORE PRODUCERS					
CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
TSANTSABANE MINING (PTY) LTD PO BOX 871 POSTMASBURG 8420  Tel: +27 (0) 53 313 4905 Fax: +27 (0) 53 313 4906	13789	Tsantsabane Mining (Pty) Ltd  Tel: +27 (0) 53 313 4905 Fax: +27 (0) 53 313 4906  Northern Cape Province Erf 1 0	Tsantsabane Managing Board	Opencast  Haematite Fe 64% typical	Tsantsabane Mining (Pty) Ltd 501 Bedford Centre Smith Street Bedford Gardens 2047  011 6156227 0116154975

<p>PALABORA COPPER (PTY) LIMITED  PO BOX 65  PHALABORWA  1389</p> <p>Tel: +27 (0) 15 780 2911  Fax: +27 (0) 15 780 2446</p>	<p>10489</p>	<p>Palabora Copper Ltd</p> <p>Tel: +27 (0) 15 780 2911  Fax: +27 (0) 15 780 2448</p> <p>Limpopo  Province  Laaste 24LU  Wegsteek 30LU  Loole 31LU</p>	<p>PMC 74%  Empowerment  Partners 26%</p>	<p>Opencast</p> <p>Crushing, Milling,  Floatation for Cu,  Magnetic separation of  magnetite from the tail.</p> <p>Export grade</p> <p>Fe 64,0% min  Cu 0,06% max  P 0,12% max  MgO 3,2%  CaO 0,06%  SiO<sub>2</sub> 0,06%  Al<sub>2</sub>O<sub>3</sub> 0,5%</p> <p>Local Grades HMS</p> <p>Coarse  Size: 75% @-45u  Magnetics: 95%</p> <p>Fine  Size: 90% @-45u</p>	<p>Palabora Copper Ltd  PO Box 65  Phalaborwa  1389</p> <p>Tel: +27 (0) 15 780  2802  Fax: +27 (0) 15 780  2933</p>
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**MANGANESE ORE PRODUCERS**

CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p>ASSMANG LIMITED 24 IMPALA ROAD CHISLEHURSTON SANDTON 2146</p> <p>Tel: +27 (0) 11 779 1000 Fax: +27 (0) 11 779 1031</p>	10909	<p>Gloria Mine</p> <p>Tel: +27 (0) 53 751 5346 Fax: +27 (0) 53 751 5338</p> <p>Northern Cape Province Gloria GR 9/1929 0</p>	<p>ARM 50% Assore Limited 50%</p>	<p>Underground</p> <p>Mn 43%</p>	<p>Ore &amp; Metal Company Ltd 15 Fricker Road Illovo Boulevard Johannesburg 2196</p> <p>Tel: +27 (0)11 770 6800 Fax: +27 (0)11 268 6440</p>
	10020	<p>Nchwaning Mine Kuruman</p> <p>Tel: +27 (0) 53 751 5346 Fax: +27 (0) 53 751 5338</p> <p>Northern Cape Province Nchwaning 267 0; Rock GR 13/1940 0; Santoy MLA N/A Ext of Black-</p>		<p>Underground</p> <p>Mn 43%</p>	

