FOJA: 104 .- .-

NOMENCLATURA : 1. [40]Sentencia
JUZGADO : 12° Juzgado Civil de Santiago
CAUSA ROL : C-25454-2014
CARATULADO : DISTRIBUIDORA CUMMINS CHILE SA / SOCIEDAD CONTRACTUAL MINERA VALLENAR IRON COMPANY

Santiago, veintiséis de Agosto de dos mil catorce

VISTOS Y TENIENDO PRESENTE:

Atendido el mérito de los antecedentes acompañados, los hechos expuestos por la parte demandante y lo dispuesto en los artículos 1°, 3° N° 20, 7° y siguientes del Código de Comercio y artículos 1°, 2°, 3°, 43°, 52° y siguientes del Libro Cuarto del Código de Comercio se resuelve :

Que de acuerdo a la causal contenida en el artículo 43 del libro IV del Código de Comercio, se declara la quiebra de empresa **SCM VALLENAR IRON COMPANY**, Rut N° 76.190.330-6, representada legalmente por don **ROBERT MICHAEL CLARKE SOMMERVILLE**, chileno, ambos domiciliados en calle Coronel N° 72, Oficina 1002, Piso 10, comuna de Las Condes, Región Metropolitana.

Designase como Síndico Titular Provisional a cuya intervención deberá sujetarse la fallida, hasta la primera junta de Acreedores a don **TOMAS LACAMARA DE CAMINO**, abogado, domiciliado en calle Agustinas N° 1022, Oficina 1001, comuna y ciudad de Santiago, teléfono 026729314 ó 026716546, correo electrónico tomas.lacamara@gesco.cl

Designase como Síndico Suplente a don **NELSON MACHUCAS CASANOVAS**, abogado, domiciliado en calle Amunátegui N° 277, Oficina

DUODÉCIMO JUZGADO CIVIL
SANTIAGO
CERTIFICO QUE ES COPIA
CONFORME CON SU ORIGINAL

801, comuna de Santiago, teléfono (2) 499.05.00 o 02.699.41.45, correo electrónico nmachucas@hcpabogados.cl

El Síndico designado procederá a incautar todos los bienes de la fallida, libros y documentos todo bajo inventario, prestándosele para éste objeto el auxilio de la fuerza pública por el Comisario de Carabineros de Chile, más inmediato, con la sola exhibición de copia autorizada del presente fallo.

Comuníquese mediante oficios a la Empresa de Correos de Chile y a Telex Chile, que a contar de esta fecha, deberá poner a disposición del Síndico la correspondencia y despachos telegráficos dirigidos a la fallida.

Acumúlense a la presente quiebra todos los juicios seguidos contra la fallida que estuvieren pendientes entre otros Tribunales de cualquier jurisdicción y que puedan afectar sus bienes, salvo excepciones legales.

Adviértase al público que no puede pagar, ni entregar mercaderias a la fallida so pena de nulidad de los pagos y entregas.

Las personas que tengan bienes o papeles pertenecientes a la fallida, deberán ponerlos a disposición del Síndico, bajo pena de ser tenidos por cómplices o encubridores de la Quiebra.

Hágase saber a todos los acreedores residentes en el territorio de la República, que tienen el plazo de 30 días contados desde la fecha de la publicación de la sentencia, para que se presenten con los documentos justificativos de sus créditos, bajo apercibimiento de que les afectarán los resultado del juicio, sin nueva citación. La misma noticia deberá darse a todos los acreedores que se encuentren fuera del territorio de la República por carta certificada, para que en el plazo señalado precedentemente, aumentado con el emplazamiento que corresponda y que se indicara en cada carta, comparezcan con los documentos justificativos de sus créditos y bajo el apercibimiento señalado.

DUODÉCIMO JUZGADO CIVIL
SANTIAGO
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CONFORME CON SU ORIGINAL

Inscríbase la Quiebra en el Registro de Interdicciones y Prohibiciones de Enajenar del Conservador de Bienes Raíces de Santiago e inscríbase igualmente en los Conservadores correspondientes a cada uno de los inmuebles pertenecientes a la Fallida en su caso.

Citase a los acreedores a la Primera Junta General de Acreedores a celebrarse en la sede de este Tribunal, el trigésimo quinto día hábil contado desde la fecha de la publicación de esta Sentencia, prorrogándose al día siguiente hábil, si recayere en sábado a las 09.00 horas.

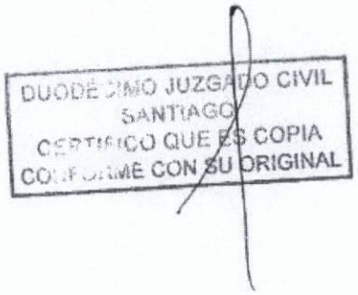
Notifíquese la presente resolución al fallido, a los acreedores y a terceros por medio de un aviso extractado y publicado en el Diario Oficial, y a los Síndicos designados conforme lo establecido en el artículo 55 del Libro Cuarto del Código de Comercio.

Anótese, regístrese y dese copia.

Dictada por doña **MARIA SOFÍA GUTIERREZ BERMEDO**, Juez Titular,

Autorizada por doña **MARIA LAURA GJUROVIC MANRIQUEZ**, Secretaria Suplente//

Se deja constancia que se dio cumplimiento a lo dispuesto en el inciso final del art. 162 del C.P.C. en **Santiago, veintiséis de Agosto de dos mil catorce**



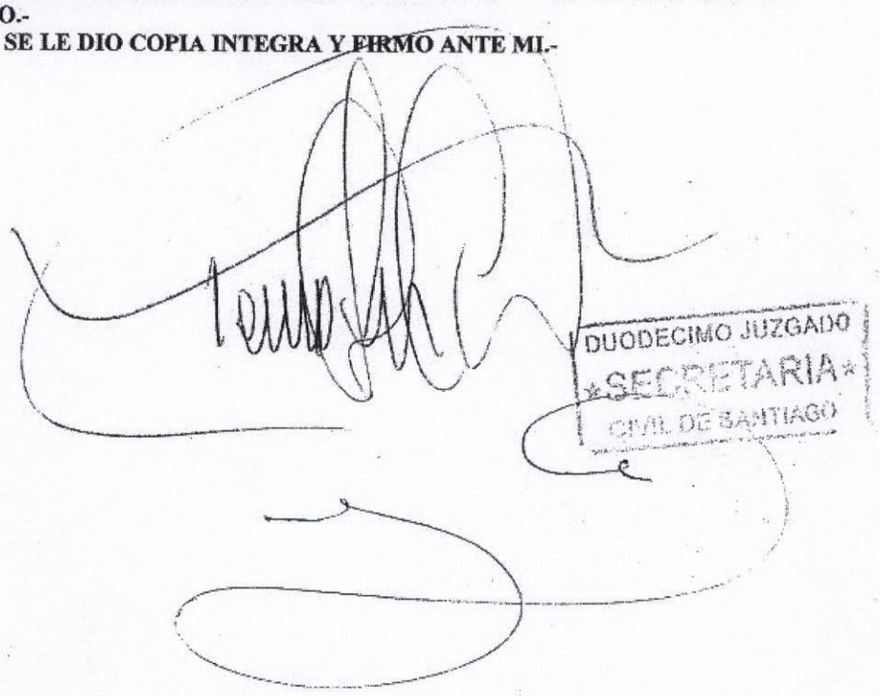
FOJA: 108 .- ciento ocho .-

NOMENCLATURA : 1. [41]Notificación de la sentencia
JUZGADO : 12° Juzgado Civil de Santiago
CAUSA ROL : C-25454-2014
CARATULADO : DISTRIBUIDORA CUMMINS CHILE SA / SOCIEDAD CONTRACTUAL MINERA VALLENAR IRON COMPANY

Santiago, veintisiete de Agosto de dos mil catorce

CON ESTA FECHA Y SIENDO LAS 9,55 HORAS COMPARECE ANTE ESTA SECRETARIA DON TOMAS LA CAMARA DE CAMINO, C.I. N°9.858.374-2, SINDICO DE QUIEBRAS DESIGNADO EN AUTOS, QUIEN EN ESTE ACTO SE NOTIFICA PERSONALMENTE DE LA SENTENCIA DICTADA EN AUTOS QUE ROLA A FS. 104 Y SIGUIENTES, COMPLEMENTADA A FOJAS 107, QUIEN ACEPTA EN ESTE ACTO EL CARGO Y JURA DESEMPEÑARLO FIELMENTE Y EN EL MAS BREVE PLAZO.-

SE LE DIO COPIA INTEGRA Y FIRMO ANTE MI.-



Continuidad de Giro Provisional

DUODECIMO JUZGADO
08 SEP 2014
CIVIL DE SANTIAGO

S. J. L. Civil (26°)

Tomás Lacámara de Camino, síndico provisional, cuaderno de administración, en autos sobre quiebra caratulados: **"Sociedad Contractual Minera Vallenar Iron Company en Quiebra",** autos rol **C-25454-2014,** a US. Respetuosamente digo:

Que conforme las facultades que me concede el libro IV del Código de Comercio en su artículo 28 numeral 8, el síndico representa los intereses generales de los acreedores, en lo concerniente a la quiebra, y representa también los derechos del fallido, en cuanto puedan interesar a la masa, sin perjuicio de las facultades de aquellos y de éste determinados por la ley. Le incumbe especialmente: "continuar provisionalmente el giro de los establecimientos del fallido, con conocimiento de éste;"

Por lo anterior, es menester poner en conocimiento a la fallida, en conformidad a la norma antes citada, la decisión de esta sindicatura de dar continuidad provisional del giro de la empresa, ya que, en atención a los antecedentes incautados estamos en presencia de una faena minera, que actualmente se encuentra en desarrollo de un contrato de suministro de escoria gruesa y material de relleno, entre la sociedad fallida y la empresa Sacyr. A mayor abundamiento, nos encontramos en estudios técnicos de un contrato de explotación del yacimiento minero, que significaría, solicitar a la junta de acreedores, una continuidad efectiva del giro, la cual, tiene como objeto el pago del pasivo de la sociedad.

Así las cosas y de acuerdo a lo dispuesto el en Artículo 27 número 8 del Libro IV del Código de Comercio en relación al Artículo 99 del mismo cuerpo legal, y siendo beneficioso para los intereses de la masa vengo en solicitar a US, poner en conocimiento de la fallida la decisión tomada por esta sindicatura de dar continuidad provisional al giro de la empresa, en atención a los fundamentos ya expuestos.

POR TANTO,

A US. PIDO, poner en conocimiento de la fallida la decisión tomada por esta sindicatura de dar continuidad provisional al giro de la empresa, en atención a los fundamentos ya expuestos.

FOJA: 66 .- sesenta y seis .-

NOMENCLATURA : 1. [88]Fórmese cuaderno separado
JUZGADO : 12º Juzgado Civil de Santiago
CAUSA ROL : C-25454-2014
CARATULADO : DISTRIBUIDORA CUMMINS CHILE SA / SOCIEDAD CONTRACTUAL MINERA VALLENAR IRON COMPANY

Santiago, ocho de Septiembre de dos mil catorce

A fojas 7: A todo: Por acompañada acta de incautación e inventario de la fallida. Efectúese la notificación de la presente resolución mediante aviso en el Diario Oficial.

Fórmese cuaderno separado de Administración.

A fojas 12: Por acompañada acta de ampliación de incautación e inventarios de la fallida. Efectúese la notificación de la presente resolución mediante aviso en el Diario Oficial.

A fojas 63: A todo: Atendida la presentación del Síndico y lo dispuesto en el artículo 30 del Libro IV del Código de Comercio, téngase por presentada cuenta final de administración, notifíquese mediante aviso extractado en el Diario Oficial y cítese a una junta de acreedores la cual se llevará a efecto al décimo quinto día después de publicada la presente resolución.

A fojas 64: A lo principal: Téngase presente; Al otrosí: Como se pide, se designa como martillero público don Julio Marticorena García debiendo asumir el cargo y desempeñarlo fielmente.

A fojas 65: Téngase presente la continuación del giro provisional en los términos formulados. Notifíquese mediante aviso extractado en el Diario Oficial y notifíquese a la fallida por cédula.

cgs

En Santiago, a ocho de Septiembre de dos mil catorce , se notificó por el estado diario, la resolución precedente

REPOSICIÓN

RECIBIDO
11 SEP 2014
CIVIL DE SANTIAGO

S. J. L. CIVIL (12°) CIVIL

MARÍA PAULA URZÚA BALTERA, abogado por la sindicatura, en autos sobre quiebra caratulados **SOCIEDAD CONTRACTUAL MINERA VALLENAR IRON COMPANY EN QUIEBRA**, autos rol **C-25454-2014,** a US. Respetuosamente digo:

Que dentro de plazo legal, vengo en interponer fundado recurso de reposición en contra de la resolución de fecha 08 de Septiembre de 2014, en la que US. resolvió: "A fojas 65: Téngase presente la continuación del giro provisional en los términos formulados. Notifíquese mediante aviso extractado en el Diario Oficial y notifíquese a la fallida por cédula". Solicitando se reemplace dicha resolución por la siguiente : "A fojas 65: Téngase presente la continuación del giro provisional en los términos formulados, con conocimiento de la fallida" o la que US. determine, en atención a los antecedentes de hecho y de derecho que a continuación expongo:

1. De acuerdo a lo dispuesto el en Artículo 27 número 8 del Libro IV del Código de Comercio en relación al Artículo 99 del mismo cuerpo legal, y siendo beneficioso para los intereses de la masa, esta sindicatura dará

2. Que de acuerdo las normas legales ante citadas, una de las Atribuciones del Sindico, es precisamente esta, y de acuerdo al Artículo 99 N° 8 antes citado, esta se hará **con conocimiento de la fallida.**
3. Que una de las tantas obligaciones del Síndico, es velar por los intereses, tanto de la fallida, como de los acreedores.
4. Que una notificación y publicación que no son necesarias, sólo perjudica a la masa, ya que para cumplir con lo que US. dispone, debemos incurrir en gastos que nos innecesarios a la luz de la legislación vigente.

POR TANTO, en mérito de los antecedentes antes expuestos, normal legales citadas y del Artículo 181 Código de Procedimiento Civil y demás pertinentes,

PIDO A US., Acceder a lo solicitado, dando lugar al recurso de reposición interpuesto, solicitando se reemplace dicha resolución por la siguiente : "A fojas 65: Téngase presente la continuación del giro provisional en los términos formulados, con conocimiento de la fallida o la que US. determine.



FOJA: 19 .- diecinueve .-

NOMENCLATURA : 1. [445]Mero trámite
JUZGADO : 12º Juzgado Civil de Santiago
CAUSA ROL : C-25454-2014
CARATULADO : DISTRIBUIDORA CUMMINS CHILE SA / SOCIEDAD CONTRACTUAL MINERA VALLENAR IRON COMPANY

Santiago, dieciséis de Septiembre de dos mil catorce

Por ingresado a mi despacho con esta fecha.

Advirtiendo que en la resolución de fecha 8 de septiembre de 2014 se ha proveído por un error una solitud perteneciente a otros autos, atendida las facultades correctoras del procedimiento, se deja sin efecto sólo en cuanto al proveído de fojas 63, rigiendo en todo lo demás la resolución antes referida.

Desglósese las piezas desde fojas 13 a 63 y dese foliación correlativa, conservando la original entre paréntesis.

A fojas 16: A lo principal: Estese a lo que se resolverá; Al otrosí: Téngase presente.

A fojas 17: Ha lugar a la reposición en contra de la resolución de fojas 15 (ex 66) de fecha ocho de septiembre de 2014, sólo en cuanto al proveído de la solicitud de fojas14 (ex 65), rigiendo en todo lo demás la resolución antes referida, y en su lugar se decreta:

A fojas 14: Téngase presente la continuación del giro provisional en los términos formulados, con conocimiento de la fallida.

cgs

En Santiago, a dieciséis de Septiembre de dos mil catorce , se notificó por el estado diario, la resolución precedente//cgs

FOJA: 375 .- trescientos setenta y cinco .-

NOMENCLATURA : 1. [445]Mero trámite
JUZGADO : 12º Juzgado Civil de Santiago
CAUSA ROL : C-25454-2014
CARATULADO : DISTRIBUIDORA CUMMINS CHILE SA / SOCIEDAD CONTRACTUAL MINERA VALLENAR IRON COMPANY

Santiago, veinticuatro de Octubre de dos mil catorce

A fojas 373: Téngase presente.
A fojas 374: Téngase presente.
Por cumplido lo ordenado a fojas 371 respecto de la solicitud de fojas 311 y 340.

Proveyendo derechamente a fojas 311: A lo principal: Téngase por verificado el crédito de **IMPERATOR INVESTMENTS LIMITED, por la suma de USD 15.175.123,17; equivalentes al 13 de octubre de 2014 a la suma de $9.018.575.670**; Al primer y segundo otrosí: Téngase por acompañada minuta y documentos con citación a los autos; Al tercer otrosí: Téngase presente.

Proveyendo derechamente a fojas 340: A lo principal: Téngase por verificado el crédito de **AUSTRALIS MINING LIMITED, por la suma de USD 15.000.000 equivalentes al 13 de octubre de 2014 a $8.914.500.000**; Al primer y segundo otrosí: Téngase por acompañada minuta y documento con citación a los autos; Al tercer otrosí: Téngase presente.

AUDIENCIA

En Santiago, a viernes 24 de octubre de 2014, a la hora señalada, en dependencias de este Decimo Segundo Juzgado Civil de Santiago, se efectúa la Junta constitutiva de acreedores de la Quiebra **SOCIEDAD CONTRACTUAL MINERA VALLENAR IRON COMPANY** bajo la presidencia de la Juez Titular doña María Sofía Gutiérrez Bermedo y actuando como Secretaria Suplente doña María Laura Gjurovic Manríquez.

La citación de la presente junta consta en la resolución que la ordenó, dictada con fecha 27 de agosto de 2014, y que fue notificada mediante publicación en el diario oficial el día 11 de septiembre de 2014.

Asiste a la presente Junta, el Síndico Provisional Titular don Tomás Lacámara de Camino, su apoderada doña María Paula Urzua Baltera, y los acreedores que concurren, son aquellos que firman la lista de asistencia confeccionada al efecto, y que el tribunal ordena agregar a los autos, formando parte integrante de la presente acta. Se deja constancia que comparece en representación de la fallida, su apoderado don Sebastián Cobarrubias Pinto.

Conforme los dispuesto en el Artículo 102 del Libro IV del Código de Comercio, tienen derecho a votar en esta junta de acreedores aquellos créditos que se señalan en el informe presentado por el Síndico en la audiencia de quórum realizada al efecto el día 23 de Octubre de 2014, y que rola a fojas 371 del cuaderno principal.

DUODECIMO JUZGADO
★SECRETARIA★
CIVIL DE SANTIAGO

Constando la presencia de acreedores en esta audiencia, que constituyen un quórum de un 99,35% del total del pasivo que asciende $18.300.164.857.- de los créditos con derecho a voto, se declara legalmente constituida la junta y procede a tratar las materias contenidas en el artículo 108 del Libro IV del Código de Comercio.

	FS	ACREEDOR	MONTO CRED.	%	FIRMA
1	135	A.F.P. Hábitat S.A.	$ 622.332	0,00%	
2	148	A.F.C. Chile S.A.	$ 761.879	0,00%	
3	156	A.F.P. Hábitat S.A.	$ 512.504	0,00%	
4	214	Michel R. Clarke Neveu	$ 19.951.308	0,11%	
5		Alday Muñoz y otros	$ 59.353.740	0,32%	
6	99	Doosan Botcat Chile S.A.	$ 57.603.280	0,31%	
7	120	Dist. Cummins Arrienda S.A.	$ 49.673.876	0,27%	
8	135	Cía. Petroleos Copec S.A.	$ 41.234.447	0,23%	
9	168	Inm. Constructora Colina Ltda.	$ 7.996.800	0,04%	
10	193	Magma IV Sudamerica Spa	$ 120.825.446	0,66%	
11		Grupo Quintana Majlis y Cia	$ 4.872.644	0,03%	
12		Grupo Quintana Majlis y Cia	$ 3.680.931	0,02%	
13		Australis Mining Limited	$ 8.914.500.000	48,71%	
14		EMPERATOR INVESTMENTS LIMITED	$ 9.018.575.670	49,28%	
			$ 18.300.164.857	100,00%	

DUODECIMO JUZGADO
SECRETARIA

El precio ofrecido dependen del tipo de material, a saber: a). Metro cubico de Material RP1: $375.- más IVA.- b).Metro cubico de Material RP4: $500.- más IVA.- c). Metro cubico de Polvo Roca: $1.500.- más IVA.-

También se informó respecto la intención que ha manifestado la sociedad La Palma Ltd.Sac. de celebrar con la sociedad fallida SMC Vallenar Iron Company, un contrato de arrendamiento referente a la explotación del mineral de todas o algunas de las pertenencias incautadas por este Síndico.

Al respecto la Junta de Acreedores acuerda decretarla a partir de esta fecha, atendida la importancia que tiene mantener en funcionamiento la mayor parte de los activos incautados, atendido a los evidentes deterioros que se producen con su inactividad, y de los fondos que se puedan recaudar al efecto, con las siguientes indicaciones:

1. Respecto de la compra venta de mineral de baja ley, se aprueba la continuidad efectiva del giro de la empresa. Lo anterior es sin perjuicio del personal de la fallida que se requiera para la mantención de los equipos y las instalaciones, y de una adecuada estructura administrativa que lo permita.

2. La junta autoriza al síndico a negociar el contrato de arrendamiento de todas o partes de las pertenencias mineras con la Sociedad Las Palmas Ltd. Sac., para lo cual podrá establecer las estipulaciones del mismo.

3. Bienes adscritos a la continuidad de giro, todos aquellos incautados por el síndico, que se encuentren en la faena minera ubicada en Vallenar, con excepción de los derechos y acciones en otras sociedades, si los hubiere.

4. Administrador: El síndico Titular.

5. Duración: un año, sin perjuicio que la junta ordene su suspensión antes de esta fecha.

La junta por unanimidad de los acreedores presente acuerda, aprobar las continuidad de giro y todos y cada unos de los puntos antes expuestos.

Los acreedores por unanimidad concurren con la aprobación.

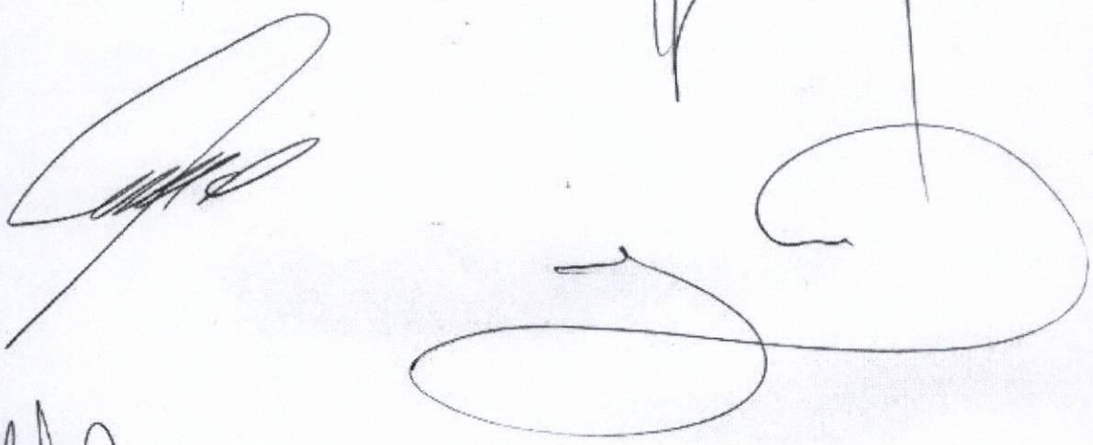
b) Vigilancia

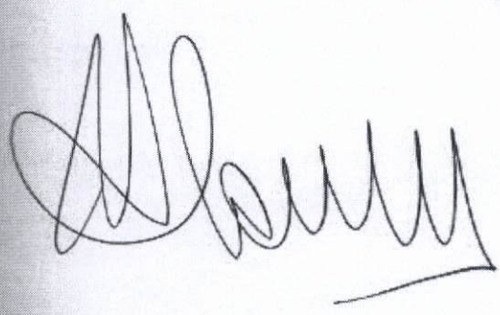
El síndico informa que ha apostado vigilancia en la planta incautada, lugar donde también existen activos de la fallida.

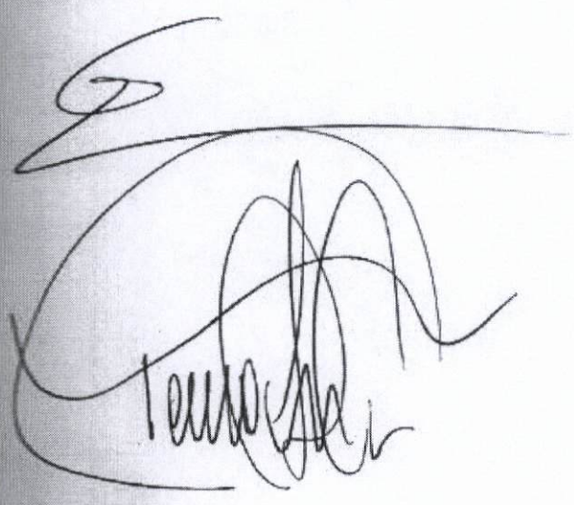
DUODECIMO JUZGADO
SECRETARIA
CIVIL DE SANTIAGO

La junta por unanimidad de los acreedores presente aprueba y ratifica la contratación de los servicios de vigilancia destinados directamente al cuidado y mantención de los bienes de la fallida.

Sin otras materias que tratar se procede a dar término a la presente Primera Junta de Acreedores, firmando junto con S.S. Titular para debida constancia, el síndico y los designados presidente y secretario titulares, el apoderado de la fallida y la Señora Secretaria Suplente del Tribunal, que autoriza.







En Santiago, a veinticuatro de Octubre de dos mil catorce , se notificó por el estado diario, la resolución precedente//cgs



DUODECIMO JUZGADO
*SECRETARIA
DE SANTIAGO

SLE

ACOMPAÑA ACTA PRIMERA JUNTA ORDINARIA DE ACREEDORES

DUODECIMO JUZGADO
11 NOV 2014
CIVIL DE SANTIAGO

S. J. L. JUZGADO CIVIL DE SANTIAGO (12°)

TOMAS LACÁMARA DE CAMINO, Síndico por la quiebra **"SOCIEDAD CONTRACTUAL MINERA VALLENAR IRON COMPANY EN QUIEBRA"**, causa Rol N° **C-25454-2014, cuaderno de administración**, a US. Respetuosamente digo:

Que en este acto vengo en acompañar Acta Primera Junta Ordinaria de Acreedores, celebrada el dia 6 de Noviembre de 2014, para todos los efectos legales.

POR TANTO,

A US. PIDO tenerla por acompañada para todos los efectos legales, bajo el apercibimiento de tenerse por aprobada si no fuere impugnada dentro de tercero dia.

PRIMERA JUNTA ORDINARIA DE ACREEDORES
QUIEBRA SOCIEDAD CONTRACTUAL MINERA VALLENAR IRON COMPANY

En Santiago, Jueves 06 de Noviembre de 2014, a las 16:00 horas, en dependencias de la oficina de la asesora Legal de esta quiebra doña María Paula Urzua Baltera, ubicado en Huérfanos 1480, comuna y ciudad de Santiago, tiene lugar la Primera Junta Ordinaria de Acreedores de la quiebra **SOCIEDAD CONTRACTUAL MINERA VALLENAR IRON COMPANY** Rol N° **C-25454-2014**, del 12° Juzgado de Civil de Santiago, con la asistencia del Síndico don Tomás Lacámara de Camino procede a realizar la reunión con la asistencia del presidente Sr. Roberto Egaña Galeno, en representación de Australis Mining Limited, y como secretario ad hoc la abogado doña Angelina Migliorelli Rojo, en representación de don Michael Clarke Nevett.

Los acreedores asistentes son los siguientes:

El pasivo reconocido y autorizado a concurrir y votar en esta junta asciende a $18.835.1001.331.- y los acreedores presentes representan el 95,38 % de dicho pasivo, por lo que existiendo quórum para sesionar el señor Presidente declara que se tiene por constituida la presente junta de acreedores y habilitada para adoptar acuerdos y ofrece la palabra al Síndico para que entregue su cuenta.

Cuenta del Síndico
El Síndico hace entrega a cada uno de los asistentes copia de su informe el que se acuerda forme parte integrante de la presente acta. El Síndico expone su contenido y responde las consultas de los asistentes.

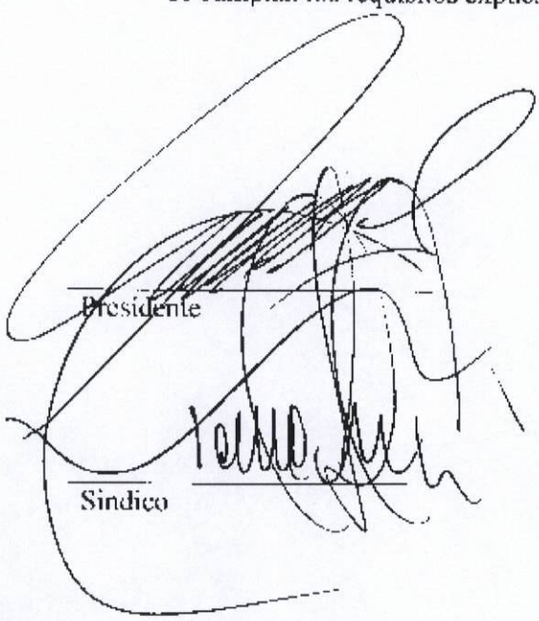
Desarrollo de la reunión:

Los asistentes a junta debaten acerca de las materias del informe y se produce un intercambio de opiniones tras lo cual, se adoptaron los acuerdos que más abajo se consignan.

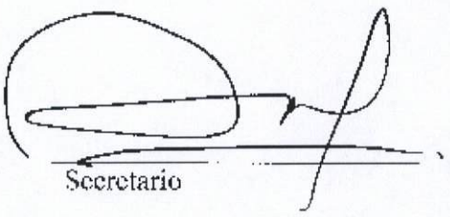
Acuerdos:

1. La Junta aprueba por unanimidad el informe del Síndico

2. La Junta de acreedores aprueba todos y cada uno de los gastos que el Síndico ha presentado en su informe en el punto N°7. En cuanto al bodegaje se aprueba la suma de $140.056.- mensuales por un periodo de 60 meses.
3. La junta de acreedores aprueba el nombramiento del administrador de la continuidad de giro y los honorarios propuestos de UF 100 líquidos.
4. La junta de acreedores otorga al Síndico facultades para transigir en los términos planteados y ratifica cualquier transacción efectuada con anterioridad, siempre que se cumplan los requisitos expuestos en el informe.