MANGANESE ORE PRODUCERS

CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p><i>Main Shareholder(s)</i>  <i>Controlling Company</i>                      SOUTH32 LIMITED                      6 HOLLARD STREET                      MARSHALLTOWN                      JOHANNESBURG                      2107</p> <p>Tel: +27 (0) 11 376 9111                      Fax: +27 (0) 11 838 4716</p>	10564	<p>Mamatwan Mine</p> <p>Tel: +27 (0) 53 742 2393                      Fax: +27 (0) 53 741 2105</p> <p>Northern Cape Province                      Goold GR 3/1929 0;                      Mamatwan PRTN 2 0</p>	<p>BHP Billiton                      44.4%                      Anglo American                      plc 29.6%</p>	<p>Opencast</p> <p>Mn 43 - 48%                      Al<sub>2</sub>O<sub>3</sub> 0.3%                      Fe 5.0%                      P 0.03%                      SiO<sub>2</sub> 5.5%                      MgO 3.2%                      Size 75mm</p>	<p>BHP Billiton                      10 Marina Boulevard                      #50-01 Marina Bay                      Financial Centre                      Tower 2                      Singapore                      018983</p> <p>Tel: +65 6421 6000                      Fax: +65 6421 7000</p>
<p>SOUTH32 LIMITED                      6 HOLLARD STREET                      MARSHALLTOWN                      JOHANNESBURG                      2107</p> <p>Tel: +27 (0) 11 376 9111                      Fax: +27 (0) 11 838 4716</p>	10966	<p>Wessels Mine</p> <p>Tel: +27 (0) 53 742 2613                      Fax: +27 (0) 53 741 2105</p> <p>Northern Cape Province                      Dibiaghomo 226 Ptn 2 0;                      Wessels 227 0</p>		<p>Underground</p> <p>Mn 47%                      Al<sub>2</sub>O<sub>3</sub> 5.0%                      Fe 12.5%                      P 0.07%                      SiO<sub>2</sub> 5.0%                      MgO 0.5%                      Size 75mm</p>	<p>BHP Billiton                      10 Marina Boulevard                      #50-01 Marina Bay                      Financial Centre                      Tower 2                      Singapore                      018983</p> <p>Tel: +65 6421 6000                      Fax: +65 6421 7000</p>

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CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p>DIRO (PTY) LTD PO BOX 8155 CENTURION 0046</p> <p>Tel: +27 (0) 53 791 9100 Fax: +27 (0) 53 791 9199</p>	13464	<p>Diro Iron Ore (Pty) Ltd</p> <p>Tel.: +27 (0) 53 791 9100 Fax.:+27 (0) 53 791 9199</p> <p>Northern Cape Province Demaneng No.546, PRTN2</p>	Diro Iron Ore (PTY) LTD	<p>Opencast</p> <p>Chemical Grade MnO<sub>2</sub> 35-50% MnO<sub>2</sub> 35-45% Size -19mm (oxidizing agent)</p>	<p>Diro (Pty) Ltd 1303 Heuwel Avenue Centurion 0157</p> <p>Tel:+27 (0) 12 643 0118 Fax:+27 (0) 86 681 8808</p>
<p>KALAHARI RESOURCES 328 RIVONIA BOULEVARD 1ST FLOOR NORTH WING RIVONIA 2128</p> <p>Tel : +27 (0) 11 808 2000 Fax : +27 (0) 86 673 2122</p>	14458	<p>Kalagadi Manganese</p> <p>Tel: +27 (0) 11 234 4154 Fax: +27 (0) 11 234 4076</p> <p>Northern Cape Province Gama 283; Olive Pan 282; Umtu 281</p>	<p>Arcelor mittal 50% Kalahari Resources 40% IDC 10%</p>	<p>Opencast: 3 Mt Sinter plant: 2.4 Mt Room &amp; pillar, mechanized, trackless machines Crush, wash &amp; screen Lumpy Mn 38.6% Fe 4.5% SiO<sub>2</sub> 5.2% Al<sub>2</sub>O<sub>3</sub> 2.6% CaO 13.1% MgO 3.4% P 0.02% Sinter Mn 46.9% Fe 5.4% SiO<sub>2</sub> 5.2% Al<sub>2</sub>O<sub>3</sub> 6.15% CaO 15.3% MgO 3.4% P 4.0%</p>	<p>Kalahari Resources 328 Rivonia Boulevard 1st Floor North Wing Rivonia 2128</p> <p>Tel : +27 (0) 11 808 2000 Fax : +27 (0) 86 673 2122</p>