Presidente



Secretario

Síndico

Fallido

QUIEBRA SCM VALLENAR IRON COMPANY

LISTA DE ASISTENCIA PRIMERA JUNTA ORDINARIA DE ACREEDORES

06 DE NOVIEMBRE DEL 2014

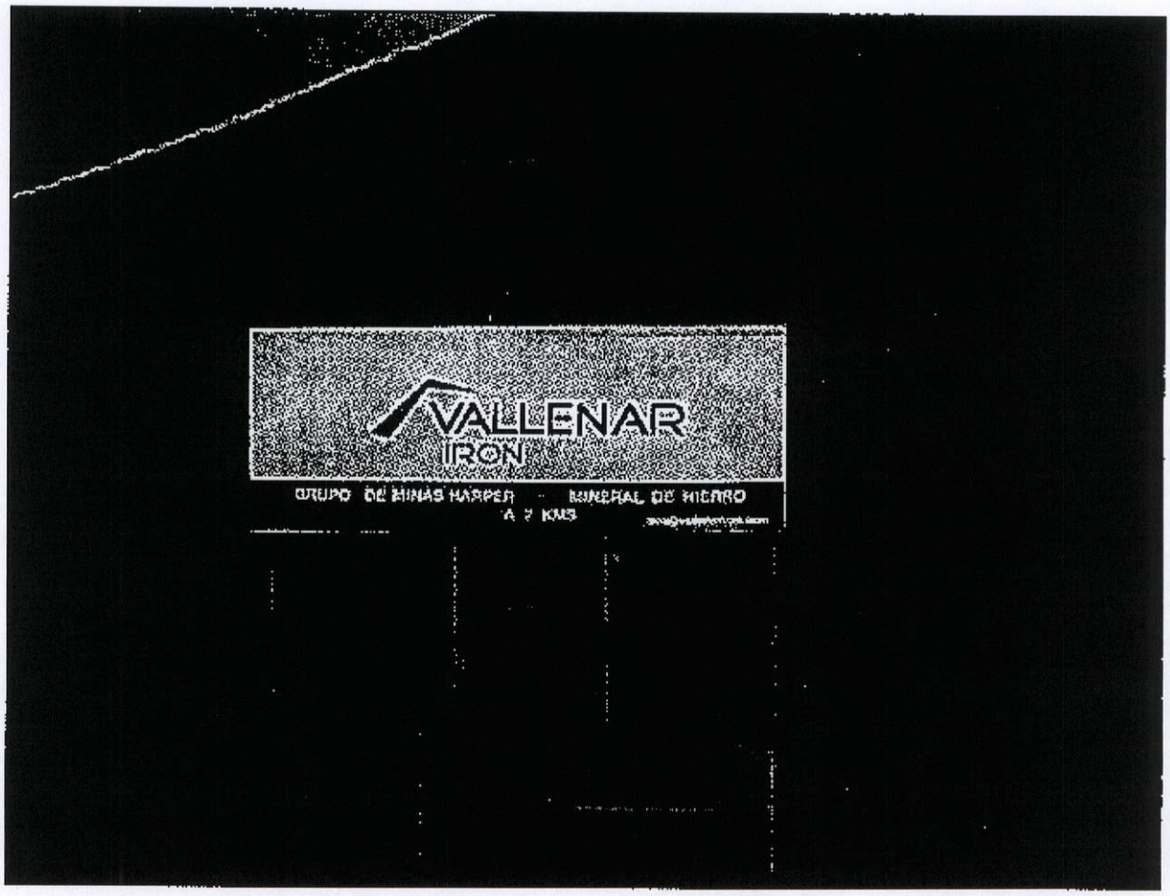
	FS	ACREEDOR	MONTO CRED.	%	FIRMA
1	135	A.F.P. Habitat S.A.	$ 622.332	0,00%	
2	148	A.F.C. Chile S.A.	$ 761.879	0,00%	
3	156	A.F.P. Habitat S.A.	$ 512.504	0,00%	
4	214	Michel R. Clarke Neveu	$ 19.951.308	0,11%	
5		Alday Muñoz y otros	$ 59.353.740	0,32%	
6	99	Doosan Botcat Chile S.A.	$ 57.603.280	0,31%	
7	120	Dist. Cummins Arrienda S.A.	$ 49.673.876	0,26%	
8	135	Cía. Petroleos Copec S.A.	$ 41.234.447	0,22%	
9	168	Inm. Costructora Colina Ltda.	$ 7.996.800	0,04%	

Tomás Lacámara de Camino
Abogado
Síndico de Quiebras

INFORME PRIMERA JUNTA DE ACREEDORES

QUIEBRA

SMC VALLENAR IRON COMPANY



- 12° Juzgado Civil de Santiago
- Rol Causa N° 25454-2014
- Junta Constitutiva de Acreedores
- Jueves 6 de Noviembre del 2014 a las 16:00 hrs.

Agustinas N°1022 - Oficina 1001
Santiago
Teléfono (2) 26716546

Tomás Lacámara de Camino
Abogado
Síndico de Quiebras

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3.-Demandas Laborales

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6.- Notas de Débitos

7.- Gastos Quiebra

8.- Continuidad de Giro

9.- Balance Quiebra y Balance Continuidad de Giro

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Abogado
Síndico de Quiebras

1.- Acreedores con derecho a participar en esta Junta

En cumplimiento de lo dispuesto en el Art 116 del libro IV del Código de Comercio el Síndico Titular Definitivo presenta lo siguiente;

En audiencia de fecha 5 de noviembre del 2014, en cumplimiento a lo dispuesto en art 102 del Libro IV del Código de Comercio, el tribunal de la Quiebra autorizo a concurrir y a votar a la Primera Junta Ordinaria de Acreedores a un total de $ 18.835.101.331,- del pasivo verificado.

2.-Informe Procesal

a.- Cierre Periodo Ordinario de Verificación

El síndico informa que de acuerdo a lo dispuesto en el Art. 139 del Libro IV del Código de Comercio, solicitó con fecha 5 de Noviembre de 2014, se declare cerrado el período ordinario de verificación para los acreedores residentes en el territorio de la república.

b.- Nomina de Créditos verificados

CREDITOS VERIFICADOS PREFERENTES ART. 2472 N°5 y 8 C.C.

AFP a Habitat S.A. fs 135 por la suma $ 622.332,-
AFC Chile S,A. Fs 148 por la suma de $ 761.879,-
AFP Habitat S.A. Fs 156 por la suma de $ 512.504,-
Michel R. Clarke Neveu Fs 214 por la suma de $ 19.951.308,-
Alday Muñoz y Otros por la suma de $ 59.353.740,-

CREDITOS VERIFICADOS PREFERENTES ART. 2472 N° 9 DEL C.C.

Doosan Botcat Chile S.A. Fs 114 por la suma de $ 9.197.162,-
Distribuidora Cummins Arrienda S.A. Fs 120 por la suma de $ 7.931.123,-
Compañía de Petróleos de Chile S.A. Fs 135 por la suma de $ 9.978.937,-
Inm. Constructora Colina Ltda. fs.168 por la suma de $ 1.276.800,-
Magna IV Sudamérica SpA fs 193 por la suma de $ 19.291.458,-
Fisco de Chile- Tesorería General de la República, a fojas 461 por la suma $ 474.741.926,-
Distribuidora Cummins Arrienda S.A por la suma de $3.471.801.-

CREDITOS VERIFICADOS PRENDARIOS

Australis Mining Limited $ 9.018.575.670,-

CREDITOS VERIFICADOS VALISTAS

Doosan Botcat Chile S.A. Fs 114 por la suma de $ 48.406.118,-
Distribuidora Cummins Arrienda S.A. Fs 120 por la suma de $ 41.742.753,-
Compañía de Petróleos de Chile S.A. Fs 135 por la suma de $ 31.255.510,-

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Tomás Lacámara de Camino
Abogado
Síndico de Quiebras

Inm. Constructora Colina Ltda. fs 168 por la suma de S 6.720.000,-
Magna IV Sudamérica SpA Fs 193 por la suma de S 101.533.988,-
Grasty Quintana Majlis y Cía por la suma de $ 4.872.644,-
Servicios Tecnicos de la Minería por la suma de $ 3.680.931,-
Australis Mining Limited $ 8.914.500.000,-
Distribuidora Cummins Arrienda S.A por la suma de $133.688.-

c.- Proposición de fecha de cesación de servicios

El síndico informa que con fecha 06 de noviembre del presente año, se presentó al tribunal la proposición de la fecha cesación de pagos de la sociedad fallida, proponiendo en día 26 agosto de 2012.

3.-Demandas Laborales

El síndico informa que ha sido notificado de las siguientes demandas laborales a saber:

N°	JUICIO LABORAL	RUC	RIT	TRIBUNAL	ABOGADO
1	Richard Naranjo Gajardo	14-4-0024225-k	O-2687-2014	1° Juzgado de Letras del trabajo	Foad jadue badilla
2	Miguel Koplow wius	14-4-0042215-0	O-4719-2014	2° Juzgado de Letras del Trabajo	Fernando Morales Pérez
3	Jose Alday Muñoz y otros.	14-4-0042309-2	O-4730-2014	1° Juzgado de Letras del trabajo	Guillermo Claverie

4.-Programa de realización del Activo

El síndico informa que el día 24 de octubre del 2014, se procedió a realizar el remate de los bienes incautados en la quiebra ubicados en las oficinas de calle Coronel Pereira N° 72, por el Martillero Julio Marticorena obteniendo la suma de $ 3.197.700,-

Además el Síndico solicita a la Junta, lo autorice a citar a Junta Extraordinaria de acreedores, para la contratación especializada de un agente vendedor, quien realizará las labores de tasación de los activos y eventualmente su venta, en el evento que no se pueda materializar el contrato de arrendamiento con La Palma LTD SAC

5.-Pago Créditos Preferentes

El síndico informa que una vez realizados todos los bienes muebles y los que también no forman parte de la continuidad de giro ubicados en la Cuidad de Vallenar presentara un reparto de fondos de acuerdo a sus preferencias.

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Tomás Lacámara de Camino
Abogado
Síndico de Quiebras

6.-Notas de Débitos

Emisión de Notas de Débito: Se informa a los acreedores que han solicitado notas de débito que deben presentar los siguientes documentos para analizar la procedencia de su emisión:

i. Copia facturas legalizadas
ii. Libro de ventas
iii. Form. 29 correspondiente a las facturas verificadas
iv. Ultimo formulario 29 presentado en el año

7.-Gastos Quiebra

El síndico informa a la junta y solicita a la aprobación expresa de lo siguiente:

Honorarios Incautación: $ 3.666.667.-

Se procedió a pagar por este concepto la suma señalada aun especialista, que realizo la incautación de los activos que se encontraban en faena, ubicada en la cuidad de Vallenar.

Bodegaje documentación incautada

El síndico informa que procedió a contratar los servicios de bodegaje con el señor Claudio Solans por la suma de $ 140.056,- a fin almacenar toda la documentación contable incautada que se encontraba en la propiedad arrenda por la fallida ubicada en calle Coronel Pereira N° 72 oficina 1001 Las Condes, por la suma de según lo dispone la Superintendencia de Quiebras en Instructivo N° 6 de fecha 29 de diciembre del 2009 articulo 18 letra Q y el Servicio de Impuestos Internos.

Arriendo Oficina ubicada en calle Coronel Pereira

Con fecha 23 de septiembre del 2014, se procedió a la entrega de la propiedad ubicada en calle Coronel Pereira N° 72 oficina 1001 pagando los siguiente:

Gastos de reparación y limpieza propiedad	$ 2.228.139.-
Proporción arriendo días de agosto y septiembre 2014	$ 1.094.229.-

Según contrato de arriendo existía una garantía por la suma de UF 177,63, la que fue entregada a esta sindicatura por la suma de $ 4.289.967.-

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Tomás Lucámara de Camino
Abogado
Síndico de Quiebras

Gastos Traslado de bienes y documentación

Por este concepto se ha pagado la suma de $ 2.506.669.- por traslado de los bienes incautados y la documentación contable.

8.- Continuidad de Giro Definitiva

Referente al contrato con la empresa Sacyr, sigue corrientemente la explotación de este según lo programado hasta finales del mes de diciembre. Se solicita a la junta autorización de los honorarios que corresponden al administrador de la continuidad de giro por 100 UF mensuales. En cuanto a la negociación del contrato de arrendamiento con la empresa La Palma LTD SAC, esta se encuentra en una etapa de estudio de su factibilidad jurídica.

9.- Balance Quiebra y Continuidad de Giro

Se adjunta anexo 1

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Tomás Lacámara de Camino
Abogado
Síndico de Quiebras

ANEXO N°1

BALANCE GENERAL

QUIEBRA Y CONTINUIDAD DE GIRO

Agustinas N°1022 - Oficina 1001
Santiago
Teléfono (2) 26716546

BALANCE GENERAL QUIEBRA SCM VALLENAR IRON COMPANY
Desde Septiembre del 2014 a Octubre 2014

T	CUENTA	DEBITOS	CREDITOS	DEUDOR	ACREEDOR	ACTIVO	PASIVO	PERDIDA	GANANCIAS
A	BANCO ITAU	$ 2.356.144	$ 1.803.749	$ 552.395		$ 552.395			
A	CTA CTE CONT. DE GIRO	$ 1.919.549	$ 9.361.374		$ 7.441.825		$ 7.441.825		
P	CONSIGNACION DE 100 U.F.		$ 2.356.144		$ 2.356.144		$ 2.356.144		
P	RETENCION DE 2DA CAT.	$ 22.222	$ 22.222						
G	PUBLICACIONES LEGALES	$ 16.551		$ 16.551				$ 16.551	
G	GASTOS VARIOS	$ 3.555.134		$ 3.555.134				$ 3.555.134	
G	VIGILANCIA	$ 1.785.000		$ 1.785.000				$ 1.785.000	
G	HONORAR.INCAUT.E INVENT	$ 3.666.667		$ 3.666.667				$ 3.666.667	
G	HONORARIOS MINISTRO DE	$ 222.222		$ 222.222				$ 222.222	
	SUB TOTAL	$ 13.543.489	$ 13.543.489	$ 9.797.969	$ 9.797.969	$ 552.395	$ 9.797.969	$ 9.245.574	
	RESULTADO						-$ 9.245.574	-$ 9.245.574	$ 0
	SUMAS IGUALES	$ 13.543.489	$ 13.543.489	$ 9.797.969	$ 9.797.969	$ 552.395	$ 552.395	$ 0	$ 0

LILIANA TOLEDO R.
Contador Sindicatura

000030

BALANCE GENERAL CONTINUIDAD DE GIRO SCM VALLENAR IRON COMPANY
Desde Septiembre del 2014 a Octubre 2014

T	CUENTA	DEBITOS	CREDITOS	DEUDOR	ACREEDOR	ACTIVO	PASIVO	PERDIDA	GANANCIAS
A	BANCO ITAU	$ 19.100.769	$ 19.100.769	$ 0		$ 0			
A	CTA CTE QUIEBRA	$ 9.361.374	$ 1.919.549	$ 7.441.825		$ 7.441.825			
P	PRESTAMO SINDICO		$ 3.500.000		$ 3.500.000				
P	RETENCION DE 2DA CAT.	$ 546.667		$ 546.667			$ 546.667		
G	MANTEN.Y FLETES	$ 3.505.952		$ 3.505.952				$ 3.505.952	
G	GASTOS VARIOS	$ 1.942.333		$ 1.942.333				$ 1.942.333	
G	HONORARIOS CONTABLES	$ 1.777.777		$ 1.777.777				$ 1.777.777	
G	HONORARIOS CONT. DE GIR	$ 5.466.666		$ 5.466.666				$ 5.466.666	
I	VENTAS		$ 17.181.220		$ 17.181.220				$ 17.181.220
	SUB TOTAL	$ 41.701.538	$ 41.701.538	$ 20.681.220	$ 20.681.220	$ 7.441.825	$ 546.667	$ 12.692.728	$ 17.181.220
	RESULTADO						$ 6.895.158	$ 4.488.492	
	SUMAS IGUALES	$ 41.701.538	$ 41.701.538	$ 20.681.220	$ 20.681.220	$ 7.441.825	$ 7.441.825	$ 17.181.220	$ 17.181.220

LILIANA TOLEDO R.
Contador Sindicatura

000031

SEGUNDA JUNTA ORDINARIA DE ACREEDORES
QUIEBRA SOCIEDAD CONTRACTUAL MINERA VALLENAR IRON COMPANY

En Santiago, Jueves 04 de Diciembre de 2014, a las 16:00 horas, en dependencias de la oficina de la asesora Legal de esta quiebra doña María Paula Urzua Baltera, ubicado en Huérfanos 1480, comuna y ciudad de Santiago, tiene lugar la Segunda Junta Ordinaria de Acreedores de la quiebra **SOCIEDAD CONTRACTUAL MINERA VALLENAR IRON COMPANY** Rol N° **C-25454-2014**, del 12° Juzgado de Civil de Santiago, con la asistencia del Síndico don Tomás Lacámara de Camino procede a realizar la reunión con la asistencia del presidente Sr. Roberto Egaña Galeno, en representación de Australis Mining Limited, y como secretario ad hoc al abogado don Matías Gause Swett, en representación de Tecno Fast S.A.

Los acreedores asistentes son los siguientes:

	FS	ACREEDOR	MONTO CRED.	%	ABOGADO PATROCINANTE	FIRMA
1	114	Doocan Botcat Chile S.A.	$ 57,603,280	0.27%		
2	120	Dist. Cummins Chile Arrienda S.A.	$ 49,673,877	0.23%		
3	135	Cia de Petroleos de Chile	$ 41,198,749	0.19%		
4	143	AFP Habitat S.A,	$ 622,332	0.00%		
5	148	AFC Chile	$ 761,879	0.00%		
6	156	AFP Habitat S.A.	$ 512,504	0.00%		

7	193	Magna IV Sudamericana SPA	$ 132,488,777	0.62%		
8	214	Michel Robert Clarke Neveu	$ 19,951,308	0.09%		
10		Grasty Quintana Majlis y Cia	$ 4,872,644	0.02%		
11		Grasty Quintana Majlis y Cia	$ 3,680,931	0.02%		
12		Alday Muñoz y Otros	$ 59,353,740	0.28%		
13		Dist.Cummins Chile Arrienda S.A.	$ 49,673,877	0.23%		
14		Australis Mining Limited	$ 8,914,500,000	41.42%	Roberto Egaña	
15		Imperator Investments Limited	$ 9,018,575,670	41.90%	Roberto Egaña	
16		Distribuidora Cummins Chile S.A.	$ 933,487	0.00%		
17		Ex trabajadores	$ 7,694,809	0.04%		
18		Asoc. Chilena de Seguridad	$ 482,303	0.00%		
19		Comercial Nutriser Ltda.	$ 12,766,463	0.06%	ANDRES DOMINGUEZ	
20		Distribuidora de Explosivos	$ 21,555,850	0.10%		
21		Leonardo J. Farkas Klein	$ 2,642,040,000	12.27%		

22		Tecno Fact S.A.	$ 10,878,088	0.05%	M de az Canse	
23				0.00%		
24		Tesoreria Gen. De la Republica	$ 474,741,926	2.21%		
22						

$21,524,562,494

El pasivo reconocido y autorizado a concurrir y votar en esta junta asciende $21,524,562,494 y los acreedores presentes representan el 83,43 % de dicho pasivo, por lo que existiendo quórum para sesionar el señor Presidente declara que se tiene por constituida la presente junta de acreedores y habilitada para adoptar acuerdos y ofrece la palabra al Síndico para que entregue su cuenta.

Cuenta del Síndico

El Síndico señala a los asistentes que lo informado en la junta pasada se ha mantenido sin variación, razón por la que rige el mismo informe anterior sin novedades, con la salvedad de que el contrato de arriendo propuesta por la Palma aún no se ha concretado.

Asimismo, el Síndico hace la salvedad que con relación al bodegaje aprobado en la junta pasada, no se consignó el IVA, lo que debe ser ratificado en esta Junta.

Desarrollo de la reunión:

Los asistentes a junta debaten acerca de diversas materias, produciéndose un intercambio de opiniones tras lo cual, se adoptaron los acuerdos que más abajo se consignan.

Acuerdos:

1. En atención a lo informado por el Síndico con relación al contrato de arriendo con la Palma la Junta instruye al Síndico a establecer como plazo máximo para su celebración 30 días a contar de esta fecha. El contrato deberá ser garantizado de forma suficiente para asegurar su cumplimiento conforme al criterio y facultades de la sindicatura, concedidas en Junta anterior.
2. Tras lo señalado por el Síndico con relación al bodegaje, este se ratifica por la suma de $140.056.- más IVA mensuales, por un período de 60 meses.
3. La junta de acreedores, de acuerdo con lo dispuesto en el Artículo 123 del Libro IV del Código de Comercio, mandata al Síndico vender en forma directa los bienes de la fallida, aceptando la mejor oferta previo acuerdo de Junta, por un período de 60 días.
4. Asimismo, vencido el plazo de 60 días establecido en el punto anterior, la Junta mandata al Síndico para citar y extractar la solicitud de junta extraordinaria para la contratación especializada de un agente vendedor, para el evento de que fracasen las ofertas de venta directa.

Presidente

Secretario

Sindico

Fallido

MINERA SANTA BARBARA
SINCE 1950

"MINA JAPONESA"

METODO DE EXPLOTACIÓN

VALLENAR
TERCERA REGIÓN DE ATACAMA
MAYO 2006

SERVICIO NACIONAL DE GEOLOGIA Y MINERIA
III REGION
31 MAYO 2006
Nº DE INGRESO: 65744 RECEPCION:
ENVIADO A:

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1. DESCRIPCIÓN DEL PROYECTO

El proyecto Mina Japonesa de Minera Santa Bárbara, consiste básicamente en desarrollar la explotación de un yacimiento aluvial ubicado en las cercanías de Vallenar para producir concentrados de fierro. El producto final será transportado al Puerto Punta Caleta en Caldera para su acopio y embarque.

Conforme al Plan de Negocios de Minera Santa Bárbara se contrató los servicios de Besalco Maquinarias S.A. para la operación de la Mina, Planta y el Transporte a Puerto del producto final.

1.1. Ubicación y accesos.

Las pertenencias mineras del grupo La Japonesa se encuentran ubicadas en la III Región de Atacama a aproximadamente 10 km de la ciudad de Vallenar, conforme se muestra en la siguiente figura.

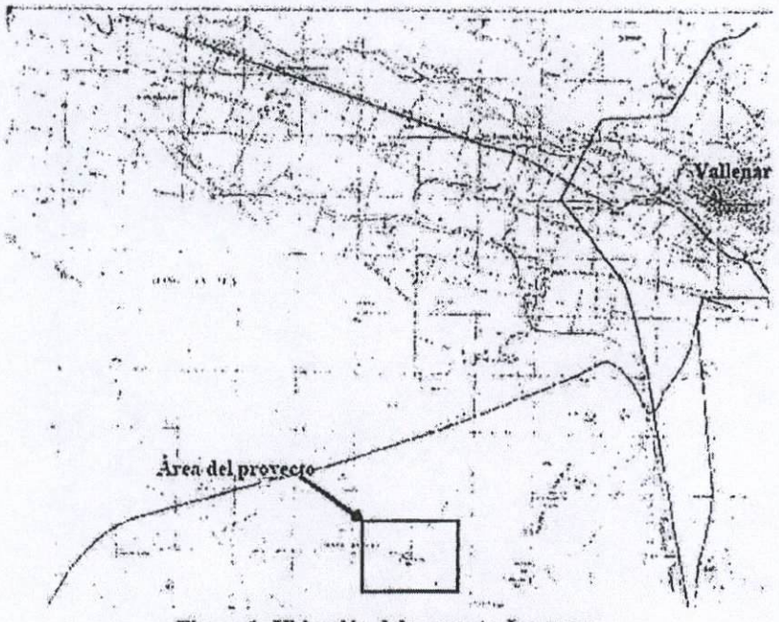


Figura 1: Ubicación del proyecto Japonesa

Para acceder al sitio del proyecto se debe avanzar aproximadamente unos 3 km desde Vallenar al sur por la Ruta 5, para luego tomar el camino C – 486 con dirección a Algarrobo por unos 3 km aproximadamente. Luego se debe doblar en la bifurcación del camino que lleva a la quebrada La Higuera y avanzar 4 km llegando a un sector donde se encuentran 2 antiguos desmontes.

1.2. *Campaña sondajes y geología.*

La zona donde se iniciará la explotación aparte de haber sido explotada hasta el año 1977, fue reconocida por la CMP el año 1995, luego por la Compañía Minera Tauro el año 2003 y Minera Santa Bárbara desarrollo una campaña de sondajes durante el año 2006. A partir de la información generada en estas campañas, se interpretó la información de los sondajes generando un modelo geológico y posteriormente un modelo de bloques, los que determinaron recursos disponibles a ser explotados cercanos a los 53 millones de toneladas de mineral de fierro con una ley cercana a un 16%. El cuerpo mineralizado tiene dimensiones aproximadas de 1.000 de ancho por 1.300 m de largo, una potencia media aproximada de 17,5 m y una densidad de 2,5 t/m3. En este mismo lugar existen dos desmontes con tonelajes estimados en un poco más de 2,5 millones de toneladas con una ley superior a 15%.

1.3. *Medio Ambiente.*

El proyecto mina La Japonesa cuenta con aprobación ambiental mediante R.E. N° 085 de fecha 25.10.2005, de la COREMA de la III Región de Atacama

2. RECURSOS MINERALES

2.1 *Modelo Geológico*

El yacimiento de hierro Japonesa, es un depósito sedimentario in consolidado de origen coluvial, emplazado sobre un basamento rocoso. El material que compone el depósito corresponde a clastos de hierro denominados "Papeos", clastos líticos (metandesita, diorita) y finos desde arenas a arcillas. En parte están compactados por soluciones principalmente calcáreas a silíceas dando origen a lo que se denomina "Tertel". En general los clastos de mineral tienen un redondeamiento regular y mala esfericidad. Su granulometría es variable desde milímetros hasta aproximadamente 30 cm.
El mineral de mena está representado por clastos de magnetita parcialmente oxidados (martitización), subredondeados, de tamaño variable y distribución heterogénea.

2.2 Recursos

Los últimos estudios de estimación de recursos concluyen que el yacimiento posee un total de recursos demostrados de aproximadamente 53 millones de toneladas de mineral de una ley media de 16% de Fe.

2.3 Desmontes

En la zona de La Japonesa existen dos desmontes de las antiguas explotaciones, los que fueron modelados a partir de la topografía base y las cotas de los collares de los sondajes, conforme se muestra en la figura siguiente. Estos poseen un total aproximado de 2,5 millones de toneladas de mineral de una ley media de 15% de Fe.

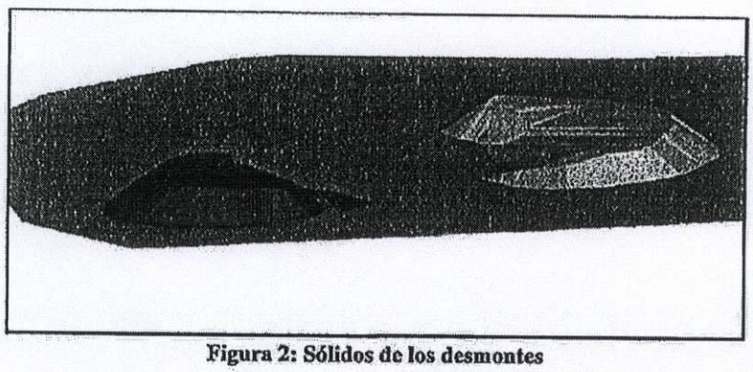


Figura 2: Sólidos de los desmontes

2.4 Definición de pit final y primeras fases mina.

A partir de los parámetros técnicos – económicos definidos preliminarmente, se realizó una simulación de tal manera de determinar que porcentaje de los recursos geológicos podían ser considerados como reservas mineras.

Al considerar todos los recursos geológicos definidos se determinó el pit final, el que se muestra en la figura siguiente.

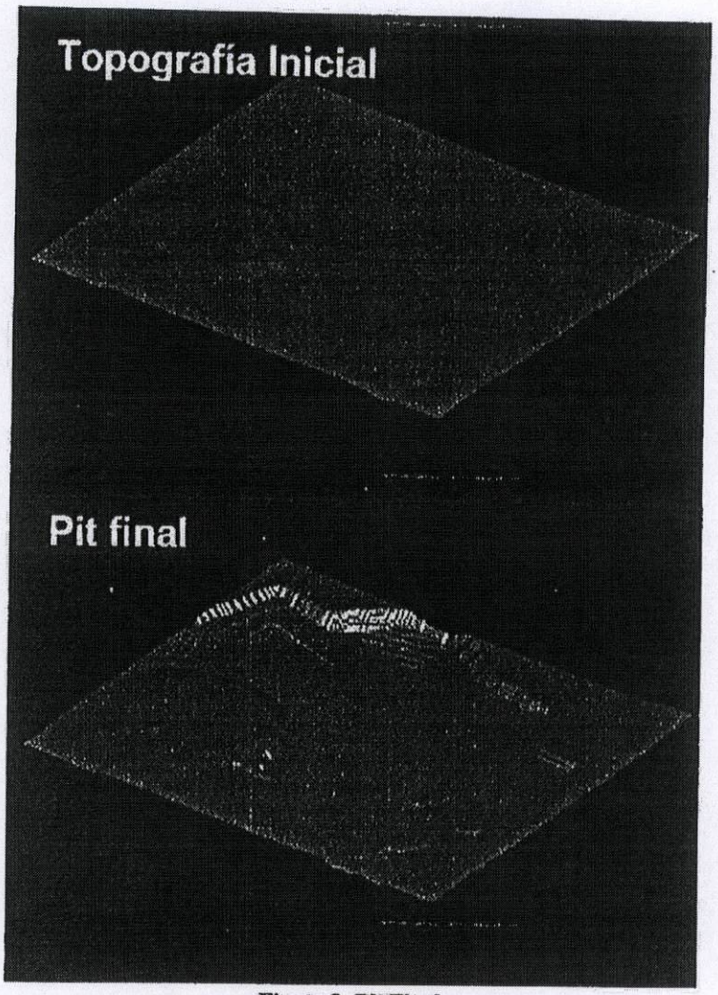


Figura 3: Pit Final

Tal como se puede observar, conforme a los parámetros técnico – económicos definidos, el pit final considerando todos los recursos del yacimiento queda definido por la envolvente o sólido definido por la geología del proyecto.

Teniendo presente las características del proyecto se procedió a diseñar 5 fases que cubren la totalidad del yacimiento definido por la geología.

En las figuras siguientes se puede observar que las primeras fases se desarrollan por el lado Este del yacimiento.

2.5 Parámetros de diseño mina.

Conforme a las características del yacimiento y el movimiento de materiales, los parámetros de diseño para la mina son:

Parámetro	Valor
Angulo global	45° y 37° (Az 180° - 270° sector
Angulo Cara Banco	70°
Ancho de rampas	20 m
Ancho mínimo de carguío	40 m
Pendiente rampas	10%
Altura de bancos	5 m

Tabla 1: Parámetros de diseño de rajo.

En el caso de la altura de bancos, se supone que estos son "doblados" a 10 m para los taludes finales de la mina.

Uno de los parámetros de diseño importantes tiene relación con el diseño de botaderos. Se considera, tal como se indica más adelante, que se utilizará la misma cavidad creada por la mina para el vaciado del material de rechazo de la planta. Con estos se minimizarán las distancias de transporte y se diminuirá el impacto medioambiental del proyecto.

2.6 Diseño de fases.

Considerando los resultados del análisis antes indicado, se procedió a realizar el diseño de fases de tal manera de contener el total del sólido definido por el geología.

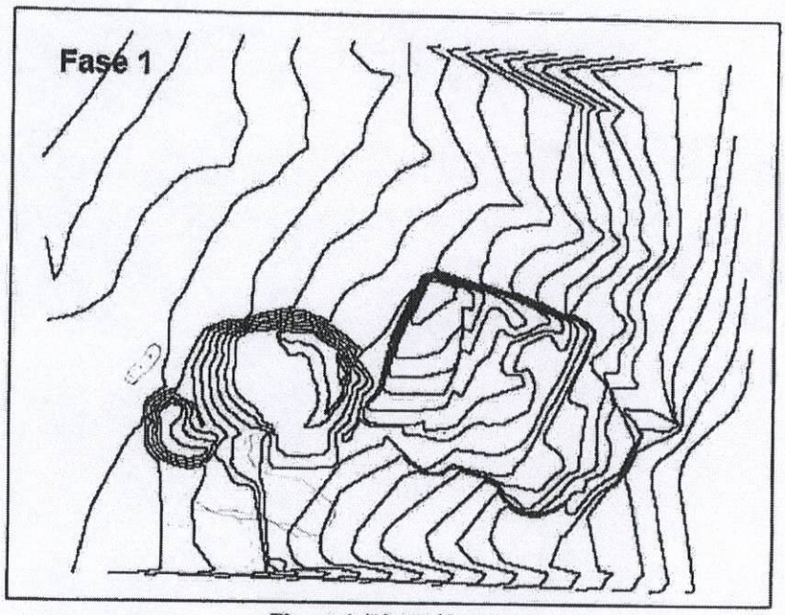


Figura 4: Diseño Fase 1

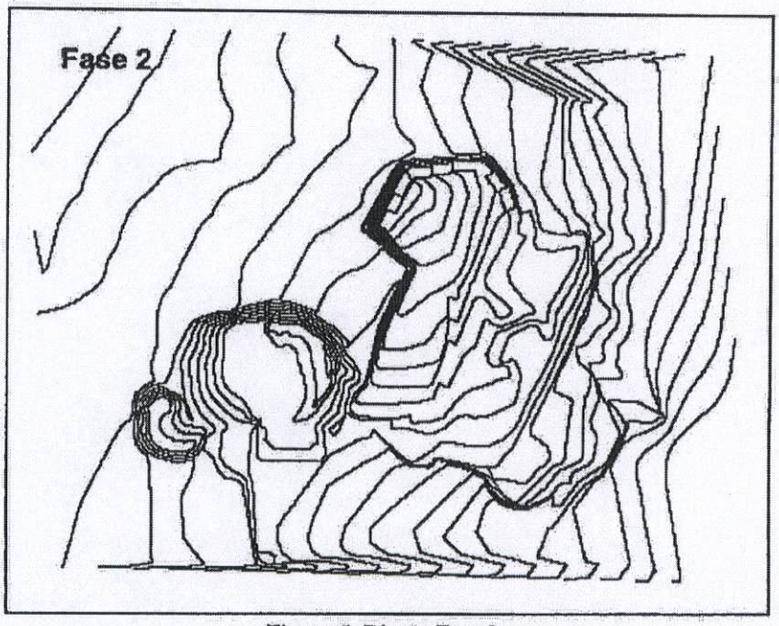


Figura 5: Diseño Fase 2.

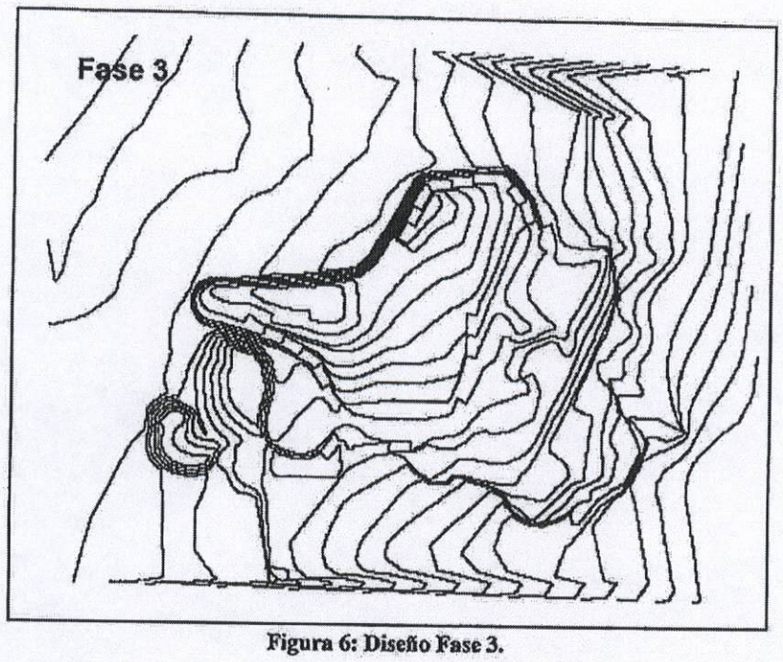


Figura 6: Diseño Fase 3.

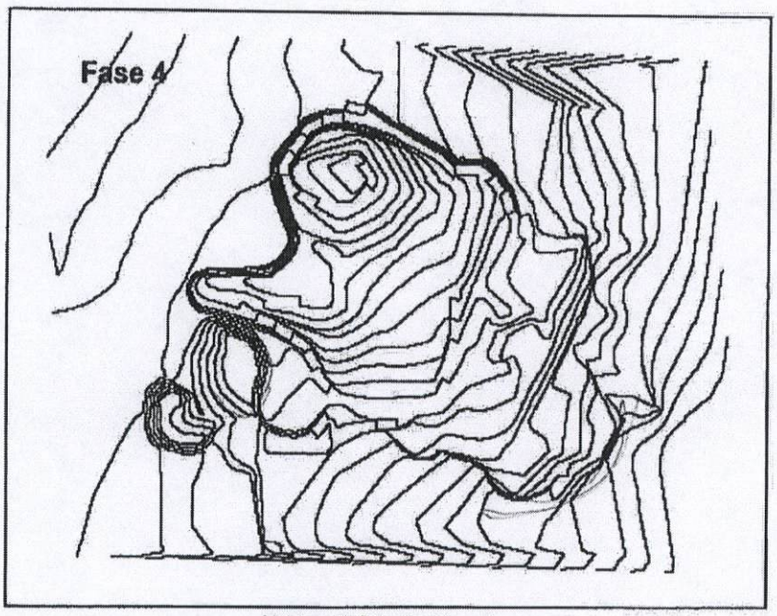


Figura 7: Diseño Fase 4.

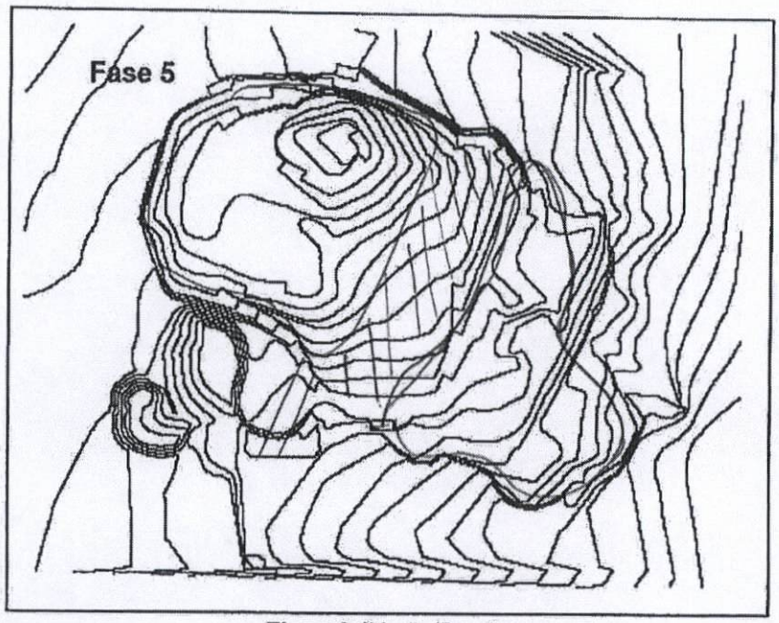


Figura 8: Diseño Fase 5.

2.7 *Diseño de botaderos.*

Tanto los rechazos de la mina como el bajo porcentaje de lastre que genere la explotación de la mina deberán ser dispuestos en botaderos. Se diseñaron botaderos capaces de contener un 20% del total de material de rechazo de la planta y lastre proveniente de la mina. El otro 80% del material se consideró que se almacenará en la misma cavidad creada en la mina, una vez extraído todo el mineral hasta la sirca. Lo que se busca mediante esta acción es disminuir las distancias de transporte, con la consecuente disminución del impacto en el medioambiente, minimizando así la cantidad de material que se disponga fuera de la cavidad de la mina. Eventualmente pudieran existir algunos materiales de rechazo de la planta que deban ser almacenados aparte del lastre o rechazo propiamente tal, los que mediante la incorporación de un nuevo proceso pudieran permitir aumentar la recuperación de fierro. Estos materiales se dispondrán en sectores previamente definidos.

La secuencia de acopio del lastre y rechazo se realizará de acuerdo a la explotación del mineral, buscando minimizar las distancias de acarreo de material.

2.8 Plan minero.

Para los efectos de programar el movimiento de material período a período se considera una producción anual de 1.200.000 tm de concentrado de fierro, con una ley del 62,5% de Fe. En base a los recursos demostrados del yacimiento de 53 millones de toneladas de mineral. El 10% de este material es clasificado directamente como lastre y el material restante es procesado por una planta de concentración magnética.

En la etapa de concentración magnética se producen 46.500 kt de material clasificado como rechazo, el cual debe ser acopiado en los botaderos de estéril, lo que da un total de movimiento de material del orden de 100.000 kt.

En las figuras siguientes se muestran las fotos de desarrollo de la mina período a período, junto con el crecimiento de los botaderos exterior e interior mina.

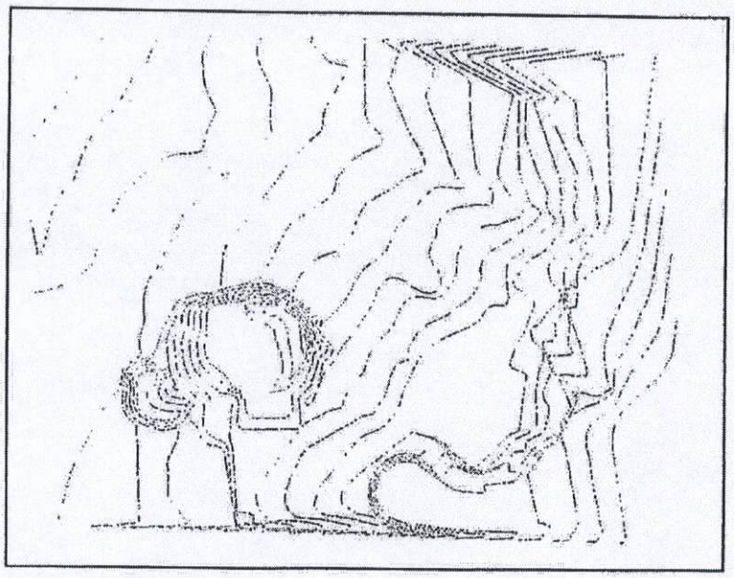


Figura 9: Foto período 1.

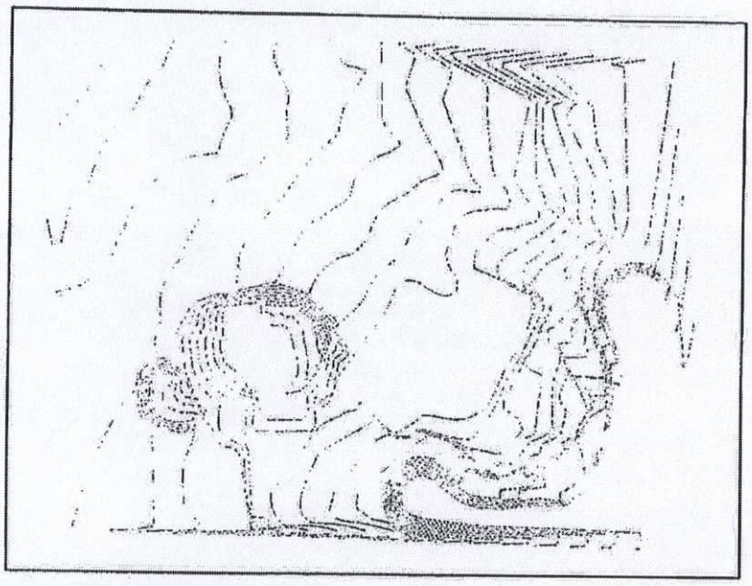


Figura 10: Foto período 2.

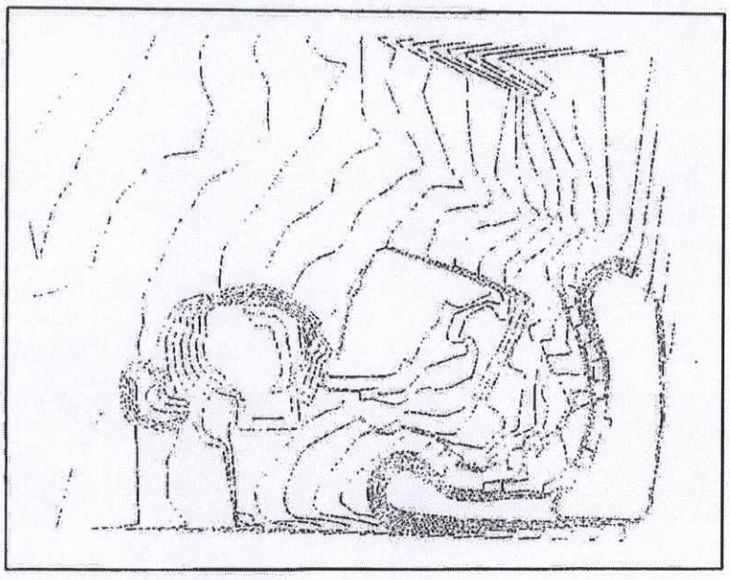


Figura 11: Foto período 3.

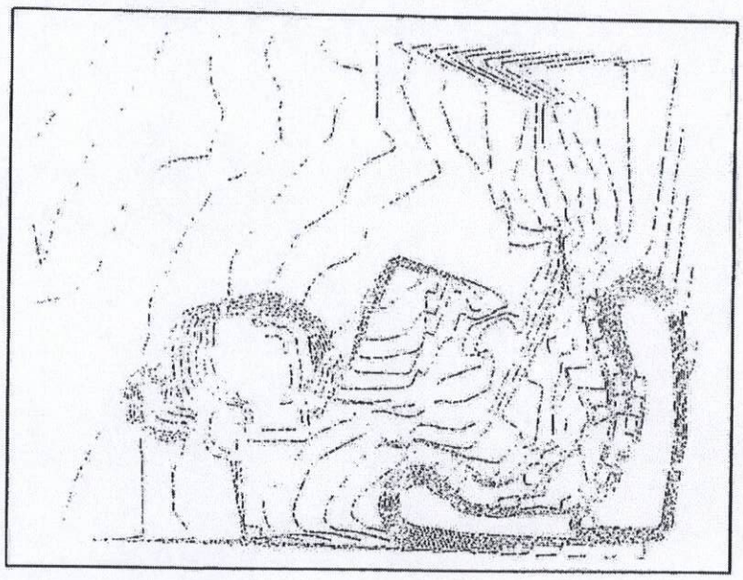


Figura 12: Foto período 4.

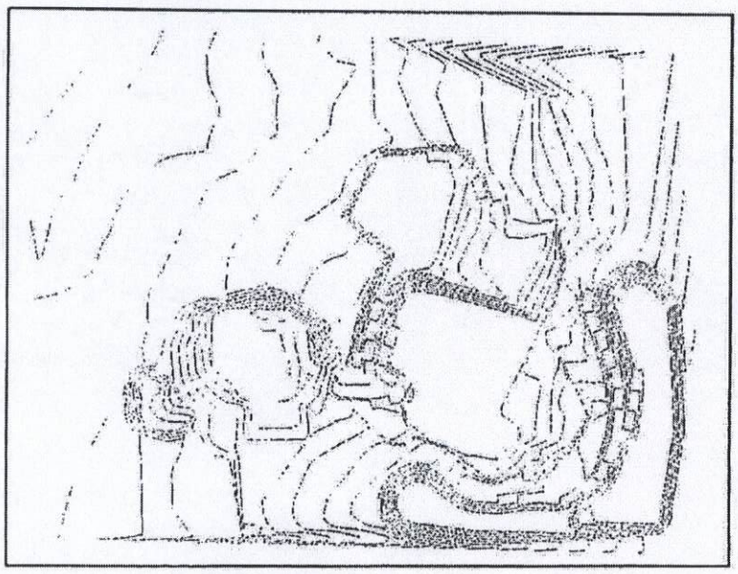


Figura 13: Foto período 5.

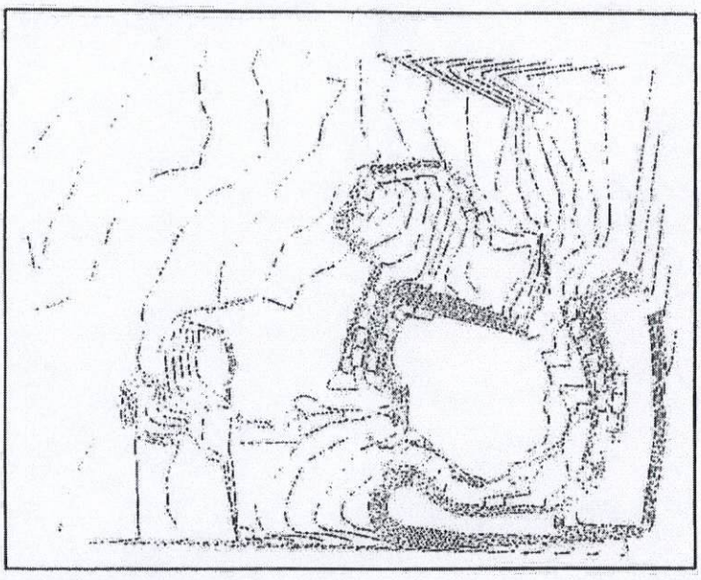


Figura 14: Foto período 6.

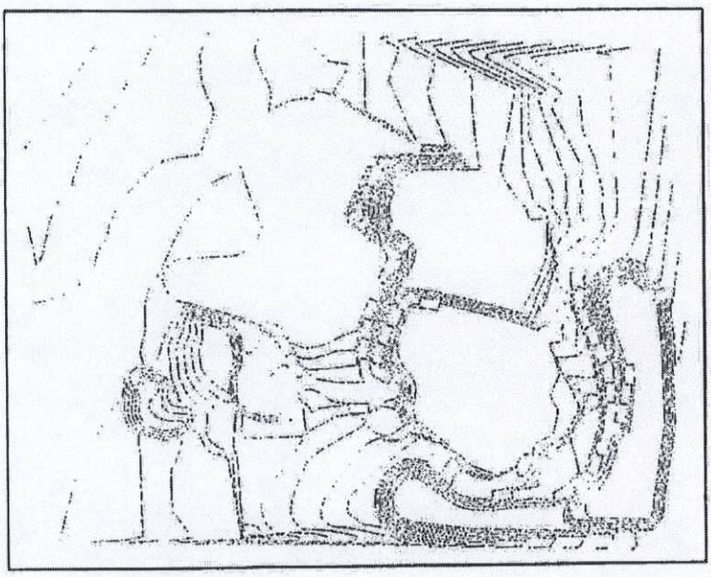


Figura 15: Foto período 7.

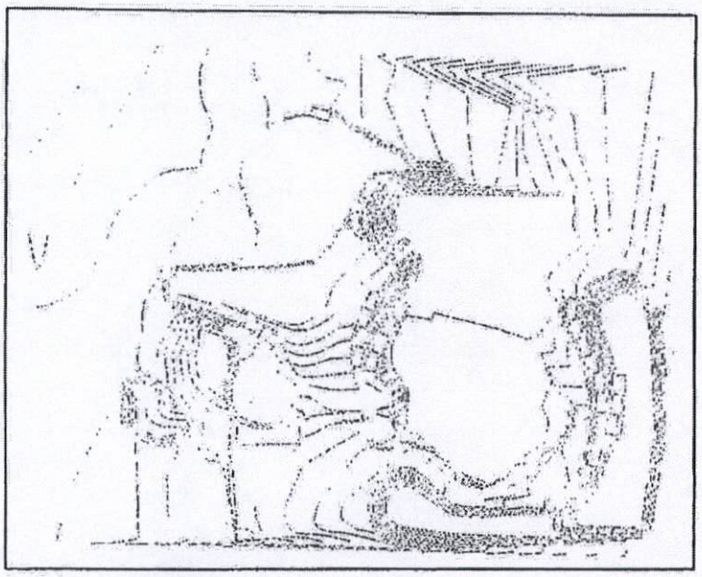


Figura 16: Foto período 8.

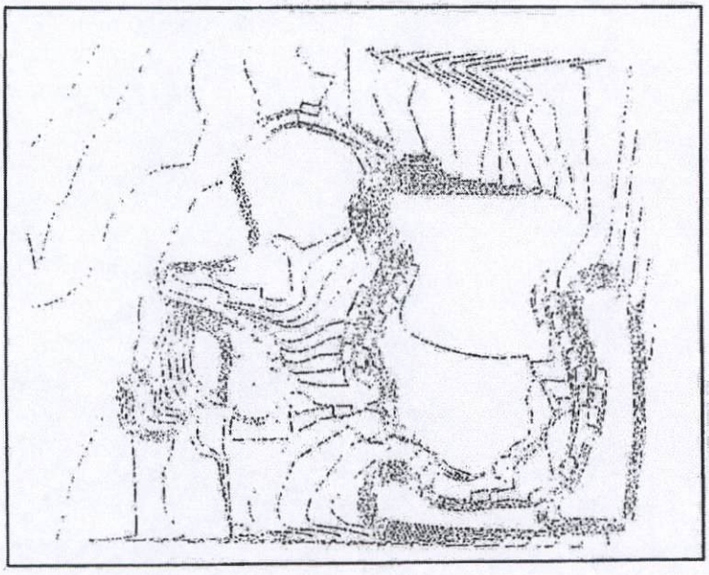


Figura 17: Foto período 9.

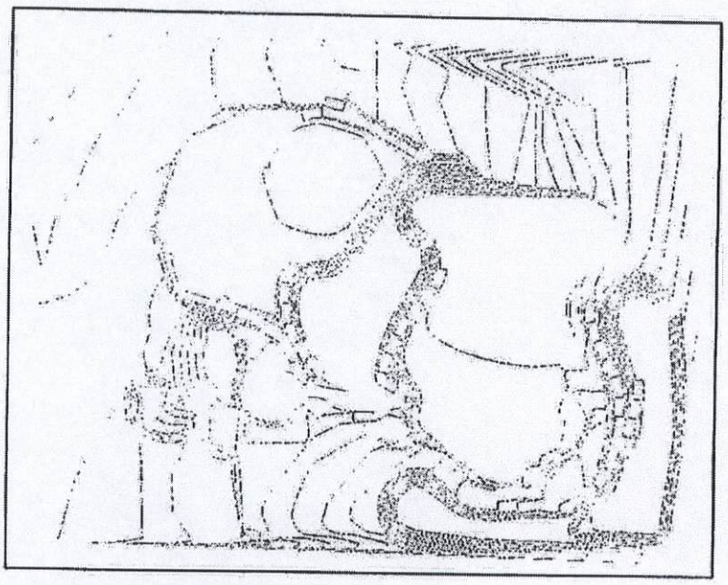


Figura 18: Foto período 10.

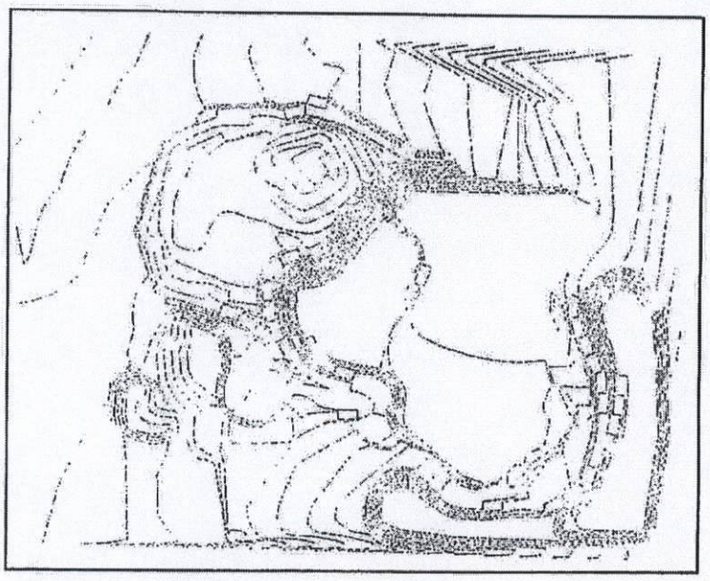


Figura 19: Foto período 11.

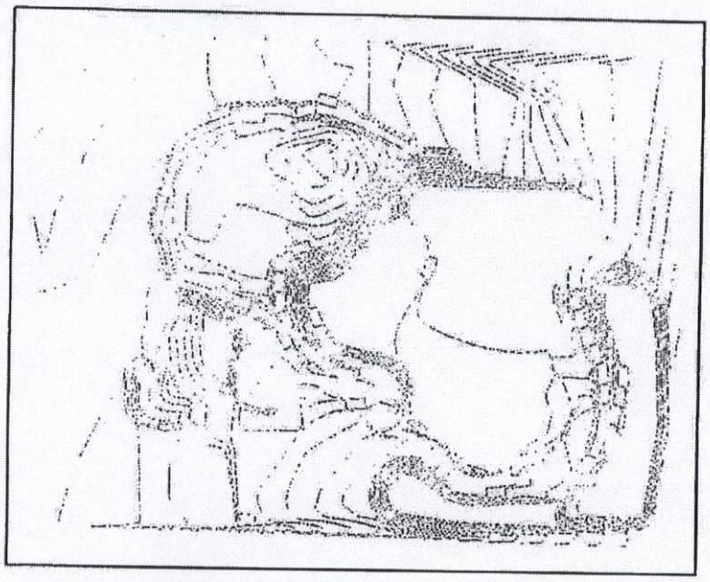


Figura 20: Foto período 12.

A partir de las fotos adjuntas de la mina período a período, se puede observar que los botaderos exteriores mina crecen hasta Junio de 2007, para luego a contar del período siguiente utilizarse solo los rellenos interior mina.

2.9 Descripción de las Operaciones

Las operaciones unitarias que se considera realizar son las habituales en este tipo de faenas:

1. Perforación y Tronadura sobre un porcentaje del material, estimado inicialmente en un 15%.
2. Carguío y Transporte de mineral, lastre y rechazo de la planta.
3. Reducción de bolones de tertel con martillo.
4. Operación de equipos de apoyo, tales como tractores desgarrando, carga de producto en camiones.

Minera Santa Bárbara, ha considerado realizar la operación de mina y planta con servicio externo, labor que será realizada por Besalco Maquinarias S.A.

Los tipos y cantidad de equipos a utilizar para cada una de las operaciones, se indican a continuación:

Tipo de Equipo	Marca	Modelo	Cantidad	Contrato
CAMION TOLVA 33 ton	Mercedes Benz	4143	13	Mina
CARGADOR FRONTAL	Volvo	L-220	2	Mina
EXCAVADORA	Komatsu	PC750	2	Mina
CAMION ALGIBE 21 m³	MACK	CV 713	1	Mina
MOTONIVELADORAS	Volvo	G 730 B	1	Mina / Transporte
BULLDOZER	Komatsu	D155AX-5	1	Mina
CAMION MANTENCION	Hino	FB4JGTA	1	Mina / Transporte
CAMIONETA	Totoya	HILUX	3	Mina / Transporte
TRACTO CAMION	Freightliner	Columbia	45	Transporte
BATEA 14 m³ (30 tons)	Machile	SRV 14 3E	45	Transporte
PERFORADOR	Atlas Copco	ROC 712	1	Transporte
COMPRESOR	Atlas Copco	XA - 70	1	Transporte
ALIMENTADOR VIBRATORIO	Simplex	SXAV 1560	2	Chancado
HARNEROS VIBRATORIOS COMBINADOS	Simplex	SXPC 10026/2 Pisos	7	Chancado
CHANCADOR DE CONO	Metso	HP 300	2	
CHANCADOR VSI	Barmac	9100	1	Chancado
CHANCADOR VSI	Barmac	7150	1	Chancado
POLEAS MAGNETICAS	Eriez Magnetics	47x72	2	Chancado
TAMBORES MAGNETICOS	Eriez Magnetics	36 X 72	13	Chancado
TOTAL MAQUINARIA			99	

Tabla 2: Equipos definidos.

A continuación se entregan algunos detalles adicionales a tener en consideración en cada una de las Operaciones Unitarias de la mina.

2.10 Perforación y Tronadura.

Dado los antecedentes aportados por el estudio de la geología del yacimiento, seria posible que el material sea desgarrado mediante excavadoras. Sin embargo, se ha considerado perforar y tronar un 15% de los materiales existentes en el yacimiento.