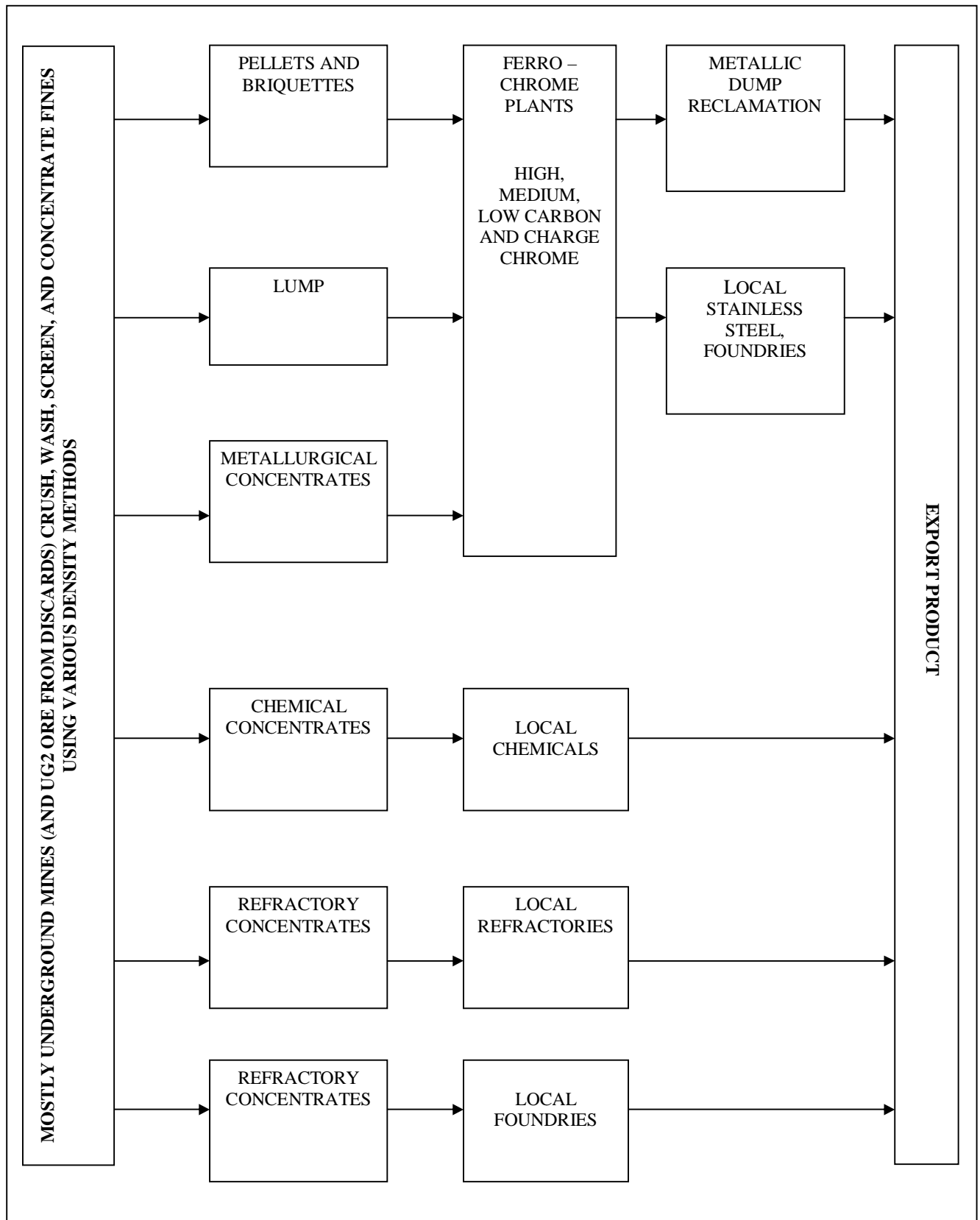
**MANGANESE ORE PRODUCERS**

CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p>MOROKWA MANGANESE MINE (PTY) LTD PO BOX 3472 PARKLANDS 2121</p> <p>Tel: +27 (0) 11 7861821 Fax: +27 (0) 11 7861834</p>	14725	<p>Morokwa Manganese Mine (Pty) Ltd</p> <p>Tel: +27 (0) 11 7861821 Fax: +27 (0) 11 7861834</p> <p>Northern Cape Province Portion 3 Farm Morokwa</p>	Morokwa Manganese Mine(PTY)LTD	<p>Opencast Crush, wash &amp; screen Lumpy</p> <p>Mn 38-42% Fe 22-24% SiO2 1,6% Al2 O3 2,6% CaO 0,50% MgO 0.10% P 0,02 – 0,05% Sizing +6 -100mm Fines (30%) -6 mm</p>	<p>Morokwa Manganese Mine (Pty) Ltd P O Box 3472 Parklands 2121</p> <p>Tel: +27 (0) 11 7861821 Fax: +27 (0) 11 7861834</p>
<p>TSHIPI É NTLE MANGANESE MINING PTY (LTD) 52 GROSVENOR ROAD BRYANSTON 2010</p> <p>Tel: +27 (0) 11 706 9004 Fax: +27 (0) 86 240 1411</p>	14935	<p>Tshipi Borwa Mine</p> <p>Tel: +27 (0) 53 739 4700 / 082 878 3056 Fax: +27 (0) 86 240 1411</p> <p>Northern Cape Province 331 Mamatwan farm PRTN 18</p>	Ntsimbintle SPV 51% Jupiter mines LTD 49.9%	<p>Opencast</p> <p>Manganese lumpy Mn 36.5% Manganese fines Mn 35%</p>	<p>OM Materials (S) Pte Ltd; 80 Marine Parade Road No.08-08 Parkway Parade Singapore 449269</p> <p>Tel: + 65.6346.5515 Fax: + 65.6342.2242</p>