Esta perforación y tronadura se caracteriza por utilizar densidades de de carga más bajas que aquellas tradicionalmente utilizadas en la minería a rajo abierto, teniendo por objeto sólo fracturar el material, para que luego mediante excavadoras ser desgarrado y cargado.

2.11 Carguío y transporte.

Tal como se indicó, los equipos considerados son Excavadoras, Cargadores y camiones de 30 tm de capacidad.

2.12 Reducción de Bolones

En aquellos casos en que se encuentren bolones con un diámetro mayor a 1 metro, será necesario reducir su volumen. Para ello, se puede utilizar un martillo pica-roca. Sólo en algunos casos en los que sea estrictamente necesario, se utilizarán explosivos para la reducción del tamaño.

2.13 ctividades de apoyo

Como toda operación minera se considera el apoyo de motoniveladoras en los caminos, junto con camiones aljibes para la depresión del polvo.
Adicionalmente se deberá contar con equipos de carguío del producto a camiones de carretera para llevar el material al puerto y tractores de apoyo en botadero y/o mina apoyando el trabajo de los cargadores frontales.

2.14 Cálculo de la flotas de equipos.

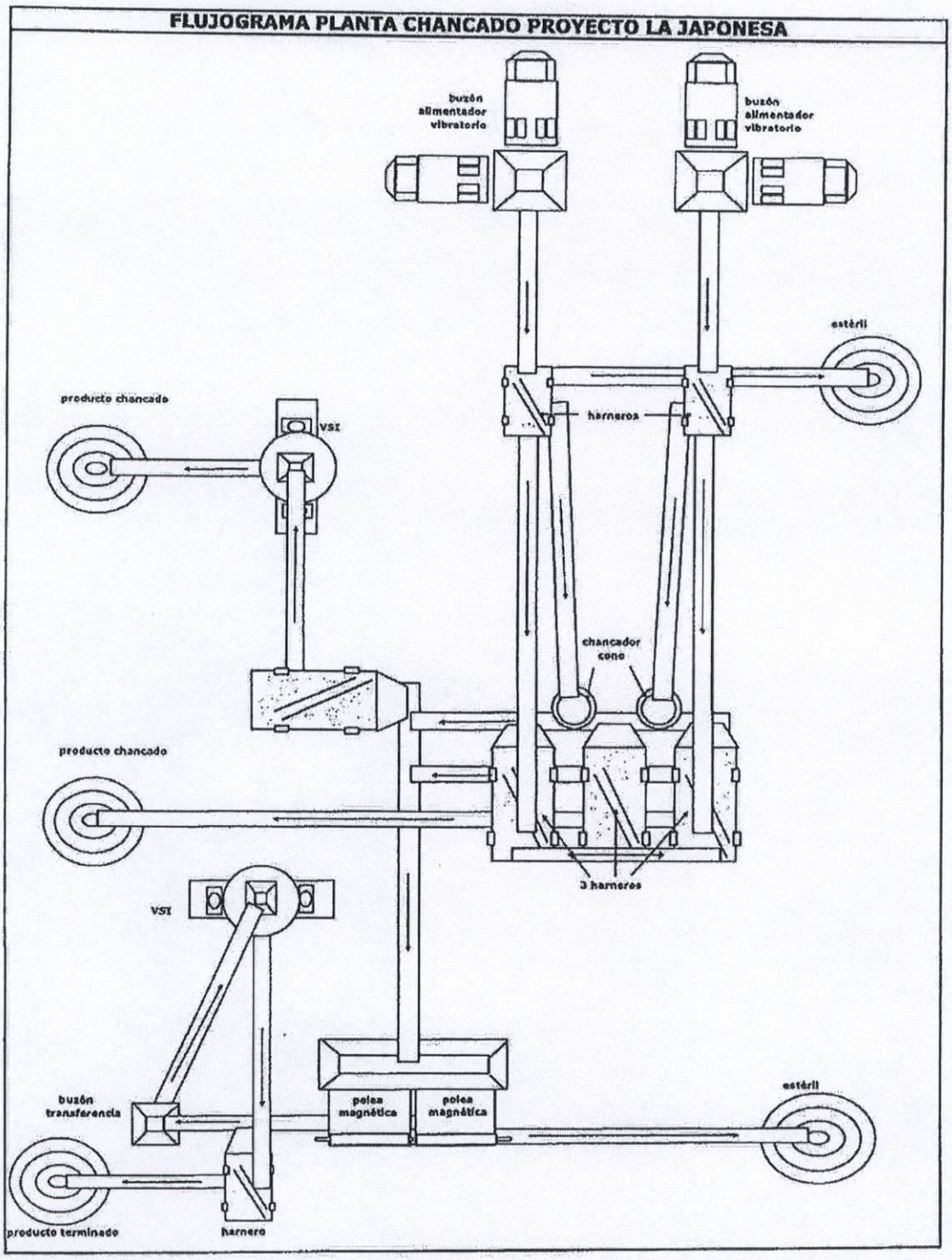
Las principales variables para la determinación de la flota de equipos, aparte de las características técnicas de éstos, tienen relación con:

- Sistema de turnos: 3 turnos de 8 horas cada uno.
- Jornada semanal: 45 horas semanales.
- Días programados al año: 280 días promedio al año.
- Recuperación planta
- Ubicación botaderos
- Distancias de transporte

3. PLANTA DE PROCESO

3.1 Descripción del proceso de concentración magnética definido.

Las características de la planta considerada se describen en la figura siguiente:


FLUJOGRAMA PLANTA CHANCADO PROYECTO LA JAPONESA
buzón alimentador vibratorio
buzón alimentador vibratorio
estéril
producto chancado
VSI
harneros
chancador cono
producto chancado
3 harneros
VSI
buzón transferencia
polea magnética
polea magnética
estéril
producto terminado
harnero

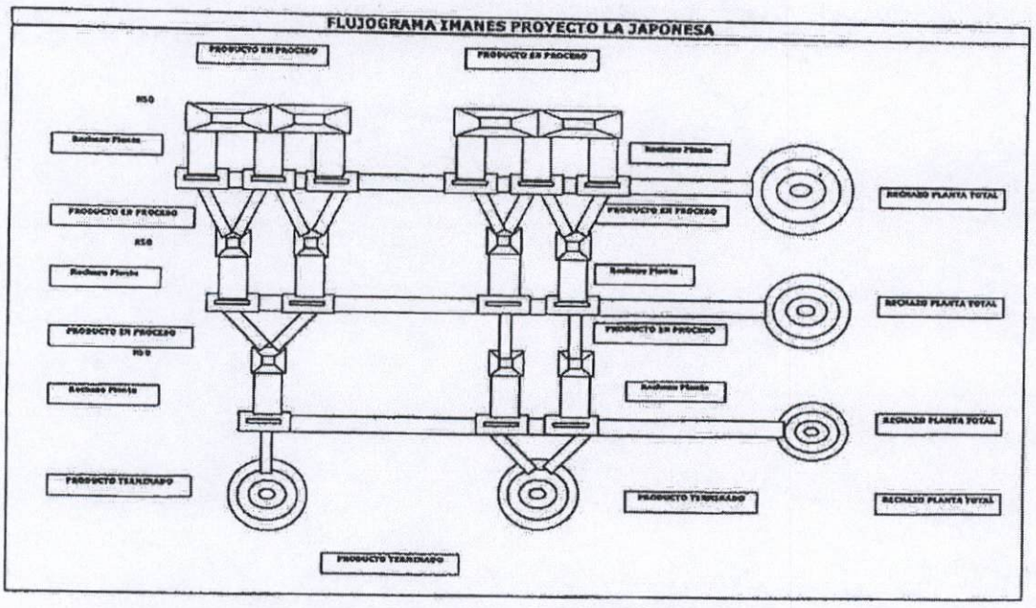


Figura 21: Diagrama de Flujo Planta de Proceso

La Planta tiene una capacidad de alimentación de 1800 TPH, con lo cual se espera producir 1.200.000 t de concentrado de Fe al año.

Tal como se puede observar en el flow sheet, la planta se compone fundamentalmente de:

1. Dos tolvas de recepción, las que alimentan dos grizzly que permiten el paso del material bajo 3" y el material sobre 3" se descarta para ser dispuesto a un botadero de estéril.
2. Cinco harneros para la clasificación de material.
3. Dos chancadores primarios Hydrocono de 300HP.
4. Dos poleas magnéticas de 42" de diámetro y 72" de ancho, estas poleas realizan la primera separación magnética del sistema.
4. Adicionalmente se consideran dos chancadores de impacto, para reducir el material bajo 6 mm.
5. Luego el material chancado es procesado en una planta de concentración magnética que considera trece tambores magnéticos para la separación del mineral. Como resultado de este proceso se generan dos productos: Concentrado de Fierro, que es llevado a Puerto para su embarque, y Rechazo Planta, que es traslado a botadero.

La planta será alimentada directamente con los camiones desde la mina, para luego requerir de cargadores frontales para cargar tanto el rechazo como el producto final.

4. OTRAS INSTALACIONES DE SERVICIOS

Las principales obras civiles e instalaciones del proyecto tienen relación con lo siguiente:

1. Oficinas de Minera Santa Bárbara y de los contratistas que tenga el proyecto.
2. Casino para la alimentación del personal de la faena.
3. Casa de cambio, baños e instalaciones generales.
4. Taller Mecánico para la mantención de los equipos mineros.
5. Bodega de repuestos, lubricantes y otros materiales.
6. Caseta de control de accesos.
7. Bodega de testigos y muestras.
8. Sistema de lavado de equipos y planta de tratamiento de riles.
9. Estanque y sistema de expendio de combustible.
10. Red Húmeda.
11. Patio de acopio de residuos.
12. Sistema de tratamiento de aguas servidas.
13. Estanques de Gas Licuado.
14. Sala de Control Planta de Beneficio.

5. DOTACIÓN DE PERSONAL

En la Tabla siguiente se muestran las estimaciones hechas relativas a la dotación de personal de la operación .

Personal	Cantidad	Contrato
CHOFER CAMIONES TOLVA 33 TON	48	Mina
OPERADOR CARGADOR FRONTAL	8	Mina
CHOFER CAMIONES ALGIBE	2	Mina
OPERADOR MOTONIVELADORAS	2	Mina
OPERADOR BULLDOZER	2	Mina
OPERADOR EXCAVADORA	8	Mina
JEFE MINA	1	Mina
ADMINISTRATIVO	1	Mina
INGENIERO EN MINAS	1	Mina
SUPERVISOR TERRENO	3	Mina
PREVENCIONISTA RIESGO SERNAGEOMIN A	1	Mina
TOPOGRAFO	1	Mina
JEFE TALLER	1	Mina
MECANICO, SOLDADOR, ELECTRICO	14	Mina
INGENIERO EN MINAS PERFORACION Y TRONADURA	2	Mina
AYUDANTE INGENIERO EN MINAS PERFORACION Y TRONADURA	2	Mina
JEFE TRANSPORTE	1	Transporte
SUPERVISOR TERRENO	4	Transporte
MECANICO, SOLDADOR, ELECTRICO	12	Transporte
CHOFER CAMIONES BATEA 30 TON	132	Transporte
OPERADORES CHANCADOR	4	Chancado
JORNALES	20	Chancado
JEFE PLANTA CHANCADO	1	Chancado
MECANICO, SOLDADOR, ELECTRICO	10	Chancado
TOTAL PERSONAL	**281**	

Tabla 3: Dotación de personal

La política de Minera Santa Bárbara es que la mayoría de estos empleos provendrán de la III Región.

6. TRANSPORTE A PUERTO Y EMBARQUE

Para la exportación de los concentrados de Fe, estos serán transportados al Puerto Punta Caleta en Caldera mediante camiones. En el Puerto se dispondrá de un sector de acopio para 200.000 toneladas y un sistema de embarque para el concentrado. Actualmente se encuentra en proceso de aprobación la correspondiente Declaración de Impacto Ambiental.

Proyecto Botaderos de Estériles

MINA LA JAPONESA

MINERA SANTA BARBARA
SINCE 1950

VALLENAR

AGOSTO 2006

SERVICIO NACIONAL DE GEOLOGIA Y MINERIA
III REGION
20 SEP 2006
Nº DE INGRESO _____ RECEPCION: _____
ENVIADO A: _____

MINERA SANTA BARBARA
SINCE 1950

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MINERA SANTA BARBARA
SINCE 1950

I. ANTECEDENTES GENERALES

En el permiso para establecer un apilamiento de residuos mineros a que se refiere el inciso 2º del artículo 233 y botaderos de estériles a que se refiere el artículo 318, ambos del D.S. Nº 72/85 del Ministerio de Minería, Reglamento de Seguridad Minera, los requisitos para su otorgamiento y los contenidos técnicos y formales necesarios para acreditar su cumplimiento, serán los que se señalan en el presente artículo.

A) Localización del Proyecto

El proyecto se localiza en el LLano Añañuca, comuna de Vallenar, Provincia de Huasco, en la III Región de Atacama. El depósito mineral se emplaza en los faldeos que conforman la sierra Chinchilla a una altura de 500 m.s.n.m.

E proyecto se encuentra a una distancia aproximada de 8 Km. de Vallenar y 4,5 Km. de la Ruta 5 cerca de las localidades rurales "La Compañía" y "Buena Esperanza" ubicadas en el valle del Río Huasco, las cuales se encuentran distantes a unos 3,5 y 6 km. del proyecto respectivamente.

Cabe señalar que este sitio corresponde a áreas ya alteradas por las antiguas operaciones mineras que se realizaron en el sector, no interviniendo áreas adicionales

B) Vida Útil

De acuerdo a las reservas del mineral disponible y al ritmo de producción, se estima un horizonte operacional de 6 a 8 años, explotando el sector denominado La Japonesa.

MINERA SANTA BARBARA
SINCE 1950

II. LINEA BASE

A) SUELO Y USO DE SUELO

Se reconocen en el área estudiada dos grandes grupos de suelos: los suelos planos, originados de grandes terrazas aluviales, vecinos al valle y alimentados por cauces de aluviones, además de aquellos otros planos inclinados existentes al pie de las laderas de serranías vecinas, con una marcada pendiente, pedregosidad y expresión en altura. Los primeros presentan un importante porcentaje de piedras, tanto en superficie como en su perfil, característica edáfica que limita su potencial de explotación agrícola; para orientarlos hacia este uso, deben ser sometidos a un intenso trabajo para eliminar esta limitante, tal como se aprecia en sectores vecinos que fueron explotados para la agricultura.

Por otro lado, los suelos de piedmonte y superiores situados en las laderas de las serranías vecinas presentan una pendiente marcada y grandes componentes líticos tanto en la superficie como en el perfil, limitando dramáticamente la potencialidad de uso agrícola de dichas áreas. Esta condición de sitio local limita la expresión del recurso biótico, el que ajustándose a estas adversas condiciones, igual es capaz de modelar la presencia de la vegetación perenne para comenzar a generar así el recurso trófico disponible. Este tipo de suelos presentan una baja capacidad de retención de humedad, alta velocidad de infiltración y genera aportes de material a los procesos de generación edáfica local y aguas abajo.

B) SUBSUELO, ESTRATIGRAFÍA Y PERMEABILIDAD

El suelo del área de proyecto, presenta estratos de baja permeabilidad, además no se detectaron acuíferos en campañas de sondajes.

C) CALIDAD DEL AIRE, CLIMA Y/O METEOROLOGIA

El área de proyecto, posee un clima desértico marginal bajo y con una humedad relativamente elevada, alcanzando un promedio anual de 70%. El promedio de las temperaturas máximas alcanzadas entre los años 1980 y 1999 fue de 32,1ºC, y la mínima alcanzó os 2,6ºC. Con relación a las precipitaciones, en un año normal existe una caída de agua de 31,6mm.

Las mayores temperaturas ambientales se producen entre la segunda quincena de mes de enero y la primera quincena de febrero, y estas sobrepasan levemente los 30ºC, mientras que las mínimas temperaturas se producen entre los meses de junio y julio y rara vez alcanzan los 0ºC.

Para el análisis de la meteorología de la zona de emplazamiento del proyecto, sólo se cuenta con información monitoreada por un equipo propio de la empresa consultora, realizada durante el mes de mayo del presente año, además se adquirió la meteorología del año 2003 del sector de Copiapó.

Se aprecia la predominancia de las velocidades de 2 m/s, y además se puede observar que las mayores velocidades de viento se dan en los meses de primavera y verano, contrarrestando una oscilación de velocidades más baja durante invierno y otoño.

C.1 MATERIAL PARTICULADO RESPIRABLE PM10

Los resultados obtenidos durante el mes de mayo de 2005 son presentados en la siguiente Tabla , en la que se muestran las concentraciones de cada día muestreado y el valor de la norma aplicable. Posteriormente estos valores son representados gráficamente a continuación.

Como es posible apreciar en tales tabla y figura, la totalidad de las concentraciones obtenidas durante el mes se encuentra bajo la norma, siendo el valor más alto (62 µg/m3N) correspondiente al 41% del valor límite permisible establecido por el D.S. Nº 59, del Ministerio Secretaría General de la Presidencia. Cabe señalar que el valor más bajo correspondiente a 24 µg/m3N, se produjo el día 31 de mayo, fecha en la cual se produjeron precipitaciones en la zona.

MINERA SANTA BARBARA
SINCE 1950

Fecha muestreo	µg /m3N
01/05/05	51
04/05/05	51
07/05/05	57
10/05/05	62
13/05/05	48
16/05/05	41
19/05/05	53
22/05/05	41
25/05/05	36
28/05/05	49
31/05/05	24
Norma	150

Fuente: Algoritmos

D) GEOLOGIA Y GEOMORFOLOGIA

Mina la Japonesa es parte de la denominada Franja Ferrífera de la Cordillera de la Costa o Franja Ferrífera Chilena; esta es una franja longitudinal de depósitos ferríferos que se extiende por más de 600 km entre las latitudes de 26º y 32ºS y que coincide con la posición de una faja de intrusivos del Albiano (110-100 Ma; Cretácico Inferior alto) y con la posición de la Zona de Falla de Atacama en su extremo sur. El mineral de hierro de La Japonesa corresponden a depósitos aluviales con rodados (clastos) de mineral de Fe

Los depósitos de hierro de la Franja Ferrífera se localizan dentro del dominio de la Zona de Falla de Atacama; que es un sistema de falla regional mayor de tipo transcurrente sinistral desarrollado en el Cretácico Inferior y que incluyó el desarrollo de fajas miloníticas a lo largo de la Cordillera de la Costa de las Regiones II a IV y con movimientos verticales durante el Cenozoico. Algunos cuerpos de mena de Fe presentan control estructural por fallas pertenecientes a este sistema regional.

Las rocas metavolcánicas que constituyen la roca huésped de los cuerpos de magnetita se ubican a corta distancia de cuerpos intrusivos tonalíticos, monzoníticos, dioríticos o granodioríticos; en muchos casos las volcanitas son roof-pendants elongados longitudinalmente e incluidos en los intrusivos.

MINERA SANTA BARBARA
SINCE 1939

MINA LA JAPONESA, es un yacimiento de tipo sedimentario coluvial, emplazado en los faldeos occidentales de Sierra Chinchilla, cuya principal mineralización lo constituyen clastos de tamaño variable de Magnetita y Martita (un mineral intermedio entre Hematita y Magnetita producto de la oxidación de este último), que fueron depositados mediante arrastre en dos cuencas sobre el Llano Añañuca. Los clastos o "papeos" de Fe sedimentarios, se originaron por la erosión de cuerpos vetiformes de magnetita emplazados en la parte alta de Sierra Chinchilla.

E) HIDROGEOLOGÍA E HIDROLOGÍA

En parte está formada de los cauces que forman la Quebrada de La Añañucas , así mismo, se aprecian en ciertos sectores de estos cauces afloramientos rocosos, los que con su expresión modifican el curso de las aguas y la topografía del lugar, formando pequeños meandros de aguas lentas.

MINERA SANTA BARBARA
SINCE 1950

III) ETAPAS, ACTIVIDADES

La ejecución del Rajo principal y Botaderos de Estériles, Faena La Japonesa, las actividades preliminares a ejecutar antes del comienzo de la operaciones vinculadas con la explotación de estos se vinculan específicamente a la apertura de caminos, construcción de rampas y la remoción del material de sobrecarga del rajo principal.

A) SUPERFICIE

Los Rajos y botaderos de estéril se localizarán en un área encerrada por la siguiente poligonal en coordenadas UTM:

Tabla N°: Área Localización Rajos y Botaderos

DETALLE	NORTE	ESTE	VOLUMEN ESTIMADO
BOTADERO MINA NORTE	6832068.267	322990.783	2.500.000 m3
BOTADERO PLANTA SUR	6831450.603	323332.717	1.800.000 m3

B) CAMINOS

La construcción de los caminos a botaderos consistirá en preparar las vías por donde circularán los camiones desde el Rajo hasta los respectivos Botaderos de Estériles.

Los caminos de acceso a los Botaderos de Estériles tendrán un ancho de alrededor de 15 m, con una pendiente máxima de 10%, aptos para el tránsito en doble sentido de camiones de tonelaje adecuado para las faenas de transporte de mineral.

Los caminos interiores de los Rajos, por los que circularán los equipos pesados, tendrán las siguientes características:

- Rampa principal doble tráfico: aproximadamente 15 m de ancho
- Rampa secundaria, fondos de rajos (1 vía): aproximadamente 10 m de ancho
- Pendiente máxima: 10%

C) OPERACION

La explotación de los Rajos contempla las siguientes actividades principales:

- Perforación y tronadura
- Carguío y transporte de mineral a stock correspondiente o chancador
- Disposición de estéril en Botaderos
- Mantención de rampas, caminos, Botaderos y Acopios de Mineral

D) PARAMETROS GEOMETRICOS ESTIMADOS BOTADEROS

	BOTADERO MINA NORTE	BOTADERO PLANTA SUR
LARGO (METROS)	360	280
ANCHO (METROS)	300	136
ALTURA MAXIMA (METROS)	30	25
PENDIENTE TALUDES	1,33	1,33
VOLUMEN ESTIMADO (m^3)	2.500.000 m^3	1.800.000 m^3

E) RECURSOS HIDRICOS

El Proyecto no requiere consumos de agua industrial, salvo en lo que se refiere al riego de caminos.

MINERA SANTA BARBARA
SINCE 1990

F) CARGUIO Y TRANSPORTE

El carguío y transporte de mineral se realizará con un sistema consistente en equipo de carguío - camión. El equipo de carguío (retroexcavadora o cargador frontal) cargará directamente desde el frente de explotación a los camiones que transportarán el material hasta su destino, ya sea hacia los acopios de mineral o directamente hacia el chancador.

El material estéril será conducido hacia el Botadero de Estéril que corresponda según la fase en que se encuentre la explotación del Rajo que se esté explotando en su momento.

G) MANTENCION DE RAMPAS, CAMINOS, BOTADEROS Y ACOPIOS DE MINERAL

Como parte de la operación normal se contempla la mantención de los caminos por los que circularán los camiones de transporte de mineral y/o estéril, siendo parte de esta actividad el riego de los mismos mediante camión aljibe, construcción de los cordones de seguridad y el retiro del material que se derrame de los camiones, durante el transporte, el que será apilado y enviado a su destino.

La mantención de los Botaderos de Estériles y Acopios de Mineral contempla el despeje de la superficie para la descarga de los camiones, dejando un cordón de material al borde del acopio o botadero con una altura de acuerdo a lo dispuesto en el reglamento de seguridad minera, que guarde relación con el diámetro de neumático del camión a utilizar y la mantención de los caminos dentro del Botadero y/o Acopios de Mineral

La construcción de los botaderos se hará de manera tradicional y habitual en este tipo de operaciones, es decir, que los mismos camiones van vaciando y generando un camino que con cierta pendiente permite hacer crecer el botadero hacia arriba. Una vez que se ha hecho crecer este camino un determinado número de metros en la vertical, se hace el llenado de todo ese nivel, para luego reiniciar un nuevo nivel, mediante el mismo proceso. Durante parte del tiempo, un tractor sobre oruga o un equipo similar, apoya a los camiones en la construcción de los botaderos. Los parámetros de diseño corresponden a un talud de 37º de inclinación y 20 m las rampas o caminos de acceso.

MINERA SANTA BARBARA
SINCE 1950

H) MAQUINARIAS A UTILIZAR

Equipo	Capacidad	Función	
Retroexcavadora modelo 750, marca Komatzu.	3.5 m3	Cargulo	Mina-Planta
Retroexcavadora modelo 450, marca Komatzu	2 m3	Cargulo	Mina – Planta
Camión Mercedes Benz, Modelo Actros	70 Ton.	Transporte	Mina – Planta
Bulldozer modelo 275 AX, marca Komatzu.		Apoyo	Mina – Planta
Motoniveladora Deere, Modelo 770 CH, serie II.		Apoyo	Mina – Planta
Cargadores Komatzu, modelo WA 500		Cargulo	Planta
Camiones Fraylan	40 Ton.	Transporte	Planta

MINERA SANTA BARBARA
SINCE 1950

I) ACOPIO DE PRODUCTO, MATERIAL Y ESTERILES

El acopio de los productos magnéticos será realizado mediante el apilamiento de estos en Planta y sus capacidades son 3.570 toneladas, tanto para granzas como para finos.

Los rechazos provenientes de la planta serán almacenados en acopios separados de los productos magnéticos, y se ubicarán mezclados (rechazos de granzas y finos) en un acopio de 6.600 toneladas, para luego ser transferidos por cargadores frontales (y posteriormente ser transportado) a camiones de 50 toneladas de carga, los mismos que moverán el lastre (proveniente del rechazo de las poleas electromagnéticas), y almacenados en el botadero de lastre diferenciándolo del estéril, esperando una cantidad suficiente como para ser reprocesados en un futuro cercano, cuando el proceso metalúrgico de recuperación se defina y se establezcan las condiciones y cantidades comerciales que así lo justifiquen.

En la medida que el rajo crezca con la explotación y se llegue a los niveles de la circa o basamento, se comenzará a disponer el material estéril o lastre en esta cavidad. Lo que se busca mediante esta acción es disminuir las distancias de transporte, con la consecuente disminución del impacto en el medio ambiente, minimizando así la cantidad de material que se disponga fuera de la cavidad de la mina.

El material estéril generado se depositará en botaderos adyacentes al rajo y posteriormente los mismos espacios generados durante su explotación.

La secuencia de acopio de estéril se realizará de acuerdo a la serie de explotación del mineral, tomando en cuenta una minimización de costos en las distancias de acarreo del estéril.

Posteriormente, cuando el tamaño de la cavidad generada sea lo suficientemente grande dentro de la mina, parte del material se dispondrá dentro de esta misma cavidad. Esto tiene por finalidad disminuir las distancias de transporte de material, así como también disminuir el impacto ambiental del proyecto rellenando la cavidad creada por la mina. En la Figura siguiente se muestra un esquema de cómo se rellenarán estos sectores de botadero a partir de los años 2 en adelante.

MINERA SANTA BARBARA
SINCE 1950

Botaderos interiores y exteriores mina. Escenario futuro



IV) CARACTERISTICAS DEL ESTERIL

De acuerdo a lo estudiado a la fecha, el material de lastre corresponde a un material granular con bajo contenido de finos, con un tamaño máximo de clastos mayor a 50 cm, cuya granulometria depende del método de explotación, tamaño de los equipos de transporte, etc.

A) POTENCIAL GENERACIÓN ACIDA

El test estático para medir el potencial de generación ácida, denominado Acid-Base Account (ABA), se bas en un balance entre los componentes de la muestra potencialmente generadores de ácido (Potencial de Acidificación, PA) y los componentes neutralizantes de ácidos (Potencial de Neutralización, PN).

La determinación del Potencial de Acidificación se realiza principalmente basándose en el análisis químico de la muestra por azufre total y azufre como sulfato de muestras de concentrado de hierro proveniente de Mina La Japonesa. De esta manera se calcula por diferencia el azufre como sulfuro, que sirve de base para el cálculo del PA.

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El Potencial de Neutralización representa la cantidad total de minerales neutralizantes presentes en el material, principalmente carbonatos, se determina mediante una digestión ácida de una porción de muestra durante 24 horas, a temperatura controlada y posterior titulación.

Obtenidos ambos potenciales se determina el Potencial Neto de Neutralización por diferencia. Así:

$$PNN = PN - PA$$

El test estático permite categorizar los materiales en tres grupos:

- Bajo a nulo potencial de generación de ácido: Si el valor del PNN (potencial neto de neutralización) es mayor que 20 kg/t y la relación PN/PA es mayor que 3.

- Potencial marginal de generación de ácido: Si el valor del PNN es menor que 20 kg/t y la relación PN/PA se encuentra entre 1 y 3.

- Alto potencial de generación de ácido: Si el valor del PNN es negativo y la relación PN/PA es menor que 1.

A.1) Análisis Químico de Muestras Sólidas

Parámetro	Método	Limite
As	A. Atómica (Disol. Acida)	0.005%
Se	A. Atómica (Disol. Acida)	0.005%
Cd	A. Atómica (Disol. Acida)	0.001%
Ba	A. Atómica (Fusión)	0.005 %
Cr	A. Atómica (Fusión)	0.01 %
Ag	A. Atómica (Disol. Acida)	1 g/T

MINERA SANTA BARBARA
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Hg	Vapor Frío/A.Atómica	0.2 g/T
Pb	A. Atómica (Disol. Acida)	0.002 %
Fe	A. Atómica (Fusión)	0.10% hasta 20%
Fe	Volumetria	>20%
Al	A. Atómica (Fusión)	0.10%
Ni	A. Atómica (Disol. Acida)	0.05%

Fuente: CIMM T&S abril 2006

Muestra	*S*	*$SO_4^=$*	*S_{SO4}*	*S total calculado*	*kg $CaCO_3$ equiv./t material*			
	%	*%*	*%*	*%*	*PN*	*PA*	*PNN*	*PN/PA*
JA-2	0,01	0,02	0,01	0,003	11,072	0,104	10,968	106,557

Fuente: CIMM T&S abril 2006

Dado que la relación de PN/PA es mayor que 3, se considera bajo a nulo potencial de generación de ácido, esto sumado a la baja precipitación en la zona se concluye que el potencial de generación de acidez del material de estéril y botaderos es nula, todo lo anterior basado en muestras de concentrado de Hierro.

Por otra parte el diseño de los botaderos no contempla sistemas de canalización de aguas lluvias por existir en la zona escasas precipitaciones y tomando un periodo de retorno T= 100 años, la probabilidad de ocurrencia de precipitaciones sobre 200 mm es nula.

MINERA SANTA BARBARA
SINCE 1950

V) ANTECEDENTES PARA ACREDITAR EL CUMPLIMIENTO DEL PERMISO AMBIENTAL SECTORIAL 88 DEL RSEIA

Mediante el presente informe se solicitan los permisos respectivos presentando el proyecto técnico ante el Director de SERNAGEOMIN para su aprobación en lo que respecta al proyecto Mina La Japonesa y Botaderos. En el Capítulo 2.7.66 de la D.I.A proyecto Mina La Japonesa se plantea un monitoreo de seguimiento de los taludes de los botaderos, los cuales se describen a continuación.

Se entregan los antecedentes solicitados en el Reglamento del SEIA para recabar el permiso ambiental sectorial relacionado con el Artículo 318 del Reglamento de Seguridad Minera.

El proyecto dará cumplimiento a todas las normas de seguridad establecidas en los referidos artículos, según corresponda; además el permiso para establecer un apilamiento de residuos mineros a que se refiere el inciso 2º del artículo 233 y botaderos de estériles a que se refiere el artículo 318, ambos del D.S. Nº 72/85 del Ministerio de Minería, Reglamento de Seguridad Minera, los requisitos para su otorgamiento y los contenidos técnicos y formales necesarios para acreditar su cumplimiento, serán los que se señalan en el presente artículo

A) MONITOREO DE SEGUIMIENTO

Se realizará un monitoreo de seguimiento según lo descrito en el Capítulo 2.7.66 de la D.I.A proyecto Mina La Japonesa, para garantizar que la mina no genere riesgos ambientales en su etapa de abandono. Se tiene contemplado que este seguimiento se lleve a cabo durante un año después del cierre. Además se establece un monitoreo de los taludes de los depósitos utilizados como botaderos, para así verificar la ausencia de riesgo de desmoronamientos.

B) MEDIO AMBIENTE

El proyecto Mina La Japonesa de titular Sociedad Contractual Minera Santa Bárbara cuenta a la fecha con la aprobación de la Resolución de Calificación Ambiental N° 085 de fecha 25.10.2005, de la Corema de la III Región de Atacama.

MINERA SANTA BARBARA
SINCE 1950

VI) ACTIVIDADES DE LA ETAPA DE CIERRE

El proyecto considera dentro de su planificación una etapa de abandono de acuerdo al D.S. 132/03. Las medidas de cierre específicas para el área de explotación y sus áreas anexas serán parte de un Plan de Cierre General del Proyecto, el cual se presentará oportunamente a la autoridad ambiental y de Seguridad Minera.

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REPÚBLICA DE CHILE
MINISTERIO DE DEFENSA NACIONAL
SUBSECRETARÍA DE MARINA
CM-148-06

OTORGA CONCESIÓN MARÍTIMA MAYOR, SOBRE UN SECTOR DE TERRENO DE PLAYA, PLAYA, FONDO DE MAR Y PORCIÓN DE AGUA, EN HUASCO, A SOCIEDAD CONTRACTUAL MINERA SANTA BARBARA.

DECRETO Nº 346 /

MINISTERIO DE DEFENSA NACIONAL
SUBSECRETARIA DE MARINA
16 NOV 2006
TRAMITADO

SANTIAGO, 24 OCT 2006

VISTO Y TENIENDO PRESENTE:

1.- Lo informado por:

a) El Servicio de Impuestos Internos, IIIª Dirección Regional Copiapó, Departamento de Avaluaciones, según ORD.DAV.03.00 Nº 661, del 17 de octubre de 2005.
b) La Dirección Regional del Servicio Nacional de Pesca IIIª Región, según Certificado Nº 500221605, del 13 de septiembre de 2005.
c) La Secretaría Regional Ministerial de Vivienda y Urbanismo, Región de Atacama, según ORD.: Nº 689, del 18 de octubre de 2005.
d) La Secretaría Regional Ministerial de Obras Públicas, Región de Atacama, según Certificado Nº 015, del 21 de noviembre de 2005.
e) El Servicio Agrícola y Ganadero, Dirección Región de Atacama, según Informe para Concesión Marítima Nº 008/2005, del 3 de noviembre de 2005.
f) La Secretaría Regional Ministerial de Salud Atacama, según ORD. : BS3 / Nº 2112, del 24 de octubre de 2005.
g) La Subsecretaría de Marina, según Oficio ORD. Nº 12210/1274, del 12 de abril de 2006, a la C.R.U.B.C. de la IIIª Región de Atacama.
h) La Dirección de Intereses Marítimos y Medio Ambiente Acuático, según Memorándum Ordinario Nº 12210/8997/50, del 6 de enero de 2006.

2.- Lo dispuesto en el:

a) D.F.L. Nº 340, de 1960. Ley de Concesiones Marítimas.
b) D.S. (M) Nº 2, del 2005, modificado por D.S. (M) Nº 213, del 2006. Reglamento sobre Concesiones Marítimas.
c) D.S. Nº 19, de 2001, del Ministerio Secretaría General de la Presidencia.
d) D.S. (M) Nº 1, de 1992. Reglamento para el Control de la Contaminación Acuática.
e) D.S. (M) Nº 1.340 bis, de 1941. Reglamento General de Orden, Seguridad y Disciplina en las Naves y Litoral de la República.
f) D.L. Nº 2.222, de 1978. Ley de Navegación.

MINISTERIO DE DEFENSA NACIONAL
SUBSECRETARIA DE MARINA

D E C R E T O :

1.- OTÓRGASE a SOCIEDAD CONTRACTUAL MINERA SANTA BÁRBARA, sociedad chilena, RUT. Nº 76.190.330-6, con domicilio en Las Condes, Apoquindo Nº 3650, CONCESIÓN MARÍTIMA MAYOR, sobre un sector de TERRENO DE PLAYA, PLAYA, FONDO DE MAR Y PORCIÓN DE AGUA, en el lugar denominado Punta Alcalde, al Sur del Puerto de Huasco, comuna y provincia de Huasco, IIIª Región de Atacama, individualizado en la ubicación señalada en el plano Nº 66/06-S, visado por la Autoridad Marítima de Huasco.

2.- El sector de TERRENO DE PLAYA, se encuentra inscrito a nombre del Fisco, en mayor extensión en el Conservador de Bienes Raíces de Freirina, a fojas 33 Nº 9, del Registro de Propiedad de 1967. Tiene una superficie de 92.672,79 m2., en el plano, cuyas medidas y deslindes son :

Al Norte : Con línea de más alta marea, en línea irregular en 1.702,40 mts., (J-Q'). (406,85 mts. (J-K); 119,46 mts. (K-L); 106,80 mts. (L-M); 291,74 mts. (M-N); 185,41 mts. (N-Ñ); 185,76 mts. (Ñ-O); 156,36 mts. (O-P); 126,29 mts. (P-Q) y 123,73 mts. (Q-Q')).

Al Sur : Con línea de los 80 mts., en línea irregular en 1.073,02 mts., (A-I). (234,50 mts. (H-I); 33,96 mts. (G-H); 75,69 mts. (F-G); 299,70 mts. (E-F); 85,90 mts. (D-E); 104,45 mts. (C-D); 183,04 mts. (B-C) y en 55,78 mts. (A-B)).

Al Este : Con terreno de playa, en línea recta en 80 mts., (I-J).

Al Oeste : Con terreno de playa, en línea recta en 100,72 mts., (Q'-A).

3.- El sector de PLAYA, tiene una superficie de 800,25 m2., en el plano, cuyas medidas y deslindes son :

Al Norte : Con línea de más baja marea, en línea irregular en 396,3 mts., (T-R'). (154,19 mts. (S-T); 125,99 mts. (R-S) y en 116,12 mts. (R'-R)).

Al Sur : Con línea de más alta marea, en línea irregular en 406,38 mts., (O-Q'). (156,36 mts. (O-P); 126,29 mts. (P-Q) y en 123,73 mts. (Q-Q')).

Al Este : Con playa, en 2,00 mts., (T-O).

Al Oeste : Con playa, en 2,00 mts., (Q'-R').

4.- El sector de FONDO DE MAR, tiene una superficie total de 54.256,88 m2., y está conformado por dos lotes, en el plano, cuyas medidas y deslindes son :

Lote 1 : Tiene una superficie de 256,88 m2. Corresponde al polígono comprendido entre los puntos signados con los números 1-2-3-4-1 :

Al Norte : Con fondo de mar, en 10,00 mts. (3-4).

Al Sur : Con línea de más baja marea, en 15,14 mts. (1-2).

Al Este : Con fondo de mar, en 24,29 mts. (4-1).

Al Oeste : Con fondo de mar, en 30,89 mts. (2-3).

Lote 2 : Tiene una superficie de 54.000 m2. Corresponde al polígono comprendido entre los puntos signados con los números 5-6-7-8-5

Al Norte : Con fondo de mar, en 600 mts. (6-7).

Al Sur : Con fondo de mar, en 600 mts. (8-5).

Al Este : Con fondo de mar, en 90 mts. (5-6).

Al Oeste : Con fondo de mar, en 90 mts. (7-8).



5.- La PORCIÓN DE AGUA, es la necesaria para mantener fondeadas tres (3) boyas y dos (2) rejeras para el amarre de naves de hasta 120.000 TGR.
La ubicación definitiva de las boyas y las rejeras, será la que determine la Autoridad Marítima.

6.- El objeto de esta concesión marítima mayor, es amparar un muelle mecanizado, para la carga de mineral de hierro a granel a través cintas transportadoras desde canchas de acopio ubicadas en terreno de playa y playa, a las bodegas de las naves e instalar tres boyas y dos rejeras para el amarre de naves de hasta 120.000 TGR.

7.- El concesionario, previo a la reducción a escritura pública del presente decreto, deberá constituir una garantía a favor del Fisco, consistente en una boleta bancaria o póliza de seguro extendida a la orden del Director General del Territorio Marítimo y de Marina Mercante, con una vigencia igual al plazo establecido para la presente concesión, más 6 meses y por un monto de $ 294.928.425, equivalente al 5% del presupuesto declarado de las obras o construcciones ($5.898.568.504).

La referida garantía deberá ser entregada a la Autoridad Marítima, junto con la escritura a que se reducirá el presente decreto. Dicha garantía deberá permanecer en custodia en la Tesorería Regional de Copiapó.

Dentro del plazo de 90 días contados desde la fecha de término de ejecución de las obras o construcciones autorizadas en el presente decreto, el concesionario deberá reemplazar dicha garantía por otra en iguales términos y porcentaje, calculada sobre el monto de la tasación comercial practicada por el Servicio de Impuestos Internos.

Dicha garantía tendrá por finalidad cubrir el costo de retiro de las obras o construcciones adheridas al suelo que quedaren instaladas o sin retirar al término o caducidad de la concesión marítima, como asimismo de todos aquellos gastos inherentes a la operación de la concesión, cuyo pago se encuentra pendiente.

8.- Esta concesión marítima mayor, entrará en vigencia a contar de la fecha de la notificación por carta certificada del presente decreto, efectuada por la Autoridad Marítima al concesionario y vencerá el 31 de diciembre de 2055.

9.- El concesionario, deberá dar cumplimiento a las siguientes obligaciones:

a) Previo al inicio de las actividades y dentro de los 30 días siguientes a la fecha de notificación de esta concesión, deberá presentar su proyecto o actividad a la Comisión Regional del Medio Ambiente (COREMA), respectiva, con el objeto de que ella determine su ingreso al Sistema de Evaluación de Impacto Ambiental (SEIA), sin perjuicio de las exigencias establecidas en otros cuerpos legales nacionales y/o internacionales.

b) Presentar a la Autoridad Marítima Local, la aprobación del estudio o declaración de Impacto Ambiental, según corresponda, dentro de los 30 días siguientes, contados desde la fecha de su aprobación.

c) No hacer llegar al mar en forma directa o indirecta energía, materias o sustancias nocivas, provenientes de sus instalaciones, conforme a las disposiciones contenidas en el D.L. Nº 2.222, del 21 de Mayo de 1978 y en el D.S. (M) Nº 1, del 6 de Enero de 1992, sin perjuicio de las exigencias ambientales establecidas en otros cuerpos legales que normen sobre la materia.

MINISTERIO DE DEFENSA NACIONAL · SUBSECRETARIA DE MARINA

d) Asegurar el libre acceso del público por el sector de playa concesionado, sin que puedan establecerse limitaciones de ninguna especie, ni el levantamiento de ningún tipo de cerco, reja, etc. las que sólo podrán ser impuestas por la Autoridad Marítima.

e) Presentar los estudios que señala el artículo 13° del Reglamento sobre Concesiones Marítimas, dentro de los 6 meses posteriores a la fecha en que la Autoridad Marítima notifique oficialmente al interesado este decreto.

f) Presentar ante la Autoridad Marítima Local, el antecedente a que se refiere la letra anterior dentro de los 30 días siguientes contados desde su aprobación.

g) Presentar ante la Dirección de Obras Portuarias del Ministerio de Obras Públicas, para su aprobación, el proyecto, dentro de los 6 meses siguientes a la fecha en que la Autoridad Marítima notifique oficialmente al interesado este decreto, conforme lo establece el artículo 14° del Reglamento sobre Concesiones Marítimas.

h) Presentar ante la Autoridad Marítima Local, el antecedente a que se refiere la letra anterior dentro de los 30 días siguientes contados desde su aprobación.

i) Cumplir con las obligaciones establecidas en los artículos 21° y 22° del Reglamento sobre Concesiones Marítimas.

j) En relación con el Certificado N° 015, del 21 de noviembre de 2005, de la Secretaria Regional Ministerial de Obras Públicas de Atacama, se deberá respetar la Faja Fiscal de 35 mts. más la Faja de Protección Fiscal de 35 mts. dando una faja de 70 mts. medidos desde el eje de la calzada hacia ambos lados del camino.

k) La construcción proyectada, deberá iniciarse dentro de los 60 días siguientes a la fecha de presentación a la Autoridad Marítima Local, de la aprobación a que se refieren en las letras b), f), h) y quedar terminadas dentro de los 18 meses posteriores a su inicio.

10.- El concesionario en lo que respecta al Orden, Seguridad y Disciplina, quedará sometido a las disposiciones del D.S. (M) N° 1.340 bis, de fecha 14 de Junio de 1941, sobre la materia.

11.- El concesionario pagará la renta y tarifa anual, en forma semestral y anticipada, de acuerdo al siguiente detalle :

A.- RENTA:
50% del valor de tasación por los 92.521,64 m2. de superficie de terreno de playa (Deducido 151,1485 m2. de superficie de terreno de playa que ocupa el Muelle Mecanizado), practicada por el Servicio de Impuestos Internos, IIIª Dirección Regional de Copiapó, Departamento de Avaluaciones, según ORD.DAV.03.00 N° 661, del 17 de octubre de 2005, la que asciende a $ 12.305.378 (92.521,64 m2. x $ 133 el m2. = $ 12.305.378 x 50% = $ 6.152.689 / $ 31.103 UTM. octubre 2005)..... 197,8166.- UTM.

MINISTERIO DE DEFENSA NACIONAL - SUBSECRETARIA DE MARINA

50% del valor de tasación por los 786,045 m2. de superficie de playa (Deducido 14,205 m2. de superficie de playa que ocupa el Muelle Mecanizado), practicada por el Servicio de Impuestos Internos, IIIª Dirección Regional de Copiapó, Departamento de Avaluaciones, según ORD.DAV.03.00 Nº 661, del 17 de octubre de 2005, la que asciende a $ 53.451 (786,045 m2. x $ 68 el m2. = $ 53.451 x 50% = $ 26.726 / $ 31.103 UTM. octubre 2005)..... 0,8593.- UTM.

50% del valor de tasación por los 54.000 m2. de superficie de fondo de mar (Deducido 256,88 m2. de superficie de fondo de mar que ocupa el Muelle Mecanizado), practicada por el Servicio de Impuestos Internos, IIIª Dirección Regional de Copiapó, Departamento de Avaluaciones, según ORD.DAV.03.00 Nº 661, del 17 de octubre de 2005, la que asciende a $ 3.672.000 (54.000 m2. x $ 68 el m2. = $ 3.672.000 x 50% = $ 1.836.000 / $31.103 UTM. octubre 2005)..... 59,0297.- UTM.

RENTA ANUAL :..... 258,3251.- UTM.

(VALOR SEMESTRAL :..... 129,1626.- UTM.)

B.- TARIFA:

UN MUELLE MECANIZADO :

Con 330 mts. de longitud utilizable, a razón de 1,00 UTM. el metro utilizable..... 330.- UTM.

BOYAS Y REJERAS :

Tres (3) boyas y (2) rejeras, para amarre de naves de hasta 120.000 TRG., a razón de 36,00 UTM. cada una..... 180.- UTM.

TARIFA ANUAL :..... 510.- UTM.

(PAGA SEMESTRAL..... 255.- UTM.)

12.- La renta y tarifa por concepto de esta concesión, se ingresará al Ítem 50-01-01-06-99, "Otras Rentas de la Propiedad".

13.- El presente decreto deberá ser reducido a escritura pública por el concesionario dentro del plazo de 30 días, contados desde la fecha en que la Autoridad Marítima notifique oficialmente este decreto al interesado mediante carta certificada, facultándose al Director Regional Tesorero de Copiapó, para suscribirla en representación del Fisco, siendo suficiente causal de derogación el incumplimiento de esta obligación. Previamente deberá comprobarse el pago de la renta y tarifa señalada anteriormente, lo cual deberá consignarse en la escritura, como asimismo, la aceptación de todas las condiciones y obligaciones que le impone el presente decreto. Los gastos de reducción a escritura pública serán de cargo del concesionario.

MINISTERIO DE DEFENSA NACIONAL · SUBSECRETARIA DE MARINA

14.- La Autoridad Marítima notificará al interesado por carta certificada el presente decreto en el plazo de 30 días, contados desde la fecha en que éste haya sido ingresado en la Capitanía de Puerto.

Anótese, tómese razón, comuníquese y regístrese en el Ministerio de Bienes Nacionales.

POR ORDEN DE LA PRESIDENTA DE LA REPÚBLICA

FDO. VIVIANNE BLANLOT SOZA, MINISTRA DE DEFENSA NACIONAL, lo que se transcribe para su conocimiento, Carolina ECHEVERRÍA Moya, Subsecretaria de Marina.

MINISTERIO DE DEFENSA NACIONAL · SUB-SECRETARIA DE MARINA ·

DISTRIBUCIÓN:

C.G.R.	3
T.G.R.	1
M.B.N.	1
C.J.A.	1
DGTM.MM.	3
CC.MM.	2
ARCHIVO	1
TOTAL	12

CEV/280806
CM-148-06
C: 18.854 OTO

ARMADA DE CHILE
SERVICIO HIDROGRAFICO
Y OCEANOGRAFICO

D. SHOA ORDINARIO Nº 13250/24/28 VRS

CONSIDÉRESE "CON VALOR HIDROGRÁFICO" EL ESTUDIO BATIMÉTRICO REALIZADO POR LA EMPRESA GEOMAR INGENIERÍA, EN EL SECTOR DE PUNTA ALCALDE, PUERTO HUASCO, III REGIÓN.

VALPARAÍSO, 29 MAY 2008

VISTO: Lo autorizado por Resolución D.SHOA ORD. Nº 13250/24/40 VRS, de fecha 26 de julio de 2006; las Actas de Inspección elaboradas por los inspectores del Servicio Hidrográfico y Oceanográfico de la Armada, de fecha 17 de noviembre de 2006 y 02 de marzo de 2007; los antecedentes recopilados durante la inspección de los trabajos desarrollados en terreno; la revisión al Informe y Plano del Estudio Batimétrico; las atribuciones que me confiere el Decreto Supremo Nº 192, de fecha 6 de marzo de 1969, modificado por Decreto Supremo N° 784, de fecha 14 de agosto de 1985; lo establecido en las Instrucciones Hidrográficas N° 5 "Especificaciones técnicas para la ejecución de sondajes", 4ª Edición, y teniendo presente las normas legales que rigen la materia relativa a la responsabilidad que corresponde a las empresas ejecutoras de los levantamientos hidrográficos;

R E S U E L V O:

1.- CONSIDÉRESE "CON VALOR HIDROGRÁFICO", a contar de esta fecha, el Informe Técnico GOM-HUA 439/1006 y el Plano N° GM-528, de fecha enero de 2007, correspondientes al Estudio Batimétrico efectuado en el sector de Punta Alcalde, Puerto Huasco, III Región, por la Empresa GEOMAR INGENIERÍA, durante los días 11 al 14 de noviembre de 2006 y 02 de marzo de 2007, por encargo de la empresa SOCIEDAD CONTRACTUAL MINERA SANTA BÁRBARA S.A.

2.- REMÍTANSE a la Empresa Ejecutora el Informe Técnico y Plano correspondientes, firmados por el Oficial Revisor competente.

3.- ARCHÍVENSE en la Sección Archivo del Departamento de Investigación y Desarrollo del Servicio Hidrográfico y Oceanográfico de la Armada, copia de los antecedentes sometidos a revisión.

4.- ANÓTESE y comuníquese a quienes corresponda para su conocimiento y cumplimiento.

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO DE LA ARMADA DE CHILE * DIRECTOR *

CRISTIAN SORO KORN
CAPITÁN DE NAVÍO
DIRECTOR

ARMADA DE CHILE
SERVICIO HIDROGRAFICO
Y OCEANOGRAFICO

D. SHOA ORDINARIO N° 13270/24/324/ VRS

CONSIDÉRESE "CON VALOR OCEANOGRÁFICO" EL ESTUDIO OCEANOGRÁFICO REALIZADO POR LA EMPRESA GEOMAR INGENIERÍA LTDA., EN PUNTA ALCALDE, HUASCO, III REGIÓN.

VALPARAÍSO, 1 JUL 2008

VISTO: lo autorizado por las Resoluciones D. SHOA Ordinario N° 13270/4/221 VRS, N° 13270/24/157 VRS y N° 13270/24/105 VRS, de fechas 26 de julio de 2006, 7 de junio de 2007 y 27 de febrero de 2008, respectivamente; las Actas de Inspecciones elaboradas por los inspectores del Servicio Hidrográfico y Oceanográfico de la Armada, de fechas 31 de agosto de 2006, 11 de octubre de 2006, 14 de junio de 2007 y 22 de febrero de 2008; los antecedentes recopilados durante las inspecciones de los trabajos desarrollados en terreno; la revisión de los Informes Técnicos; las atribuciones que me confiere el Decreto Supremo N° 192, de fecha 6 de marzo de 1969, modificado por Decreto Supremo N° 784, de fecha 14 de agosto de 1985; lo establecido en las Instrucciones Oceanográficas N° 1 "Especificaciones técnicas para mediciones y análisis oceanográficos", 3ª Edición, y teniendo presente las normas legales que rigen la materia relativa a la responsabilidad que corresponde a las empresas ejecutoras de estudios oceanográficos,

R E S U E L V O:

1.- CONSIDÉRESE "CON VALOR OCEANOGRÁFICO", a contar de esta fecha, los Informes Técnicos de fechas julio de 2007 y marzo de 2008, correspondientes a las mediciones y análisis de corrientes (métodos eulerianos y lagrangianos), vientos, mareas y calidad de fondo, efectuados en el sector de punta Alcalde, Huasco, III Región, por la Empresa GEOMAR INGENIERÍA LTDA., entre julio de 2006 y abril de 2008, por mandato de la Empresa MINERA SANTA BÁRBARA S.A.

2.- REMÍTANSE a la Empresa Ejecutora los Informes Técnicos, firmados por el Oficial Revisor competente.

.- ARCHÍVENSE en la División Archivo del Departamento de Investigación y Desarrollo del Servicio Hidrográfico y Oceanográfico de la Armada, copia de los informes y todos los antecedentes sometidos a revisión.

4.- ANÓTESE y comuníquese a quienes corresponda, para su conocimiento y cumplimiento.

SERVICIO HIDROGRAFICO Y OCEANOGRAFICO DE LA ARMADA DE CHILE * DIRECTOR *

PATRICIO CARRASCO HELLWIG
CAPITÁN DE NAVÍO
DIRECTOR SUBROGANTE

ARMADA DE CHILE
SERVICIO HIDROGRAFICO
Y OCEANOGRAFICO

D. SHOA ORDINARIO N° 13270/24/324/ VRS

CONSIDÉRESE "CON VALOR OCEANOGRÁFICO" EL ESTUDIO OCEANOGRÁFICO REALIZADO POR LA EMPRESA GEOMAR INGENIERÍA LTDA., EN PUNTA ALCALDE, HUASCO, III REGIÓN.

VALPARAÍSO, 1 JUL 2008

VISTO: lo autorizado por las Resoluciones D. SHOA Ordinario N° 13270/4/221 VRS, N° 13270/24/157 VRS y N° 13270/24/105 VRS, de fechas 26 de julio de 2006, 7 de junio de 2007 y 27 de febrero de 2008, respectivamente; las Actas de Inspecciones elaboradas por los inspectores del Servicio Hidrográfico y Oceanográfico de la Armada, de fechas 31 de agosto de 2006, 11 de octubre de 2006, 14 de junio de 2007 y 22 de febrero de 2008; los antecedentes recopilados durante las inspecciones de los trabajos desarrollados en terreno; la revisión de los Informes Técnicos; las atribuciones que me confiere el Decreto Supremo N° 192, de fecha 6 de marzo de 1969, modificado por Decreto Supremo N° 784, de fecha 14 de agosto de 1985; lo establecido en las Instrucciones Oceanográficas N° 1 "Especificaciones técnicas para mediciones y análisis oceanográficos", 3ª Edición, y teniendo presente las normas legales que rigen la materia relativa a la responsabilidad que corresponde a las empresas ejecutoras de estudios oceanográficos,

R E S U E L V O:

1.- CONSIDÉRESE "CON VALOR OCEANOGRÁFICO", a contar de esta fecha, los Informes Técnicos de fechas julio de 2007 y marzo de 2008, correspondientes a las mediciones y análisis de corrientes (métodos eulerianos y lagrangianos), vientos, mareas y calidad de fondo, efectuados en el sector de punta Alcalde, Huasco, III Región, por la Empresa GEOMAR INGENIERÍA LTDA., entre julio de 2006 y abril de 2008, por mandato de la Empresa MINERA SANTA BÁRBARA S.A.

2.- REMÍTANSE a la Empresa Ejecutora los Informes Técnicos, firmados por el Oficial Revisor competente.

.- ARCHÍVENSE en la División Archivo del Departamento de Investigación y Desarrollo del Servicio Hidrográfico y Oceanográfico de la Armada, copia de los informes y todos los antecedentes sometidos a revisión.

4.- ANÓTESE y comuníquese a quienes corresponda, para su conocimiento y cumplimiento.

SERVICIO HIDROGRAFICO Y OCEANOGRAFICO DE LA ARMADA DE CHILE * DIRECTOR *

PATRICIO CARRASCO HELLWIG
CAPITÁN DE NAVÍO
DIRECTOR SUBROGANTE

ARMADA DE CHILE
SERVICIO HIDROGRAFICO
Y OCEANOGRAFICO

D. SHOA ORDINARIO Nº 13250/24/28 VRS

CONSIDÉRESE "CON VALOR HIDROGRÁFICO" EL ESTUDIO BATIMÉTRICO REALIZADO POR LA EMPRESA GEOMAR INGENIERÍA, EN EL SECTOR DE PUNTA ALCALDE, PUERTO HUASCO, III REGIÓN.

VALPARAÍSO, 29 MAY 2008

VISTO: Lo autorizado por Resolución D.SHOA ORD. Nº 13250/24/40 VRS, de fecha 26 de julio de 2006; las Actas de Inspección elaboradas por los inspectores del Servicio Hidrográfico y Oceanográfico de la Armada, de fecha 17 de noviembre de 2006 y 02 de marzo de 2007; los antecedentes recopilados durante la inspección de los trabajos desarrollados en terreno; la revisión al Informe y Plano del Estudio Batimétrico; las atribuciones que me confiere el Decreto Supremo Nº 192, de fecha 6 de marzo de 1969, modificado por Decreto Supremo N° 784, de fecha 14 de agosto de 1985; lo establecido en las Instrucciones Hidrográficas N° 5 "Especificaciones técnicas para la ejecución de sondajes", 4ª Edición, y teniendo presente las normas legales que rigen la materia relativa a la responsabilidad que corresponde a las empresas ejecutoras de los levantamientos hidrográficos;

R E S U E L V O:

1.- CONSIDÉRESE "CON VALOR HIDROGRÁFICO", a contar de esta fecha, el Informe Técnico GOM-HUA 439/1006 y el Plano N° GM-528, de fecha enero de 2007, correspondientes al Estudio Batimétrico efectuado en el sector de Punta Alcalde, Puerto Huasco, III Región, por la Empresa GEOMAR INGENIERÍA, durante los días 11 al 14 de noviembre de 2006 y 02 de marzo de 2007, por encargo de la empresa SOCIEDAD CONTRACTUAL MINERA SANTA BÁRBARA S.A.

2.- REMÍTANSE a la Empresa Ejecutora el Informe Técnico y Plano correspondientes, firmados por el Oficial Revisor competente.

3.- ARCHÍVENSE en la Sección Archivo del Departamento de Investigación y Desarrollo del Servicio Hidrográfico y Oceanográfico de la Armada, copia de los antecedentes sometidos a revisión.

4.- ANÓTESE y comuníquese a quienes corresponda para su conocimiento y cumplimiento.

SERVICIO HIDROGRAFICO Y OCEANOGRAFICO DE LA ARMADA DE CHILE
DIRECTOR

CRISTIAN SORO KORN
CAPITÁN DE NAVÍO
DIRECTOR

ARMADA DE CHILE
SERVICIO HIDROGRÁFICO
Y OCEANOGRÁFICO

SHOA ORDINARIO N° 13270/24/352 Vrs.

CONSIDÉRESE "CON VALOR OCEANOGRÁFICO" EL ESTUDIO DE VIENTOS REALIZADO POR LA EMPRESA GEOMAR INGENIERÍA LTDA. EN PUNTA ALCALDE, HUASCO, III REGIÓN.