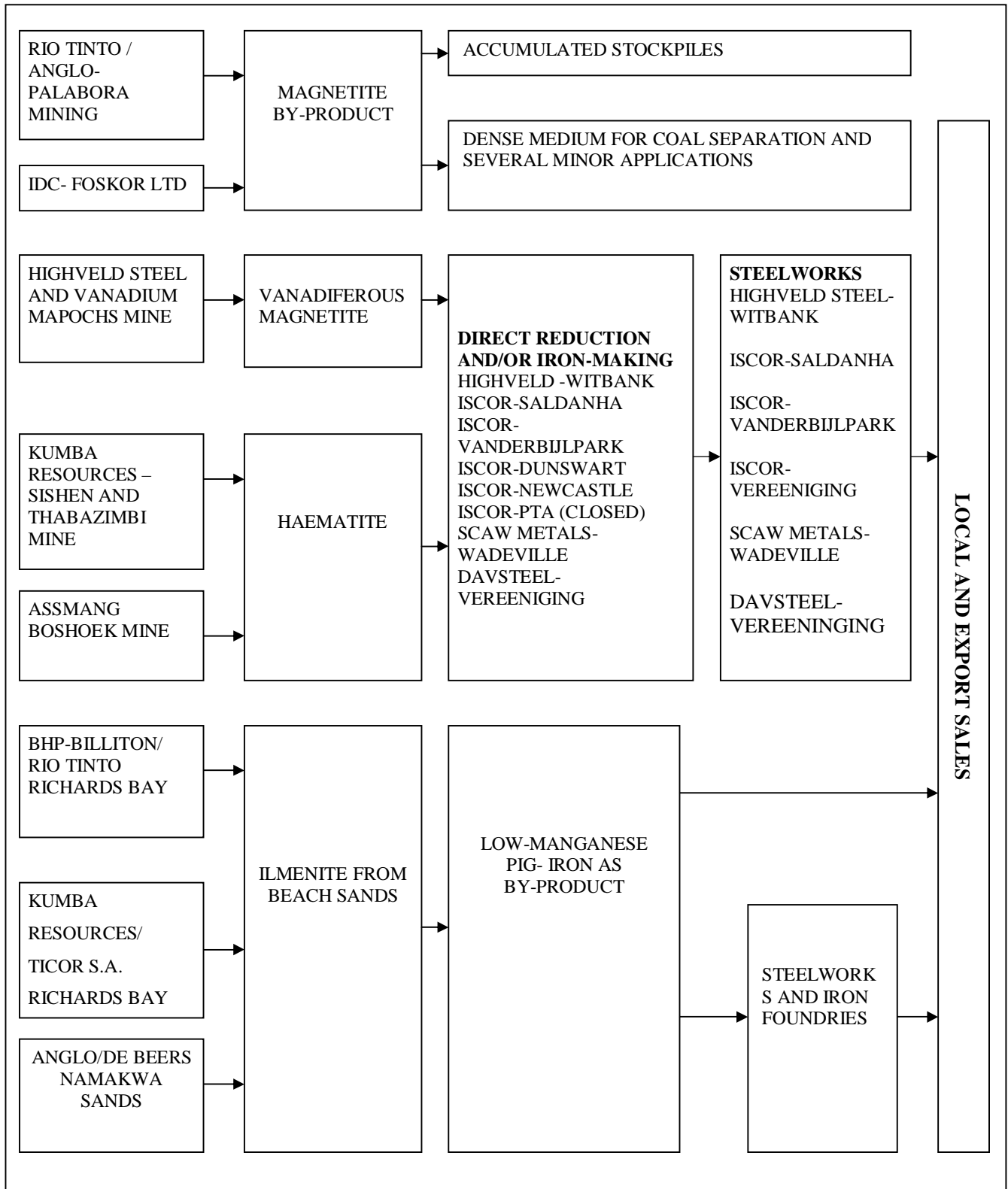
MANGANESE ORE PRODUCERS

CONTROLLING COMPANY	MINE CODE	PRODUCER AND LOCATION	MAIN SHAREHOLDER (S)	TYPE OF OPERATION AND PRODUCT SPECIFICATION	MARKETING COMPANY
<p>METMIN (PTY) LTD PO BOX 1205 HALFWAY HOUSE 1685</p> <p>Tel: +27 (0) 11 805 4662 Fax: +27 (0) 86 624 7829</p>	10525	<p>Metmin (Pty) Ltd</p> <p>Tel: +27 (0) 18 765 1003 Fax: +27 (0) 86 624 7829</p> <p><b>North West</b> Farm, Province Ryedale 751 Q</p>	Obnosis (PTY) LTD t	<p>OpencasT</p> <p>Manganese Oxide 35-65%</p>	<p>Metmin (Pty) Ltd Po Box 1205 Halfway House 1685</p> <p>Tel: +27 (0) 11 805 4662 Fax: +27 (0) 86 624 7829</p>
<p>UNITED MANGANESE OF KALAHARI (PTY) LTD CHINA CONSTRUCTION BANK 95 GRAYSTON DRIVE SANDTON 2196</p> <p>Tel: +27 (011) 217 2800 Fax: +27 (011) 217 2801</p>	14456	<p>United Manganese of Kalahari (Pty) Ltd</p> <p>Tel: +27 (0) 53 742 3000 Fax: +27 (0) 53 742 3119</p> <p><i>Farm, Province</i> Farm Perth <i>Northern Cape</i></p>	Renova Manganese Investments Limited Majestic silver Trading 40 (PTY) LTD	<p>Opencast</p> <p>Manganese ore 37.5%</p>	<p>Kalahari Trading AG Baarerstrasse 94 CH-6300 Zug Switzerland sales@kalaharit rading.ch</p>

**FIGURE 1: CHROME FLOW DIAGRAM**



**FIGURE 2: IRON FLOW DIAGRAM**



**FIGURE 3: MANGANESE FLOW DIAGRAM**