VALPARAÍSO, 09 JUL 2010

VISTO: lo autorizado por las Resoluciones SHOA Ordinario Nrs. 13270/24/221 VRS, 13270/24/157 VRS y 13270/24/105 VRS, de fechas 26 de julio de 2006, 7 de junio de 2007 y 27 de febrero de 2008, respectivamente; el Acta de Inspección Nº 63/2008 de fecha 23 de mayo de 2008, elaborada por el inspector del Servicio Hidrográfico y Oceanográfico de la Armada de Chile (SHOA); los antecedentes recopilados durante la inspección de los trabajos desarrollados en terreno; la revisión del Informe Técnico; las atribuciones que me confiere el Decreto Supremo N° 192, de fecha 6 de marzo de 1969, modificado por Decreto Supremo N° 784, de fecha 14 de agosto de 1985; lo establecido en las Instrucciones Oceanográficas N° 1 "Especificaciones técnicas para mediciones y análisis oceanográficos", 3ª Edición de 2005, y teniendo presente las normas legales que rigen la materia relativa a la responsabilidad que corresponde a las empresas ejecutoras de estudios oceanográficos,

RESUELVO:

1.- CONSIDÉRESE "CON VALOR OCEANOGRÁFICO", a contar de esta fecha, el Informe Técnico, de agosto de 2008, correspondiente a las mediciones y análisis de Vientos en el sector de Punta Alcalde, Huasco, III Región, efectuadas por la Empresa GEOMAR INGENIERÍA LTDA., entre julio de 2006 y mayo de 2010, por encargo de la Empresa MINERA SANTA BÁRBARA S.A.

2.- REMÍTASE a la Empresa Ejecutora los Informes Técnicos, firmados por el Oficial Revisor competente.

3.- ARCHÍVENSE en la División Archivo del Departamento de Dirección del SHOA, copia del informe y todos los antecedentes sometidos a revisión.

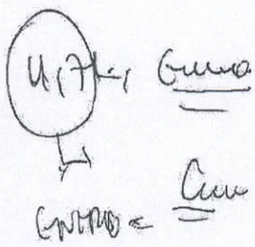
4.- ANÓTESE y comuníquese a quienes corresponda, para su conocimiento y cumplimiento.

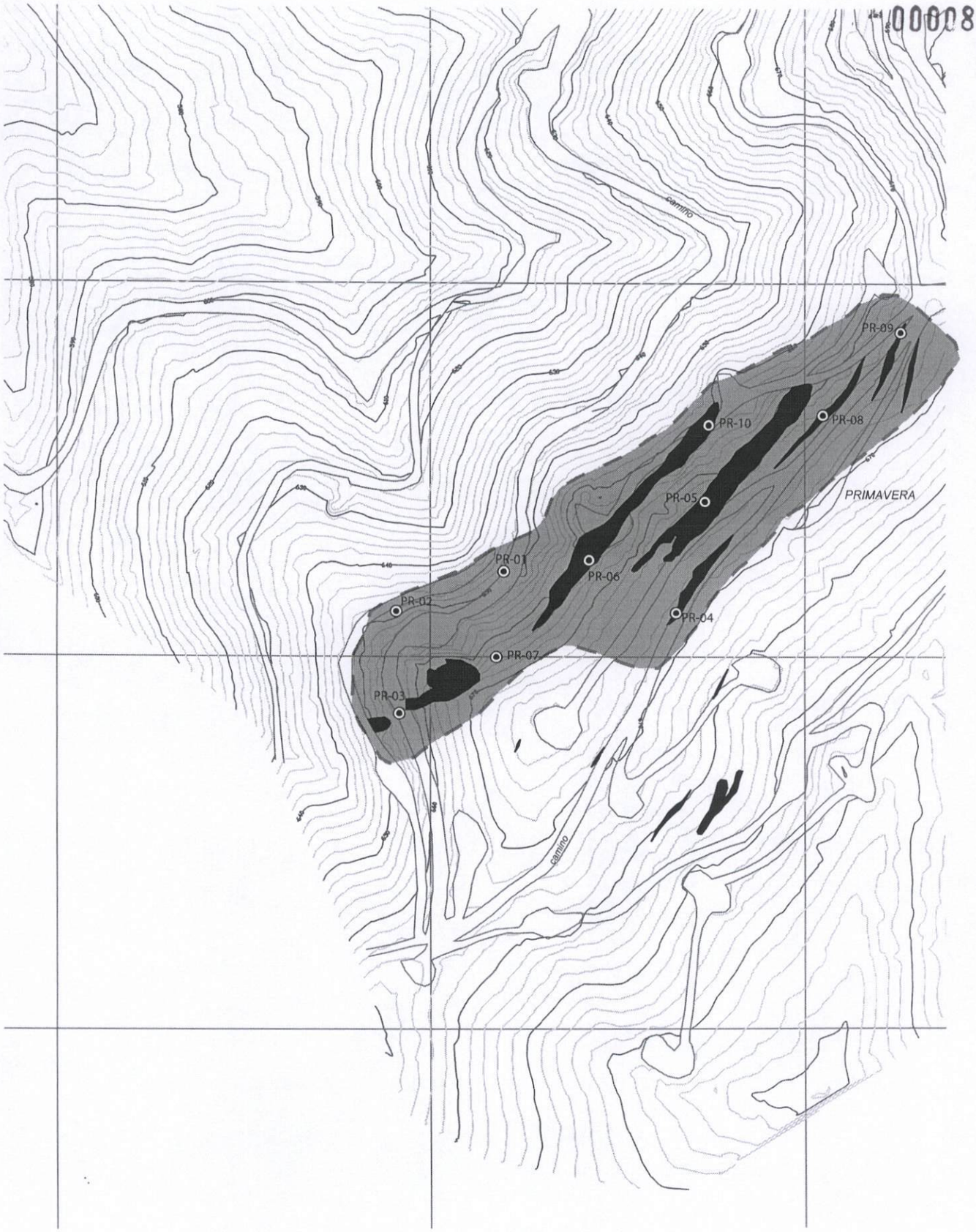
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Vallenar Reserve Estimation 2

Iron Project

Society Minera Vallenar Iron Company

Job No. 2372-01 **09 June 2011**

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SUMMARY

Magnetite bodies south of Vallenar, Chile, form the basis of plans to restart mining operations. The project is being planned to take advantage of historically high iron prices. Ore will be mined by open pit methods and magnetite will be recovered as iron ore fines using crushing and dry magnetic separation. Only magnetic methods are planned to recover the ore, so all resources grades in this report are expressed in terms of magnetite iron (FeMag).

A number of significant deposits exist in the 3,549 hectare tenement area, located 12 km south of the town of Vallenar. The magnetite mineralisation occurs in veins, lenses and surrounding veinlet stockwork that are considered to have formed by contact metamorphism. Later erosion formed a colluvial deposit at Japonesa, which was worked during 2007 and 2008.

Five deposits have been geologically modelled during this study. The deposits are named after the former mines which operated in the 1960s. At Japonesita and Primavera, artisanal workings and road cuttings expose a number of narrow high grade magnetite veins and some stockwork development. These deposits, although geologically distinct, are close together and will be mined from one large open pit. The Mirador deposit is inferred to be similar, but is poorly exposed and so the geology is less certain, and drilling has shown it to be lower grade. At Chillán Viejo, artisanal workings show at least two high grade lenticular veins, two to six metres wide. At Japonesa, unconsolidated colluvial gravels form a low grade resource.

Drilling up until November 2010 was in the form of reverse circulation drilling with limited (often no) geological descriptions. This limited the understanding of the deposits; in particular, the orientation of individual high grade veins could not be determined adequately and the true extent of stockwork development was not defined. Therefore, diamond drilling was undertaken during December 2010 and January 2011 to resolve these issues and increase confidence in the geological models.

Diamond drilling at Japonesita, Primavera and Mirador has confirmed the earlier reverse circulation results, and broadly confirmed the geological models. Quality control has been checked by resampling of old drill chips. Careful logging of core with a magnetic susceptibility meter and comparison with initial analytical results has demonstrated good correlation of magnetic susceptibility with analysed FeMag. This has enabled use of the magnetic susceptibility results where laboratory analyses are not available.

The revised resource estimates are summarised as:

Deposit	Tonnes (Mt)	Grade FeMag %	Cutoff FeMag %	Current Resource Status
Japonesita	33.8	13.9	6	Measured + Indicated + Inferred
Primavera	86.9	17.7	6	Measured + Indicated + Inferred
Mirador	28.5	11.9	6	Indicated + Inferred
Chillán Viejo	25	14.4	6	Inferred
Japonesa	21.4	7.9	6	Inferred
Japonesa stockpile	2.2	6.4	NA	Inferred
Mirador stockpile	1.0	8.5	NA	Inferred
RESOURCE BASE	**198.8**	**14.6**		

The geological models at Japonesita-Primavera and Mirador have been used to create a mine plan and schedule, enabling an equipment list and mining costs to be forecast. KRC mining consultants carried out this part of the work. KRC have assumed conventional truck and shovel operations, and assumed a mine recovery of 95% and a mine dilution of 10%. The mining schedule includes in-pit inferred resources.

Worley Parsons has provided confirmation of indicative plant costs and parameters to produce 2mtpa of product. The planned plant is a dry process involving a primary crusher located near the working pits, with a conveyor (approximately 1.5 km long) to the secondary plant, which includes comminution, screening plant and magnetic separators, to produce an iron ore product.

Shipping costs have been provided by SMC Vallenar Iron. These figures have been used to derive a tentative project cash flow forecast, assuming a price of US$135 per tonne (present day dollars) for a 62% Fe fines product, C & F in China. The product prices used in the cash flow model are below recent market spot prices, which have ranged up to US$197/t. The Steel Index 62% benchmark was US$175.50 at 26 April 2011.

The model assumes mining initially from Japonesita-Primavera pit, then from Mirador, then processing low grade stockpiles.

The project model derived for this exercise is not detailed but is sufficient to demonstrate strong project economics (22% IRR) under the assumed price regime. The project as forecast remains profitable (12% IRR) if the assumed price is reduced to $120/t. Based on the positive economics, we estimate project reserves to be:

Deposit	Proved Reserves		Probable Reserves		Total	
	Tonnes (Mt)	Grade FeMag %	Tonnes (Mt)	Grade FeMag %	Tonnes (Mt)	Grade FeMag %
Japonesita	16.9	11.4	9.1	13.1	26.0	12.0
Primavera	8.7	19.8	35.1	16.9	43.8	17.4
Mirador	-	-	11.0	13.0	11.0	13.0
TOTAL	25.6	14.2	55.2	15.5	**80.8**	**15.1**

During project development additional drilling is recommended to upgrade some in-pit inferred resources and provide more confidence in detailed mine planning. In pit inferred resources make up 46% of the scheduled ore in our modelled pits. Magnetic susceptibility measurements will assist in grade control to define plant feed and low grade stockpile material, but additional drilling will be required before effective mine scheduling can be conducted.

Given the resources outside the pits, together with the potential to increase the Primavera resources at depth and deepen the planned pit, there is potential to increase the project life or expand the operations.

Additional exploration potential is shown by the detailed magnetic geophysical data. Some areas of exploration potential have been subject to artisanal workings. The highest priority targets are magnetic anomalies and poorly tested grounds immediately adjacent to Japonesita, the area immediately east of Japonesita and north east of Primavera towards Mirador, at Chillán Viejo and at Viviana South, where scattered drilling has returned a number of intercepts over 20% FeMag within a magnetic anomaly approximately 750m by 250m in area. Other priority exploration targets are south of Primavera, southeast

Chillán Viejo and east of Mirador. These, together with lower priority areas (southeast Primavera, Japonesa basement), increase the potential to define additional resources within these tenements.

DISCLAIMER

While every effort has been made, within the time constraints of this assignment, to ensure the accuracy of this report, Geos Mining accepts no liability for any error or omission. Geos Mining can take no responsibility if the conclusions of this report are based on incomplete or misleading data.

Geos Mining and the authors are independent of Society Minera Vallenar Iron Company , and have no financial interests in Society Minera Vallenar Iron Company or any associated companies. Geos Mining is being remunerated for this report on a standard fee for time basis, with no success incentives.

Neither the whole nor any part of this report, nor any reference thereto, may be included in, or with, or attached to any document or used for any purpose without Geos' written consent to the form and context in which it appears.

The opinions expressed herein are given in good faith and Geos believes that any assumptions or interpretations are reasonable. This report contains forecasts and projections prepared by Geos Mining. Geos Mining's assessment of the most likely production schedule, its projections of the capital and operating costs for an operation and its estimate of potential mine life are based on technical reviews of project data. However, these forecasts and projections cannot be assured and factors both within and beyond the control of SMC Vallenar Iron could cause the actual results to be materially different from Geos Mining's assessments and estimates contained in this report. Forecasts included in this report are conceptual, and simplified to suit the current purpose, and although Geos Mining has used its expertise and judgement to select appropriate parameters for use in the forecasts, we can offer no guarantee that the assumptions made are not erroneous.

JORC

Estimation of Mineral Resources and Reserves of the various deposits at Vallenar has been undertaken under the supervision of Sue Border, who has the necessary relevant experience to be regarded as a Competent Person as defined by the JORC Code, 2004. Resource and Reserve terms used in this report are used in compliance with the JORC code.

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INTRODUCTION

Society Minera Vallenar Iron Company (SMC Vallenar) plan to restart iron mining operations south of Vallenar. Geos Mining has been requested to undertake ore reserve estimation for the Vallenar project by Mr Phil Thomas, director of geology at SMC Vallenar. Mr Llyle Sawyer and Ms Sue Border of Geos Mining visited the project area from 11th November 2010 to 15th November 2010. Mr Llyle Sawyer revisited the site to review sampling, geology and logging procedures during the period from 17th February 2011 to 23rd February 2011.

The planned project is to mine a series of deposits within the tenements, starting off with mining part of the remaining lower grade colluvial deposits at Japonesa, to clear the area for waste pad development. After the initial colluvial mining the operations will move to mine the higher grade hard rock deposit at Japonesita, which will naturally progress into mining the Primavera deposit. The scheduled plans are to then continue mining at Mirador, then progress to Viviana and/or Chillán Viejo.

Ore will be mined by open pit, using blasting and conventional truck and shovel operations. Mined ore will be crushed at a relocatable primary crusher located close to the pit, then moved by conveyor to the main processing plant. The main plant will consist of secondary and tertiary crushing circuits with dry magnetic separation to produce an iron ore fines product. The product will be trucked to a shipping port within four hours drive of the mine. Negotiations are underway with port operators out of several ports, including Puerto Caleta, Puerto Totoralillo and Puerto Huasco, for access to bulk storage and loading facilities suitable for, initially Handymax and Panamax class and eventually Cape class vessels. An interim port solution at Punta (Port) Alcalde is being researched to see if a temporary facility can be installed while the main Cape size port is being constructed. The iron ore fines will be shipped from the selected port to customers, expected to be mainly located in northern China. Sales discussions with WISCO who purchased 500,000 tonnes in 2007 and 2008 were held in China on 26 April 2011.

Resources have previously been estimated by SRK Consultants, Chile for the Japonesa (SRK, 2007), Japonesita (SRK, 2008), Primavera (SRK, 2009) and Mirador (SRK, 2009) deposits. SRK in all cases estimated resources based on the total iron content. As only magnetic iron is to be recovered in the planned project, and some of the total contained iron is in the form of silicates that are not capable of recovery using established processing procedures, the total iron estimates are not suitable to form the basis of any reserve estimation. Hence Geos Mining has re-estimated the resources, initially in late 2010 with updated estimates reported below, on the basis of estimated magnetic iron content.

Drilling up until November 2010 was in the form of reverse circulation drilling with limited (often no) geological descriptions. This limited the understanding of the deposits; in particular, the orientation of individual high grade veins could not be determined adequately and the true extent of stockwork development was not defined. Therefore, diamond drilling was undertaken during December 2010 and January 2011 to resolve these issues and increase confidence in the geological models.

Geological models have been revised following receipt of analyses and geological logs from the recent diamond core drilling programme and the planned project parameters revised accordingly. The revised geological models indicate narrow, higher grade, mineralised bodies within the low to moderate mineralised stockwork veined andesite. The resources and resources herein have been based on these revised models.

All costs in this report are in US$ unless otherwise stated.

RELIANCE ON OTHER EXPERTS

A brief field trip and report on the geotechnical stability of the Japonesita and Primavera deposit rocks was undertaken by Coffey Geotechnics in late 2010. KRC Mining Consultants and Worley Parsons have contributed to this report in their fields of expertise (mine planning and plant costings respectively) and their reports are attached as appendices.

PROPERTY DESCRIPTION AND LOCATION

(SMC) Vallenar Iron's Japonesita -Primavera Project and the adjacent prospects of Mirador, Chillán Viejo and Vivianna are located approximately 12 kilometres south-west of the town of Vallenar, Chile (Figure 1). The projects lay adjacent to the historical Japonesa Iron Ore Mine and constitute a strip of iron deposits that extends 6 kilometres NNE-SSW and 4 kilometres east – west within the Sierra Chinchilla Mountains. The prospects are bounded by the UTM coordinates: N 6,830,000 to N 6,836,000 and E 322,000 to E 326,000 and are situated at an altitude of 1,000 metres above sea level.

The project is based on 15 exploration concessions totalling 3047 hectares and 10 exploitation concessions totalling 502 hectares listed in Table 1 and shown in Figure 2. Tenure information was provided by SCM Vallenar Iron, GEOS Mining did not conduct an independent audit of the tenement status.

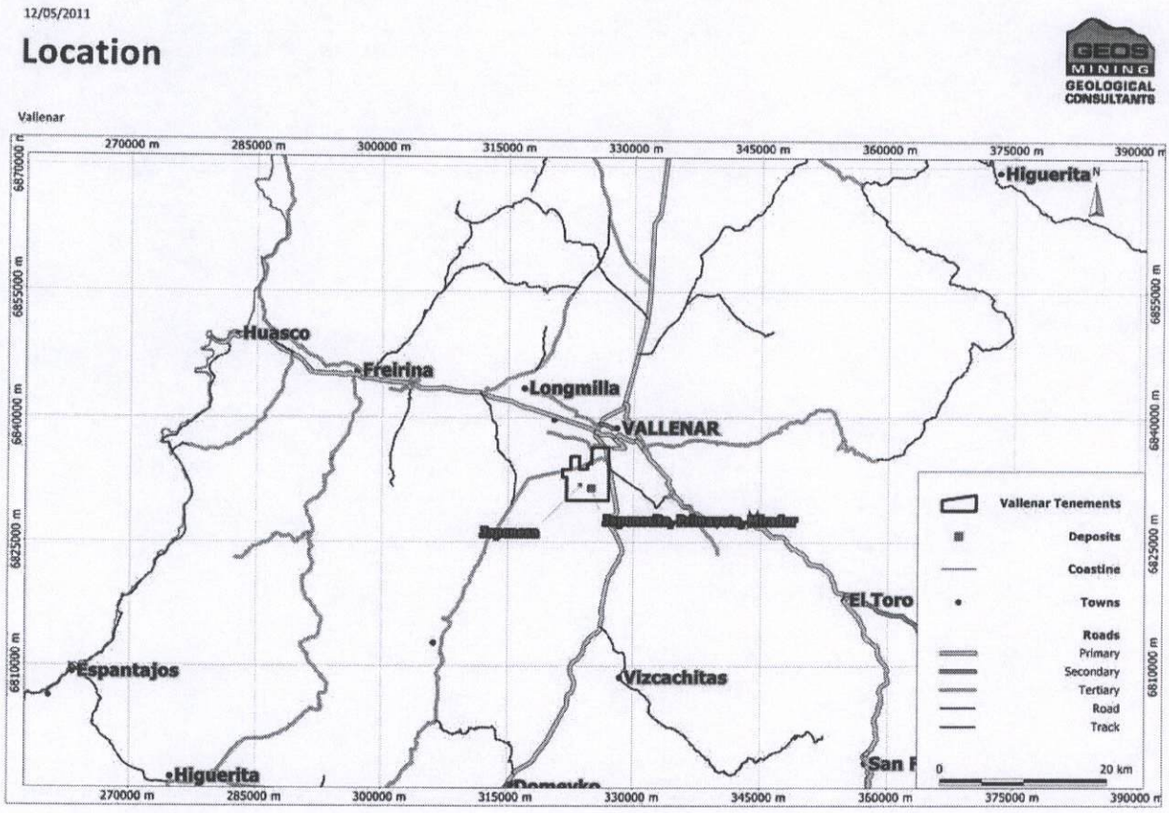


Figure 1 Location map

ACCESSIBILITY

The access to the historical Japonesa Mine area is via Route 5 North and then by secondary gravel roads, all in good condition. Access to the individual prospects is via well constructed access and exploration tracks and other ungraded vehicular tracks within the exploration and exploitation leases.

HISTORY

Selective vein mining has been undertaken in the area since the 1950's and continued until 1977. This mining was producing iron ore with a grade ranging from about 60-68% and sold as lump iron ore.

Japonesa Mine (initially mined in 1960, and again in 2007-2008) is an alluvial/colluvial iron deposit located in the alluvial/colluvial sediments just west of Japonesita prospect that covers an area of approximately 900m by 700m. Within the alluvial/colluvial area are two dumps, the larger is about 3 million m^3, and the smaller is about 1 million m^3. These dumps are the product of magnetic separation of iron ore from the gravels, which ceased operation during 1977.

World Geoscience Survey conducted an aeromagnetic survey over the Japonesa Mine area including the hills to the east, covering from Primavera to Chillán Viejo prospects, in June 1999, fFrom which a reduced to pole (RTP) interpretation of the properties was developed for Rio Tinto. This interpretation helped to confirm strong anomalies in the vicinity of the Chillán Viejo prospect and the Japonesita claims.

Vallenar's predecessor (by name) Minera Santa Barbara (MSB) re-initiated the evaluation of the iron ore deposits in the alluvial-colluvial sediments at Santa Barbara (Japonesa) in 2005. MSB commissioned Geodatos in May 2005 to do a ground magnetic survey over the northern part of their Sierra Chinchilla claims, including the area of Primavera – Japonesita prospects in the north to include Chillán Viejo prospect, survey between 6,836,000 N – 6,830,000 N (PSA 56 UTM 19S). The survey extended 6 km in a north-south direction with lines oriented east-west separated by 100m.

MSB designed a Phase 1 reverse circulation (RC) drilling campaign in 2005 to test the anomalies outlined by the Geodatos survey. This programme consisted of 54 RC drillholes totalling 6345 metres, spread between various targets: Chillán Viejo, Viviana, Japonesita, Mirador and Primavera. The majority of the drilling was vertical based on the assumption that the iron mineralization was flat-lying, similar to that at Japonesa Mine.

In 2006, MSB contracted SRK to re-interpret the Geodatos magnetic survey and re-design a Phase 2 RC drill programme. SRK prioritised 3 areas for test drilling, Japonesita, Primavera and Mirador. A total of 31 RC holes totalling 4136 metres were drilled at Japonesita during the Phase 2 drilling between 2006 and 2007.

Resources have previously been estimated by SRK Consultants for the Japonesa (SRK, 2007), Japonesita (SRK, 2008), Primavera (SRK, 2009) and Mirador (SRK, 2009) deposits. In all cases, SRK has estimated resources based on the total iron content (FeT). MSB conducted a second phase of mining operations at Japonesa Mine between February 2007 and May 2008.

MSB ventured the project to SMC Vallenar early 2010. Drilling up until November 2010 was in the form of reverse circulation drilling with limited (often no) geological descriptions. This limited the understanding of the deposits; in particular, the orientation of individual high grade veins could not be determined adequately and the true extent of stockwork development was not defined. Therefore, diamond drilling was undertaken during December 2010 and January 2011 to resolve these issues and increase confidence

in the geological models. Currently there are some outstanding assay results still pending, which will be required for final mine scheduling, but should not materially affect the global resources or reserves.

Tenements

Exploitation and Exploration

Vallenar

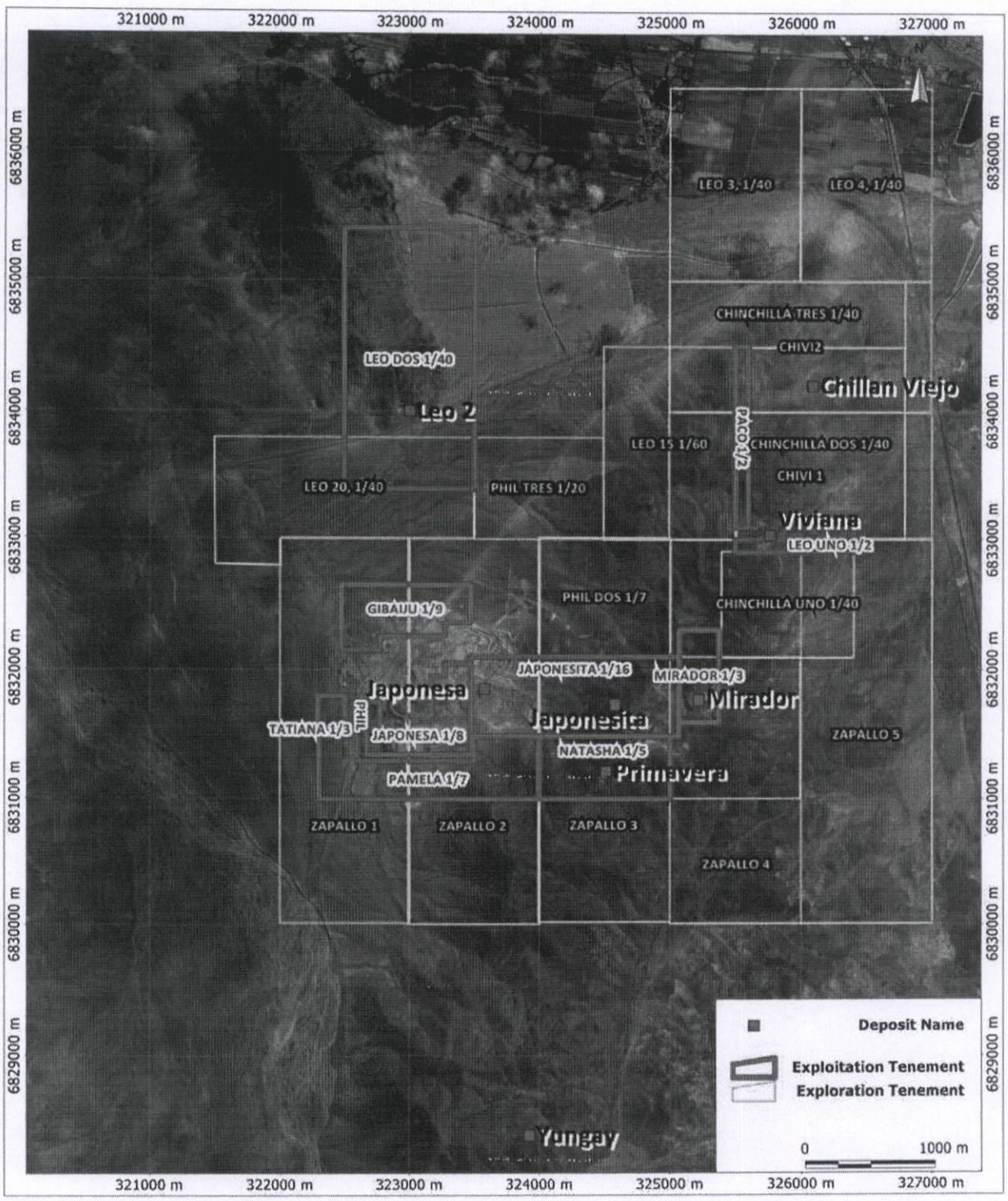


Figure 2 SCM Vallenar Iron tenements and location (after MSB, 2008)

Table 1: Tenement listing

NAME	NUMBER	HECTARES	TYPE	ORE BODY
NATASHA 1/5	03301-3606-5	50	EXPLOITATION	Primavera
LEO DOS 1/40	03301-3650-2	200	EXPLOITATION	Norte Japonesa
MIRADOR 1/3	03301-2723-6	21	EXPLOITATION	Mirador
GIBAIJU 1/9	03301-2448-2	41	EXPLOITATION	Japonesa
JAPONESA 1/8	03301-2722-8	34	EXPLOITATION	Japonesa
JAPONESITA 1/16	03301-2447-4	96	EXPLOITATION	Japonesa
PAMELA 1/7	03301-3622-7	67	EXPLOITATION	Japonesa
PHIL	03301-3630-8	3	EXPLOITATION	Japonesa
TATIANA 1/3	03301-3585-9	6	EXPLOITATION	Japonesa
LEO UNO 1/2	03301-3631-6	20	EXPLOITATION	Chillán Viejo
PACO 1/2	03301-3621-9	14	EXPLOITATION	Chillán Viejo
LEO 20, 1/40	03301-4075-5	200	EXPLORATION	Norte Japonesa
LEO 3, 1/40	03301-4063-1	200	EXPLORATION	Norte Chillán Viejo
LEO 4, 1/40	03301-4064-K	200	EXPLORATION	Norte Chillán Viejo
CHINCHILLA CUATRO 1/40	03301-3767-3	100	EXPLORATION	Mirador
CHINCHILLA UNO 1/40	03301-3764-9	200	EXPLORATION	Mirador
LEO 15, 1/60	03301-4073-9	224	EXPLORATION	Mirador
PHIL DOS 1/7	03301-3791-6	63	EXPLORATION	Mirador
ZAPALLO 5	03301-4745-8	300	EXPLORATION	Mirador
PHIL TRES 1/20	03301-3946-3	100	EXPLORATION	Japonesa
ZAPALLO 1	03301-4741-5	200	EXPLORATION	Japonesa
ZAPALLO 2	03301-4742-3	300	EXPLORATION	Japonesa
ZAPALLO 3	03301-4743-1	300	EXPLORATION	Japonesa
ZAPALLO 4	03301-4744-K	300	EXPLORATION	Japonesita-Primavera
CHINCHILLA DOS 1/40	03301-3765-7	180	EXPLORATION	Chillán Viejo
CHINCHILLA TRES 1/40	03301-3766-5	180	EXPLORATION	Chillán Viejo

GEOLOGY

REGIONAL SETTING

The project area lies 12 km southwest of the town of Vallenar, Chile, within a predominant Lower – Upper Cretaceous age, (123 – 85 Ma) plutonic belt which consists mainly of diorite, pyroxene-hornblende monzodiorite and granodiorite, intruded into intermediate volcanic rocks and partially overlain by continental sedimentary colluvium (Figure 3).

The mineralisation in the project area and adjacent hard rock prospects falls within the Chilean Iron Belt, a 25-30 km wide zone that runs parallel to the coast, some 40-50 kilometres inland, and extends N-S for approximately 600 km. The host intermediate volcanic rocks are typically associated with Fe-Cu-Au mineralization near the generally N-S trending Atacama Fault Zone.

Two major arc-parallel fault systems were active during the magnetite-apatite and iron oxide-copper-gold (IOCG) mineralisation events between latitudes 25°30' S and 32°00' S. The Atacama Fault System (AFS) was initiated at about 132 Ma during left-oblique extension of the margin. Deep-seated plutons, gabbros and diorites were emplaced syn-tectonically along the AFS and are considered to be the precursor to the magnetite-apatite+/-epidote mineral deposits (135-125 Ma). Ductile to brittle transitions in syn-plutonic mylonite located within the NNE trending fractures of the AFS host all the Cretaceous iron belt world-class deposits (SRK, 2008).

During the Late Cretaceous (approx. 125 to 93 Ma), the magmatic arc and the deformation front migrated to the east of the AFS and the Chivato Fault System (CFS) was activated at the eastern margin of the Coastal Mountain Range as a partitioned left-oblique compression system. Faults in each of the systems are linked by NW-trending faults that transfer the displacement from the AFS to the CFS. This major structure represents a regional "strike-slip duplex". Partial overprinting by a secondary alteration mineralisation system (Fox, 2001) is dominated by silicification and potassium-iron metasomatism along north-trending faults, consisting of two alteration assemblages: biotite-pyrite and later magnetite-hematite-chalcopyrite (Fox, 2001). Further late hydrothermal Fe-Cu-Au mineralisation is spatially related to ~91Ma granodiorite intrusion (Fox, 2001) and has a notable homogeneous structural trend throughout the area with the majority of veins striking NNW to WNW. (SRK, 2008).

MINERALIZATION

The mineralisation within the current project is considered to be of the Chilean Iron Belt type.

The iron magnetite mineralisation is found in veins, lenses and irregular stockwork masses that are considered to have formed by contact metamorphism. The host rocks consist mainly of Lower Cretaceous intermediate volcanic rocks that have been intruded by Late Cretaceous (123 – 85 Ma) diorite, pyroxene-hornblende monzodiorite and granodiorite, which are typically associated with the Fe-Cu-Au (IOCG) mineralisation proximal to the N-S trending Atacama Fault Zone (SRK, 2008).

ADJACENT PROPERTIES

The following information has been acquired from publically available documents and has not been verified by the authors. The following information is not necessarily indicative of any mineralisation on the property that is the subject of this technical report.

El Algarrobo deposit which has estimated reserves of 7.7 million tonnes with an average grade of 51.99 %, magnetic iron cut-off grade of 30% (CAP MINERIA, 2009) lies 27 kilometres south-southwest of the Japonesita-Primavera Prospect (Figure 3). The El Algarrobo District proximal to El Algarrobo deposit is composed of various low yield and low magnetic iron ore bodies, including Alcaparra D, Algarrobo East, Ojos de Agua and Domeyko II, with a total estimated resource of 130 million tons? (CAP MINERIA, 2009).

Los Colorados deposit which has reserves of 245 million tonnes averaging 48% iron is located approximately 40 kilometres north of Japonesita deposit. The surrounding Los Colarodos District, which includes the Chañar Quemado, Sositas and Coquimbana prospects, has been inferred by CAP MINERIA (CAP MINERIA, 2009) to have estimated reserves of up to 73 million tons?.

[? The use of 'tons' here is ambiguous, previous reference by (CAP MINERIA, 2009) was made to 'metric tons' or tonnes, however in this incidence only 'tons' was specified, this may imply the American measure of 2000lb (907 kg) or it may refer to metric tonnes. The authors consider the term refers to American 'tons' (1 ton = 907 Kg), this is not verified but would alter the estimated size of the deposit by 10%.]

PROSPECT GEOLOGY

JAPONESITA

The Japonesita ore body consists of a group of narrow high grade magnetite veins often containing >55% Fe total. The veins are emplaced in a 200 metre wide shear zone that hosts numerous small faults filled by high grade magnetite vein stockwork (Thomas, 2010). There are at least two principal orientations of iron veins and structures: NNE and NW. Japonesita has previously been considered to exhibit the greatest concentration of iron veins and zones of iron veinlet stockwork compared with the other prospects studied (SRK, 2006).

Interpreted regional structure by Santa Barbara indicates that the Japonesita ore deposit is truncated to the north by faulting. Drilling data also indicate that the deposit is terminated in the north. This supports the magnetic data interpretation, which indicates that this deposit is a lower magnetic response anomaly that abuts against the more magnetically intense Primavera deposit to the SE (Figure 4). A more recent study of the magnetic data and construction of plan and section depth images (GEODATOS, 2010) indicate that the Japonesita body is terminated to the north by the intrusion of a diorite / granodiorite. Intersections of granodiorite / diorite in drill holes north of the main Japonesita deposit and observed outcrop support this interpretation of the depth section magnetic images.

A number of minor occurrences of low level copper mineralisation, in the form of malachite and azurite, occur alongside or within magnetite-hematite veins and within cross-cutting calcite veinlets that are predominantly orientated NW. These magnetite-hematite-Cu veins could be related to the second slightly younger phase of mineralisation (Fox, 2001) and remobilisation, which has propagated along NW faults and reactivated into the N-NE pre existing fault system forming a mineralised stockwork.

Recent drilling and field observations indicate that a series of northwest striking feldspathic diorite dykes intrude the area, and are concentrated in the zone between Japonesita deposit and Primavera deposit. Field measurements indicate that these dykes trend 300-310° and dip to the northeast at approximately 60-70°. 12 of the 2010-2011 drillholes recorded dyke intersections, all less than 8m intersected length, at depths ranging up to 140m. The dykes are not mineralised but may remobilise mineralisation at their margins.

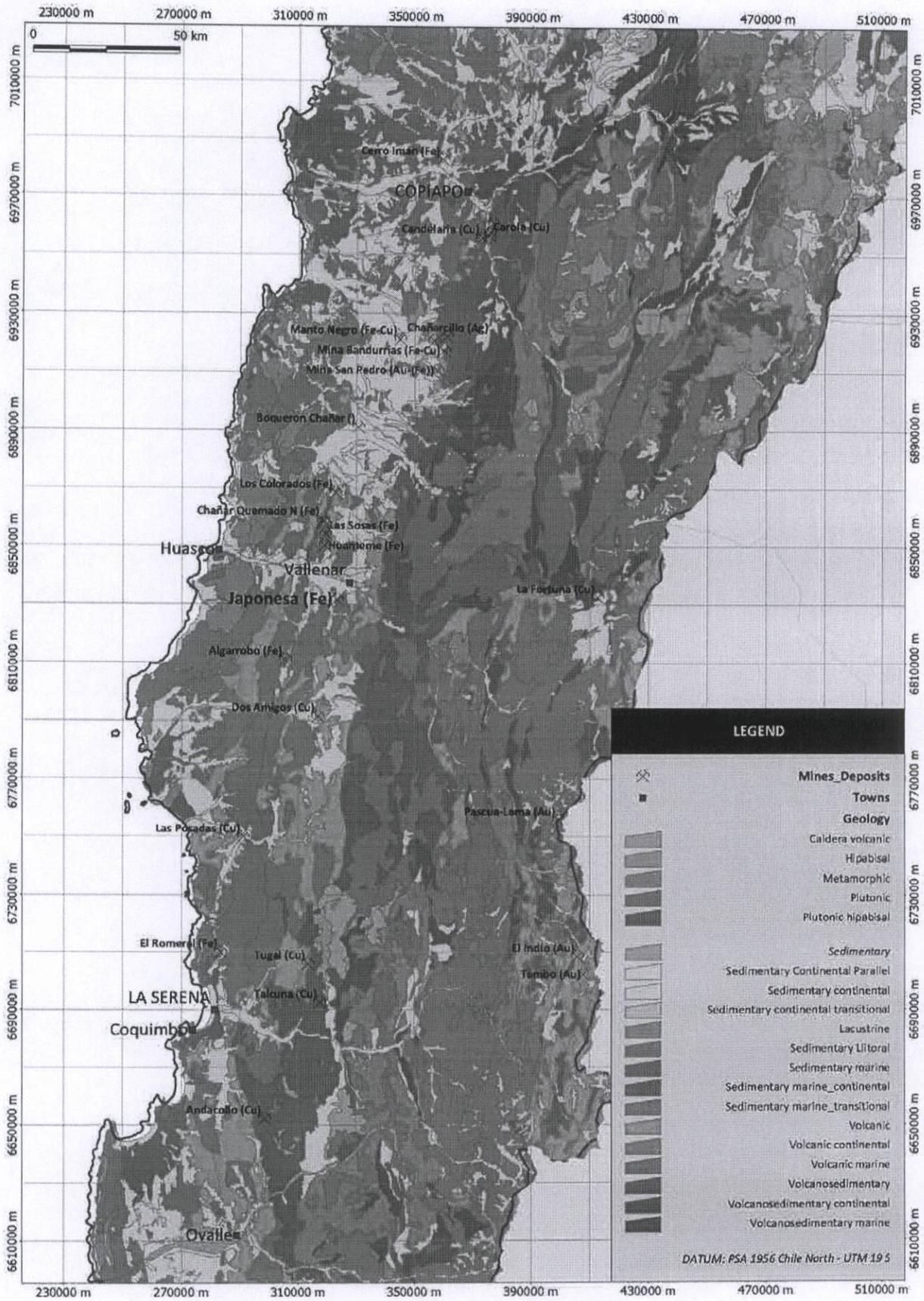


Figure 3 Regional geology and mines.

PRIMAVERA

The Primavera ore body has been considered to be a south eastern continuation of the eastern section of the Japonesita vein mineralisation. The ore body consists of a group of sub-vertical magnetite+/-hematite veins emplaced into metamorphic rocks with intrusive to volcanic prototype (Thomas, 2010). At the southwest end of this prospect there are two series of magnetite veins oriented NE with approximately 180m separating the two, but approximately 400m to the northeast these appear to converge (SRK, 2006). Interpretation of depth section magnetic images (GEODATOS, 2010) indicates that this bifurcation of veins to the south is due largely to the crowning of a diorite / granodiorite intrusive into this section, truncating the western vein system. The depth section images also indicate that there is considerable depth (over 200m) to the Primavera deposit depth. The recent diamond drilling has confirmed that there are several high grade veins separated by up to 40m within this deposit. The veins pinch out and decrease in intensity to the SE and NW. The central portion of the deposit has been intersected in excess of 250m vertical, where there is increased silica-chlorite-potassic alteration at these depths possibly indicating a thermal contact metamorphic overprint from a deeper intrusion. Primavera deposit orientation is different from that of Japonesita deposit vein orientations and has a rotational offset of 25° E. This may indicate that the Primavera deposit has been block faulted and rotated post mineralisation.

Depth section magnetic images and interpretation for both Japonesita and Primavera deposits are consistent with drill hole and outcrop data, within the limits of error. Our geological model of the deposit origin is contact metamorphic, within a fault complex proximal to intrusive granodiorite / diorite. This model is consistent with our surface observations and the magnetic and drilling data.

MIRADOR

Mirador deposit is characterised by a number of magnetite veins of varying orientation within a small 400m by 700m anomalous zone within metamorphosed andesite. The deposit was exploited by means of 'terrace' mining which reached a depth of 50 meters. Both hard rock and eroded colluvium were exploited. The ore was treated in a magnetic concentration plant on site between the years 1963 to 1971 and produced 12,000 to 15,000 tons of concentrate per month at a grade of up to 64% Fe (SRK, 2006). One large dump remains from the previous operations. Outcrop of the Mirador deposit is very limited, due to soil cover and debris from the previous mining.

JAPONESA

The Japonesa ore body is an exotic iron ore body generated by the *in-situ* erosion and mass wasting deposition of the top part of Sierra Chinchilla, including the Japonesita and Primavera veins. This erosion deposited large quantities of magnetite-rich clasts, with a matrix of material including fine magnetite and barren rock dust. Variable consolidation rates can be found in this colluvial deposit, from weak to moderate consolidation, which has facilitated a mechanical extraction process. Most of the iron rich colluvial flows were deposited in the western part of Sierra Chinchilla. However, it is possible to find similar, but smaller, exotic deposits in the eastern part of the same area (Thomas, 2010), as at Mirador. Part of the Japonesa deposit is in the form of a cemented calcrete deposit, known locally as "Tertel". Only the unconsolidated colluvium was extracted by the previous mining operations.

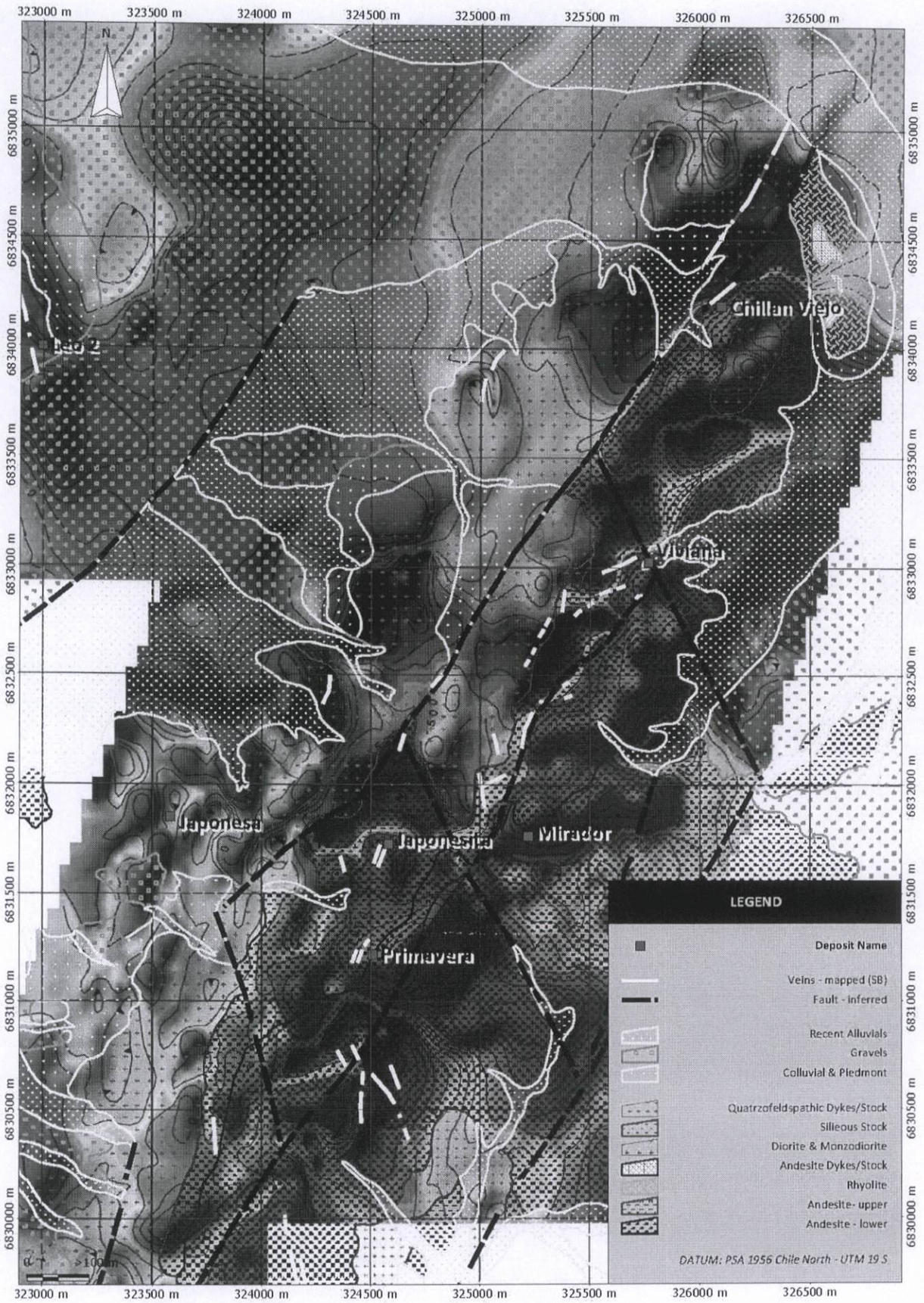


Figure 4 Deposits and interpreted geology (after Santa Barbara (SB), 2008) on RTP ground magnetic data image

CHILLÁN VIEJO

This ore body is located in the northern area of the district. The major historical workings are on two magnetite veins with NE-SW elongation for over 100m and are from 2 to 6 meters in width. This ore body was exploited by artisanal open pit mining, but visible workings are less than the reported 40 metres in depth. The ore is primarily magnetite with grades of more than 66% Fe total (Thomas, 2010). At the south western entrance to the historical workings, there is a 1.5m wide fault within the host meta-andesite that dips steeply NE with an inferred NW trend. This infers that the vein system is cut and possibly offset by these cross cutting faults, either in a fracture offset pattern or that the veins may be emplaced in an en echelon style formation.

OTHER PROSPECTS

Viviana

The mineralisation at Viviana workings is similar to that at Chillán Viejo, consisting of sub-vertical massive veins of magnetite with an ENE-WSW orientation and a reported width of 15 m; the width of the observed artisanal open cut was 4-5m. Mining of the magnetite ore is reported to have progressed to 45 m depth (SRK, 2006). The northern end of the historical workings and deposit is terminated by a steeply northerly dipping, NW trending fault.

Leo2

Leo Dos (2) deposit is characterised by a high grade magnetite vein sited within a 2-3m wide fault and hosted in a Cretaceous granodiorite intrusion. Surrounding the magnetite vein is a zone of specular hematite which has been referred to locally as an "el papeo" or literally translated 'potato' due to its shape. The NNW orientation of the magnetite vein within a zone dominated by hematite, plus a sharp contact with the host granodiorite, suggest that this mineralisation is potentially related to or has been overprinted by a younger hydrothermal event.

2010 FIELD VISIT - HARD ROCK GEOLOGY OBSERVATIONS

The Vallenar prospects were visited by Sue Border and Llyle Sawyer from Geos Mining, accompanied by Phil Thomas, director of geological for SCM Vallenar, from 11 November to 15 November, 2010.

With the exception of Japonesa, which is a colluvial type deposit, the deposits visited are 'hard rock' vein type magnetite deposits. Observations of the Japonesa deposit will be described below under "Resource Modelling – Japonesa".

All hard rock deposits visited have historical workings on them, being exploited for iron ore between 1958 and 1977. These deposits are within a general north-northwest trend that corresponds to the outcropping host rocks and also to the trends within detailed magnetic imaging.

Exposed magnetite vein deposits inspected during the field visit were Japonesita, Primavera, Viviana and Chillán Viejo (Mirador was visited but there was little outcrop). Curvilinear contact surfaces and irregular lenticular, rather than tabular vein / seam morphology, were observed at Japonesita, Viviana and Chillán Viejo. The major veins are of the order of between 0.5m to ~2.5m in width. The linear extent of the major veins was determined by the length of the historical workings, which are of the order of between several metres to over 156m long (Chillán Viejo). The dip is sub-vertical (80°-70°) and dip orientation varies between SE at Primavera (Photo 1) and NW in the main vein at Chillán Viejo (Photo 2). The southern

Chillán Viejo vein seen in Photo 2 is an example of the sinuous or curvilinear nature of these veins, varying from around 85° west to 80° east.

At Japonesita and, to a lesser extent, at Primavera, the major magnetite veins are mantled by a stockwork of thin magnetite +/- epidote +/- hematite veins and veinlets (Photo 3) of from less than 1mm to ~5cm in thickness. The stockwork zones vary in width, locally forming zones of up to 10-20m of mineralisation.

Shallow angle stockwork veins/veinlets are common in this style of mineralisation, though the dominant veining appears to be sub-vertical, with lenticular and curvilinear vein habits common (Photo 3).

The primary host of these vein type deposits is meta-andesite, proximal to contact with intrusive Cretaceous diorite - granodiorite. The andesite country rock was observed to be chlorite-actinolite +/- epidote altered as seen in Photo 4. Note the porphyritic texture of the andesite with plagioclase laths clearly evident, which are now altered, possibly to argillite or albite.

Both epidote and actinolite were observed to be closely associated with vein contacts or inter-crystallised with magnetite, as seen in Photo 5, suggesting a strong syn-genetic relationship to alteration and magnetite intrusion.

Minor traces of specular hematite were observed at Primavera and Japonesita. At exploration area Leo II, hematite was noted to constitute the majority of the iron mineralisation with magnetite as a minority component or remnant mineral. At Leo II, there is a clear contact of a hematite bearing andesite with the intruding granodiorite.

Copper was also noted as a minor component of the magnetite mineralisation at Japonesita and Primavera. It is evident by the occurrence of azurite and malachite on fractures in the magnetite and along cross-cutting calcite veining. Azurite and malachite were noted to be more prevalent within the Japonesita deposit than at other locations.

All of the observed features above are consistent with the contact metamorphic iron oxide – apatite style of magnetite deposits within the Chilean Iron Belt.

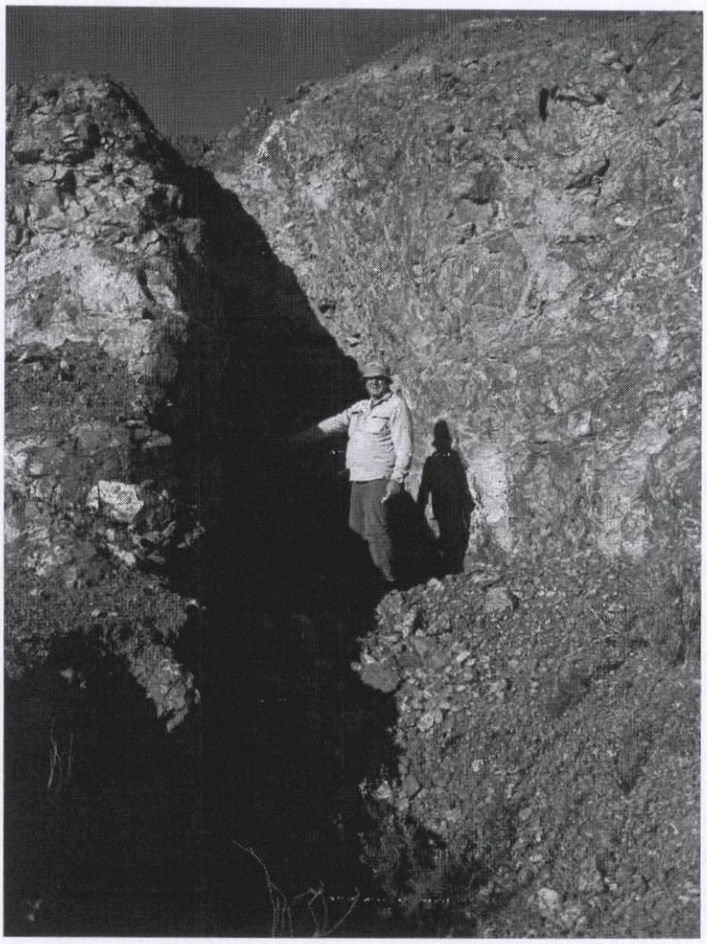


Photo 1 Historic workings at Primavera showing steep SE dip, workings oriented NE



Photo 2 Chillán Viejo historic workings looking NE, dip of vein steeply N-NW

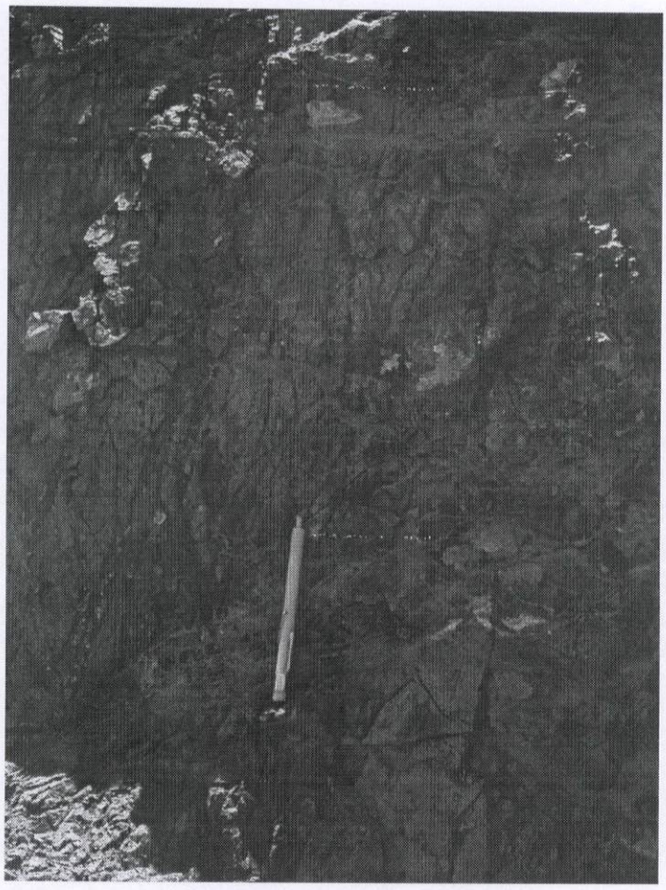


Photo 3 North east tending magnetite vein/veinlet stockwork type mineralisation, Japonesita

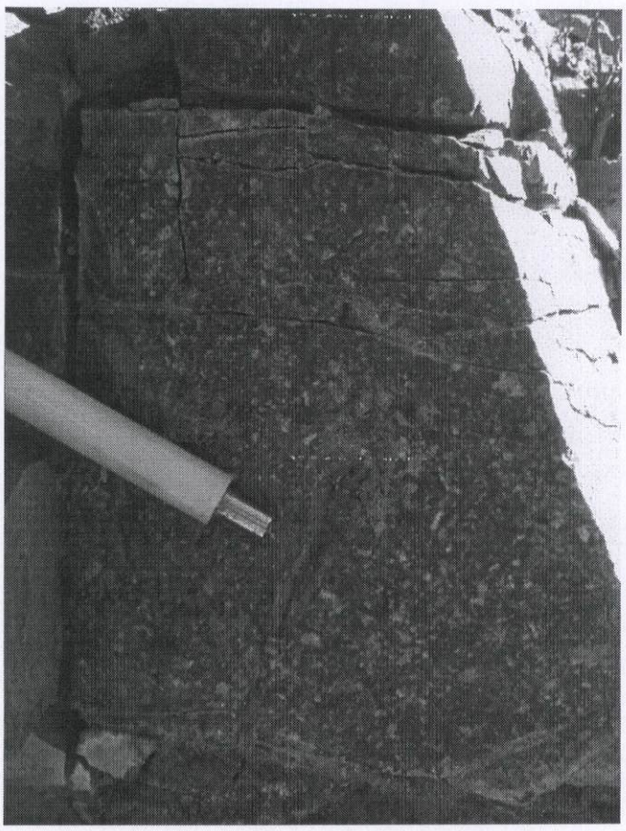


Photo 4 Chlorite-actinolite+/-epidote altered andesite, note magnetite bleb on fine fracture.



Photo 5 Magnetite + actinolite + epidote specimens (Drill Hole P07-006)

STRUCTURE

Steep north-easterly dipping to near vertical cross cutting NW-SE trending faults / shears were observed at Chillán Viejo (Photo 6), Viviana and Japonesita. Literature on the structure of the region suggests that structures oriented NW show sinistral movement; this was not directly observed during the field visit and is not evident in Photo 6. Such NW-SE structures are reportedly a later extensional movement of the Atacama Fault System. The Atacama Fault System is a series of NE-SW trending shears and faults that parallel the volcanic arc in this region.

The majority of major magnetite veins are indicated to be within a similar orientation (NNE- NE), and this was the most common vein orientation observed at Japonesita, Primevera, and Chillán Viejo, parallel to sub-parallel to the Atacama Fault System (AFS).



Photo 6 NW trending cross cutting fault zone at Chillán Viejo



Photo 7 Highly fractured andesite, includes vein stockwork mineralisation, view N

Iron oxide copper gold (IOCG) type deposits within the region have been reported to occur within northerly trending faults parallel to the AFS (Fox, 2001) and have an broad alteration halo which is oriented between NE and E. Multiple faulting of the andesite during AFS activation and / or reactivation during vein emplacement and / or diorite pluton emplacement has caused intense block fracturing of the host rock to the magnetite veins and vein stockwork (Photo 7). This is strongly evident at Japonesita and Primavera.

At Japonesita the footwall of the major veins was noted to be strongly faulted and fractured at a number of the historical workings and from observations of intersects along road cuttings (Photo 8).

Highly fractured zones (Photo 7) and crush zones (Photo 8) within the stockwork vein system areas may affect the potential recovery of the magnetite material.

Literature indicates that the lenticular intrusive Cretaceous granodiorite - diorite plutons complexes were emplaced syn-tectonically along the Atacama Fault System under a ductile regime. No direct contacts, from which temporal definition for the pluton emplacement could be ascertained, were observed. Granodiorite observed in the area north of Japonesita showed NW and N-NE conjugate fracture sets, with N-NE fractures dominating; this may reflect the pressure regime at time of cooling. Minor magnetite veinlets and some epidote veining were noted in the NW and NE fractures, though the dominant mineral observed on the fracture faces was hematite (Photo 9).



Photo 8 Crush fault zone on footwall to magnetite vein

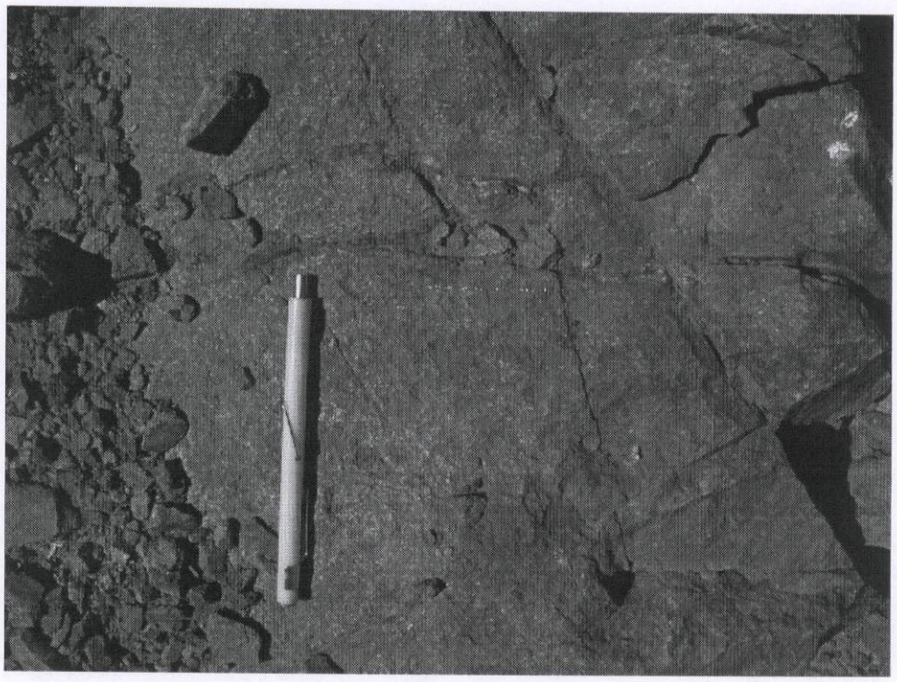


Photo 9 Minor magnetite veinlet in NW fracture within Granodiorite

GROUNDWATER

The project plans are for a dry process plant, so the presence of moisture in any feed to the plant can reduce plant throughput and, where moisture exceeds 4%, can make it impossible to continue dry processing. Therefore, the potential to intersect groundwater has been examined.

No surface water was observed throughout the area of Vallenar's hard rock deposits and no signs of seepage, except at the much lower altitude Japonesa (which is described under Japonesa resource below). Surface elevations at Japonesa average 180m lower than those at Japonesita. The seepage at Japonesa is in the form of a perched water table. The annual average rainfall for Vallenar is 95mm per year with rain falling in only five of every 12 months (April to August).

Drilling records have limited information about water and most holes were thought to be dry. We have found one record of water being intersected in one Japonesita hole at a depth of 127m, but this appears to be an isolated occurrence.

We therefore anticipate that it is unlikely that any water will be intersected above about 120m below surface at Japonesita, Mirador and Primavera, (and this also applies to the other hard rock deposits) but cannot completely exclude the possibility of a perched water table.

Geologically, any water in the andesite and intrusive rocks hosting the deposits will be confined to fault zones and possibly in joints. The amounts of water are expected to be minor (mainly nuisance value). The rocks contain little clay outside of the generally very thin weathered zone and some localised zones of clay alteration. Hence, any intersection of water could be handled by drainage by pumping from bores. In the absence of clay, any damp uncrushed ore could be left to drain and dry out. In these circumstances, it will be important to exclude any clay bearing material (eg from a fault zone) from the ore.

We recommend that once any pit reaches 100m depth, test bores (possibly extensions of routine grade control holes) are drilled, so that if any water is intersected it can be pre-drained. This precaution will be important for the deeper parts of the Primavera pit.

Providing these precautions are followed, we do not anticipate moisture in the plant feed preventing project viability, so only at Japonesa (discussed below) have we excluded any mineralisation from resources or reserves on the basis of groundwater.

EXPLORATION POTENTIAL

The main deposits that have been drill tested are Japonesita, Primavera, Mirador, Chillán Viejo and Japonesa. Where resources have been identified, these are discussed in the Resource section below. Geophysical targets for magnetite vein style mineralisation have been identified in areas adjacent to these resources, plus a number of other areas, most with localised pitting/diggings and some with limited drilling (Figure 5). These exploration targets are briefly described below and are listed in order of decreasing priority. The potential quantity and grade in these deposits is conceptual in nature and there has been insufficient exploration to define a mineral resource. It is uncertain if further exploration will result in the determination of a mineral resource in these areas.

JAPONESITA DEPOSIT

Although the Japonesita deposit has been extensively explored, a magnetic high lying on the SW edge of the main targeted body (Figure 5) has only been tested by one vertical RC hole, L-235, and one angled hole, L-312 (60° to 315°). Both holes intersected low to moderate grade stockwork magnetite veining at relatively shallow depth, though neither hole has adequately tested the magnetic anomaly due to their relative positions. A NW trending vein system has been mapped by SBM on the northern edge of this magnetic anomaly.

Given the proximity to Japonesita deposit and the lack of information regarding this anomaly it has been selected as a high priority exploration target. The potential here is for an extension of/to the Japonesita mineralisation of a small medium to low grade mineralised pod. This area should be investigated prior to or concurrent with the development of the Japonesita pit to avoid sterilisation of a potential resource.

Similarly the eastern extent of the mineralisation is limited to a few vertical and shallow holes drilled on the eastern side of the Japonesita deposit hill. These drill holes may not have been designed adequately to properly test the targeted mineralisation due a misunderstanding of the deposit. Despite there being a series of relatively deep old excavation workings on the southern eastern lower slope of the Japonesita deposit hill, there are no drill holes that test this area or any extension to the Northeast. Hole VP418 drilled to test Primavera's northern extent may have intersected some of this mineralisation (though not designed to do so) and modelling indicates that this hole ended before intersecting primary vein these old workings were on. The lack of information and reliable data for the whole area between Japonesita, Primavera and Mirador requires addressing urgently, as the planned Japonesita mine development potentially affects this area. Until further drilling is complete we would recommend that this area can only be used for low grade stockpiles, not for waste dumps, to avoid sterilisation of potential ore.

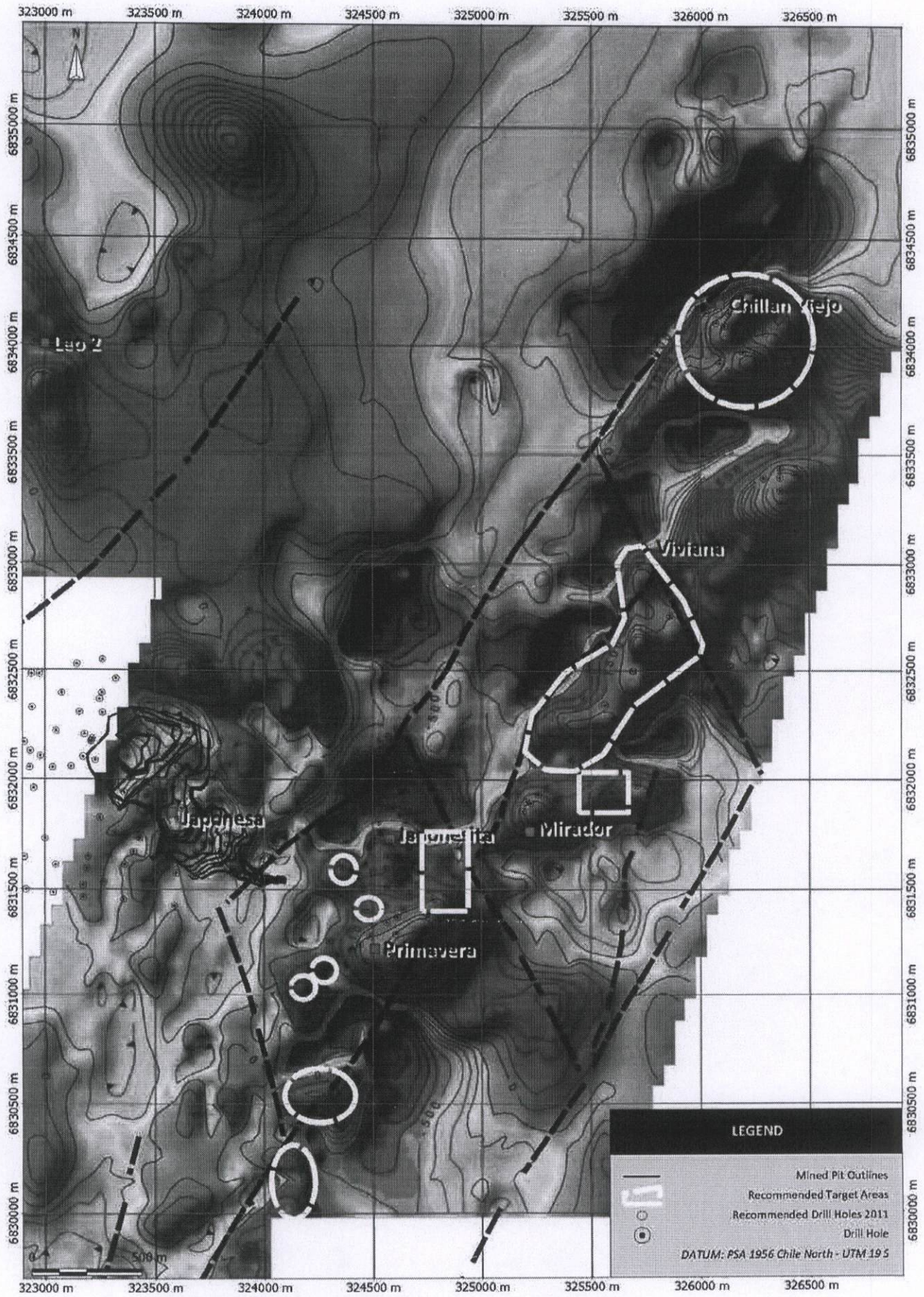


Figure 5 Exploration target areas on RTP magnetic image

SOUTH PRIMAVERA

There are two anomalies from the geophysics data imaging evident in this area: one leads off the SW end of the Primavera deposit and is a possible extension to the NE-SW oriented veins of this deposit.

Pseudo-depth section images of the ground magnetic survey data show that this SW extension is limited in length and continuity. The anomaly is intense, but has pinched out by approximately 324100mE, 6830800mN (PSA 56, UTM 19S). A single vertical drill hole, L-236, was drilled within the highest peak of this SW anomaly, at 324150mE 6831054mN, and failed to intersect any significant magnetite mineralisation (the best intersection, from 34m to 36m, averaged 10.44% FeMag). Despite some intersections of higher values for total iron of up to 29.1% FeT in the upper portions of the drill hole, the corresponding analyses for FeMag only gave 1.13% FeMag. This may indicate that there is significant hematite rather than magnetite in this anomaly. The hematite could be either associated with the mineralisation event or due to deep oxidation at this locality. Alternatively, as the drill hole is vertical and the veins are potentially steeply dipping to the southeast, the drillhole may not have been optimally positioned to target mineralisation.

This SW extension is considered a high priority exploration target to be tested by angled drilling.

The second more intense anomaly interpreted from magnetic data pseudo-depth section images (GEODATOS, 2010) is south of the first and extends in a similar SW orientation from approximately 324500mE, 6830600mN (near central point of Figure 6) for over 700m to the SW. The anomaly continues SW through the magnetic high displayed at 324100mE, 6830000mN in Figure 6.

Several historic workings of veins have been mapped by MSB (SRK 2006) in the north part of the SW anomaly, which lay adjacent to the imaged central magnetic high, Figure 6. The orientation of the overall lines of workings do not correspond with the noted SW trend from the GEODATOS pseudo-depth images, this may reflect local deviations.

As seen in Figure 5, a majority of the mapped workings in this area have an overall NW trend and occur within the intense magnetic low, which is interpreted as a granodiorite intrusive. This possibly indicates that these veins are not of the same mineralising event as the massive magnetite veins, but could be related to the younger mineralisation event associated with magnetite + hematite + copper +/- gold mineralisation.

A major NE – SW trending fault is also interpreted to pass adjacent to this anomalous area and possibly corresponds to a faulted contact between intrusive granodiorite / diorite and meta-sedimentary-volcanic suite. This is a good fit to the model for the magnetite vein mineralisation. The RTP imaged ground magnetic data (Figure 6) indicate that this larger anomaly may be offset by NNW structures.

No drilling or sampling information was available from this area.

Although both of these targets are considered to have a good potential to extend the known mineralisation, the southern target is considered to have a better potential to host significant mineralisation.

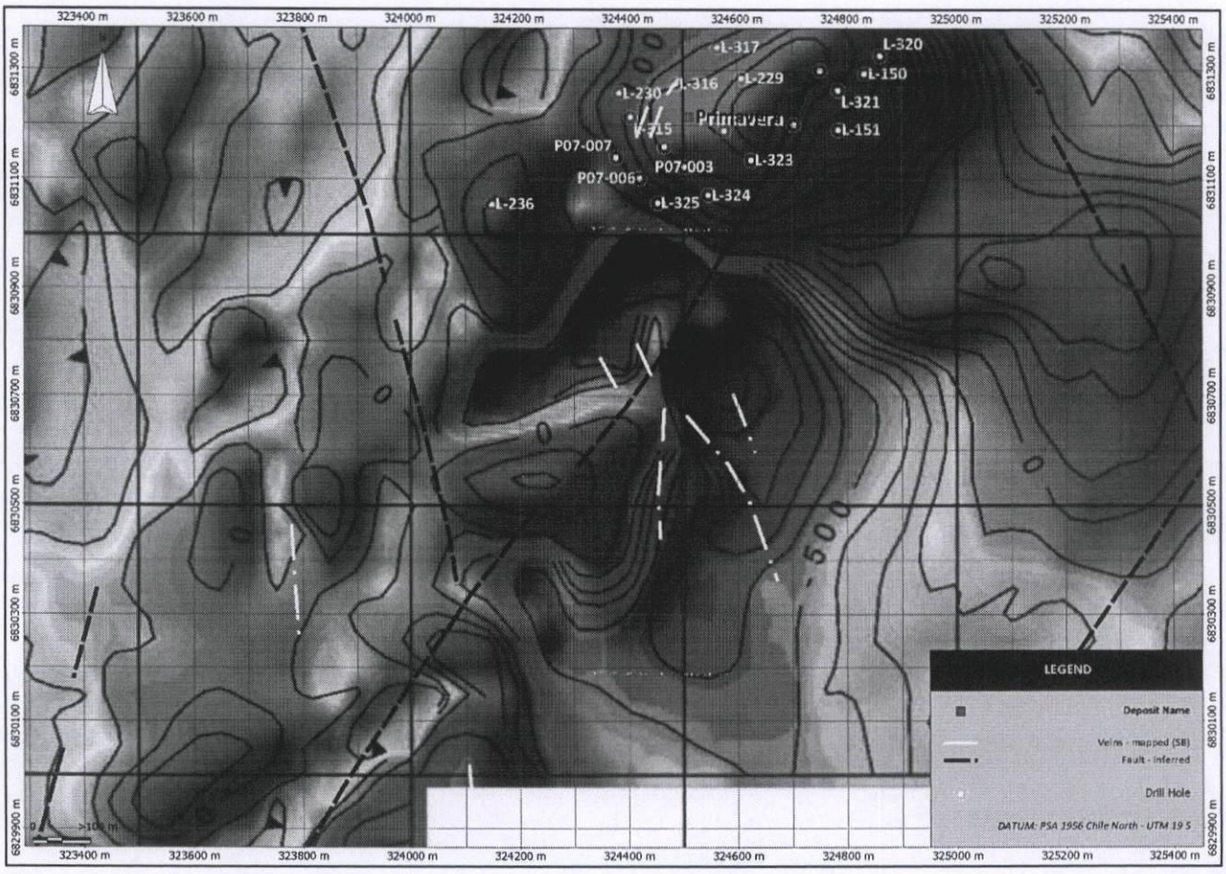


Figure 6 South Primavera exploration target area, RTP image, interpreted faults, mapped veins

VIVIANA SOUTH – MIRADOR NORTH

On the RTP magnetic image (Figure 5) there is a notable gap between the Mirador deposit magnetic anomaly and that of the magnetic anomaly south of the historical Viviana mine. This gap is not evident in magnetic pseudo-depth section images supplied (GEODATOS, 2010).

The magnetic anomaly south from Viviana mine is a very intense anomaly, on par with that associated with the Primavera deposit. There are associated historical workings along the western edge of this anomaly, where it can be interpreted from the pseudo-depth sections (GEODATOS, 2010) that there is a contact with an interpreted intruding diorite / granodiorite. From the pseudo-depth sections, it can be interpreted that the magnetic high on the edge of the granodiorite contact is dipping steeply to the southeast.

Twelve exploration drill holes were drilled into this anomaly area (Figure 7). Eight of these have been drilled within the magnetic anomaly and these intersected varying degrees of magnetite vein mineralisation.

Drillhole L-95 failed to intersect any significant mineralisation, as would be expected from its location within an intense low, interpreted as a granodiorite intrusion, on the magnetic RTP image (Figure 7). Drillholes L-155 to L-157 are shallow holes testing a colluvium cover sequence, with no significant results. Drillholes L-94 and L-91 both intersected weak, thin mineralisation, with the best intersect of the two being in L-91, average assay result of 10m @ 19.1% for magnetic iron (FeMag) from 24m, including 2m @ 24.66% FeMag from 30m depth. Both of these drillholes are vertical and, from their location on the RTP image, are marginal to the main anomaly.

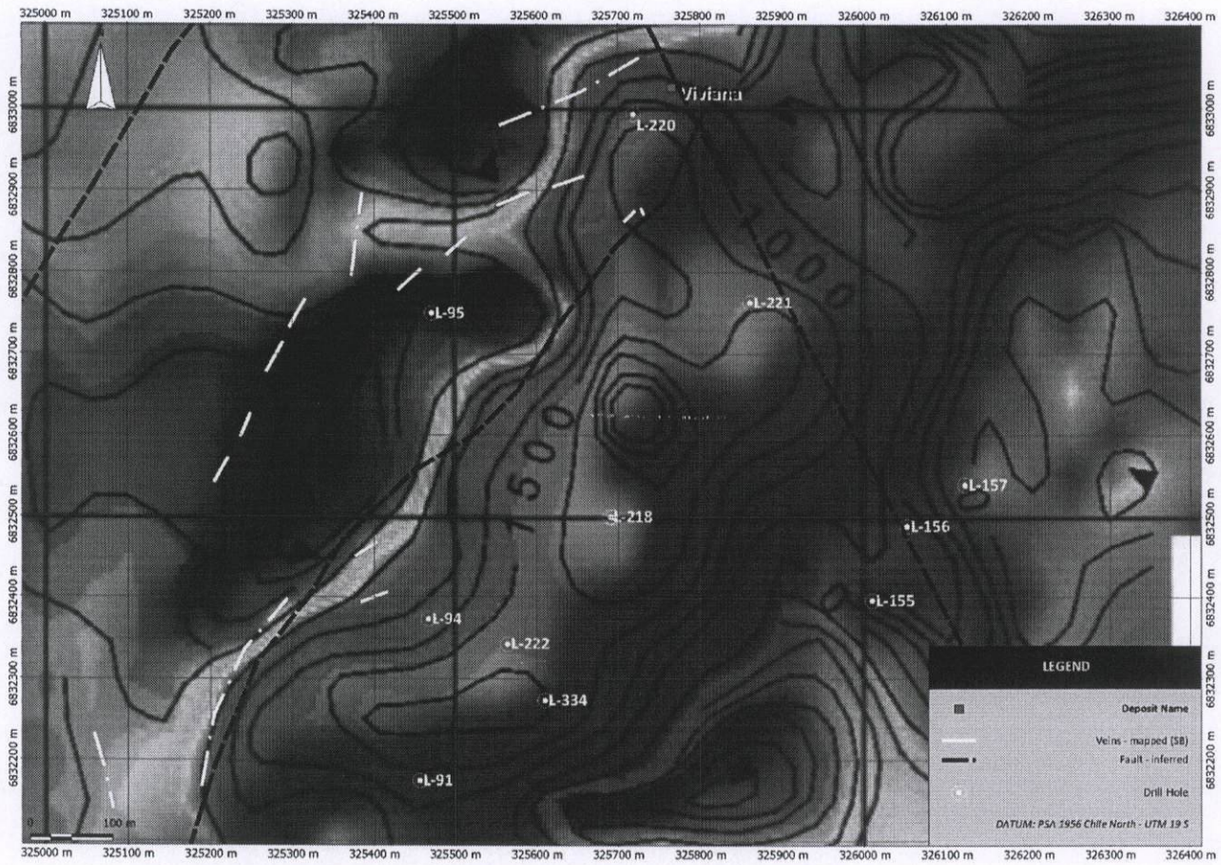


Figure 7 Viviana South exploration target, RTP magnetic image and drillholes.

The best intersection of the drillholes drilled within the Viviana South exploration target magnetic anomaly is in drillhole L-219, which is located 3m SE of L-218 (central Figure 7). Both are vertical holes. A wide zone of 72m, with an average assay result of 28.77% FeMag from 66m, was encountered. This includes an interval of 10m @ 44.72% FeMag, from 72m. There were other notable mineralised intersections in L-219, L-218, L-220 and, to a lesser extent, L-222 and L-334.

All holes show low FeMag % assay results from equivalent high total Fe % assay results for intersections from surface to approximately 30m. This near-surface zone may be either reflecting oxidation (weathering) of the magnetite mineralisation or may reflect a higher primary hematite content in this near-surface zone. Literature refers to magnetite-martite-pseudohematite alteration from secondary solutions at 200-450 degrees which could be the cause in this case.

L-222, a vertical hole, only intersected significant mineralisation from 46m for 6m @ 19.83% FeMag. The remainder of the material, where assayed, shows a remarkably depressed magnetite (FeMag) content. Again, this may reflect deep oxidation, martite-hematite alteration or a change in primary mineralisation style. This hole is positioned in or adjacent to an interpreted NW fault, which could favour martite-hematite alteration as the cause.

L-334 is the only angled hole drilled into this anomaly; it was drilled at -60° towards azimuth 315°. There were several good mineralised intersections in this hole, though at considerable depth, from 56m to 200m. Again, the top ~30m is magnetite (FeMag) depleted, though high total iron (FeT) values were returned. The other notable feature of L-334 is that the mineralised intersections are much narrower - average results of 14m @ 16.39% FeMag from 102m, 8m @ 18.2% FeMag from 56m and 2m @ 29.21% FeMag from 198m -

than those in previous holes and L-219 listed above. This reflects closer to 'true thickness' intersections of mineralisation in this hole.

The mapped lines of workings along the western contact of the meta-sedimentary - volcanic sequence and the granodiorite have been recorded within the MSB dataset as having copper in the form of malachite and azurite associated with them. This has not been verified, though similar low level copper mineralisation has been identified at Japonesita deposit by the authors. Potentially, this copper mineralisation may indicate a component of a later magnetite-hematite-copper+/-gold mineralising event and hence a potential copper-gold exploration target in this region.

The ground magnetic RTP image anomaly of >1000 nT response covers an area of ~750m NE-SW x ~250m NW-SE. Given the number of intersections of low to moderate level mineralisation found by the existing RC drill holes to ~200m depth, the Viviana South exploration area is considered a highly prospective target with strong potential to up-grade to an economic resource after sufficient drilling.

SOUTHEAST CHILLÁN VIEJO

This exploration target is considered to be a parallel structure / vein system to the historic Chillán Viejo deposit (Figure 5) and to have good potential to add further resources to the Chillán Viejo deposit with further drilling.

Significant intersections have already been drilled in at least six holes along the NW edge of this target zone and these have been included within the Chillán Viejo resource model. There is a high probability that further mineralisation will be found within this area.

Mapped geology indicates the ground magnetic anomaly has a small intruding body of diorite central to the target area. The contact regions to such intruding diorites are considered to be the focal zones for the magnetite vein mineralisation and, hence, this area is a high priority exploration target.

Pseudo-depth sections of the magnetic data (GEODATOS, 2010) indicate that the historical Chillán Viejo mine is a surface expression of limited extent, not much more than the current mine area, of a much larger magnetic anomaly of ~500m x ~300m dimensions. The pseudo-depth sections further indicate that the main magnetic anomaly is steeply dipping to the southeast and plunges to the south, with considerable depth extent, ~200m, in the east and south of the anomaly.

The deeper section of this anomaly appears to join into a previously drilled intense 'bullseye' magnetic high target to the south. None of the drillholes on this bullseye intersected significant mineralisation. The pseudo-depth sections indicate that the intense anomaly targeted by this drilling has a projected depth in excess of 250m, well beyond the deepest of the holes drilled. This bullseye target is therefore not a priority for further exploration.

EAST MIRADOR

This exploration target is due east of the Mirador deposit (Figure 5) and covers an area of similar size. Despite the high intensity of the magnetic anomaly the target is considered a low priority. Ground magnetic pseudo-depth section images (GEODATOS, 2010) indicate possible secondary, limited, magnetite veining associated with the main Mirador vein system. This geophysical anomaly may also be enhanced by an artefact geophysical anomaly, due to edge effects of intense magnetite veins at depth in contact with low magnetic susceptibility diorite, and orientation of magnetite veins creating a secondary peak during data processing.

Three vertical drillholes tested this anomaly with the earlier holes failing to intersect significant mineralisation. However, it should be noted that drillhole L-108 was abandoned at 10m and L-108B only drilled to 50m. L-225 was drilled 200m NW of the L-108 holes and intersected some minor mineralisation with the best intersection being from 88m to 100m: 12m @ 16.34% FeMag. There appears to be an apparent depletion in magnetic iron (FeMag) in the top ~36m with high total iron assays results not having a corresponding high magnetite iron content; possible causes for this are discussed under Viviana.

The deep intersection of mineralisation in drillhole L-225 suggests that the magnetic anomaly is not solely a processing artefact and is in part due to magnetite veins at depth within un-mineralised host or with an oxidised/depleted upper portion.

The area of this target anomaly is not very large and the depth to mineralisation lowers the priority as an extension to the Mirador deposit, but it is considered to have some potential for delineation of further mineralisation.

SOUTHEAST OF PRIMAVERA

This anomaly is a low order priority exploration target, with a subdued magnetic high. However, within the pseudo depth sections (GEODATOS, 2010) the zone is indicated to be associated with the interpreted steep contact of a granodiorite.

No drilling or geochemistry data is available from this area.

A program of mapping and surface sampling with use of a magnetic susceptibility meter to locate any veining in this area is recommended.

In addition, modelling of the Primavera resource indicates possible fault offsets to the main magnetite veins. One offset portion of a vein at the eastern edge of Primavera may not have been tested by drilling to date, and should be included as part of this target.

EXPLORATION STRATEGY

MAPPING WITH MAGNETIC SUSCEPTIBILITY SURVEYS

- Conduct surface mapping traverses with magnetic susceptibility meter to define and trace surface expression of major veins and zones of stockwork veinlets.
- Combine this with geochemical sampling of any sufficiently high magnetic susceptibility materials encountered and other interesting mineralisation noted (eg copper). These would be assayed for a standard suite of element including FeT, FeMag, Cu, and Au.

DETAILED PROSPECT MAGNETIC SURVEYS

To delineate the mineralised veins and their orientation more distinctly, close spaced prospect scale magnetic survey traverses are recommended as follows:

- perpendicular to vein/mineralisation trend
- 200m to 300m line length, depending on limits of prospect
- 10m line spacing
- Number of lines dependent upon length and extension of mineralisation
- 5m to 10 m reading station spacing along lines.

This should be supplemented with traverses with a magnetic susceptibility meter and or an appropriately calibrated hand held portable XRF instrument, to obtain direct evidence of mineralised zonation to be correlated with the broader geophysical survey traverses.

DRILLING

Further drill holes are recommended to test the exploration targets and extend the known resources. Drill layout would be based on current knowledge, and the results of the work recommended above, which may modify the recommendations made here. As this drilling would be designed to delineate and upgrade resources, as well as explore new targets, a combination of RC and core drilling techniques is recommended. Table 2 gives recommended drill hole locations ordered by priority. Figure 8 shows the recommended drilling in the Japonesita – Primavera zone.

Additional infill drilling will also be required, firstly to upgrade the current inferred and indicated resources, and also for mine planning (which will include grade control drilling, holes for geotechnical purposes and sterilisation drilling).

Table 2 Recommended Exploration and resource determination drill holes

Hole	East PSA69 Z19S	North PSA69 Z19S	RL	Dip	Azimuth	Length	Type	Purpose	Priority	Area
VP 438	324806	6831412		**-60**	**315**	**200**	**DD**	**Extension/ Exclusion**	**1**	**Japonesita East**
VP 439	324810	6831510		**-60**	**315**	**200**	**RC**	**Extension/ Exclusion**	**1**	**Japonesita East**
VP 440	324810	6831610		**-60**	**315**	**200**	**RC**	**Extension/ Exclusion**	**1**	**Japonesita East**
VP 441	324810	6831710		**-60**	**315**	**200**	**RC**	**Extension/ Exclusion**	**1**	**Japonesita East**
VP 442	324910	6831710		**-60**	**315**	**200**	**RC**	**Extension/ Exclusion**	**1**	**Japonesita East**
VP 443	324910	6831610		**-60**	**315**	**200**	**RC**	**Extension/ Exclusion**	**1**	**Japonesita East**
VP 444	324910	6831510		**-60**	**315**	**200**	**RC**	**Extension/ Exclusion**	**1**	**Japonesita East**
VP 435	**324380**	**6831550**		**-60**	**315**	**180**	**DD**	**Extension**	**1**	**Japonesita west**
VP 424	**324239**	**6831154**		**-60**	**315**	**180**	**RC**	**Exclusion**	**1**	**Primavera**
VP 436	**324525**	**6831380**		**-60**	**130**	**200**	**DD**	**Extension**	**1**	**Primavera west**
VP 437	324210	6831000		**-60**	**315**	**200**	**DD**	**Extension**	**1**	**Primavera west**
VP 408	326080	6834155		-60	315	200	DD	Resource	2	Chillan Viejo
VP 409	326180	6834240		-60	315	200	DD	Resource	2	Chillan Viejo
VP 410	326216	6834315		-60	315	200	RC	Resource	2	Chillan Viejo
VP 411	325995	6834080		-60	315	200	RC	Resource	2	Chillan Viejo
VP 417	325970	6833852		-60	315	220	DD	Extension	2	Chillan Viejo
VP 423	326115	6834030		-60	315	200	RC	Extension	2	Chillan Viejo
VP 445	326028	6833965		-60	315	200	DD	Exploration	2	Primavera southwest
VP 446	326210	6834070		-60	315	200	RC	Exploration	2	Primavera southwest

Hole	East PSA69 Z19S	North PSA69 Z19S	RL	Dip	Azimuth	Length	Type	Purpose	Priority	Area
VP 431	325682	6832443		-60	300	150	RC	Exploration	2	Viviana Sth
VP 432	325797	6832470		-60	300	150	RC	Exploration	2	Viviana Sth
VP 433	325568	6832512		-60	120	180	DD	Exploration	2	Viviana Sth
VP 434	325750	6832700		-60	300	200	DD	Exploration	2	Viviana Sth
VP 454	325330	6832180		-60	315	200	RC	Exploration	2	Viviana Sth
VP 455	325260	6832270		-60	315	200	RC	Exploration	2	Viviana Sth
VP 456	325560	6832340		-60	315	200	RC	Exploration	2	Viviana Sth
VP 457	325480	6832410		-60	315	200	RC	Exploration	2	Viviana Sth
VP 458	325380	6832470		-60	315	200	RC	Exploration	2	Viviana Sth
VP 459	325850	6832630		-60	315	200	RC	Exploration	2	Viviana Sth
VP 460	325680	6832770		-60	315	200	RC	Exploration	2	Viviana Sth
VP 447	326286	6834125		-60	315	200	DD	Extension	3	Chillan Viejo
VP 448	326353	6834196		-60	315	200	RC	Extension	3	Chillan Viejo
VP 449	326372	6834090		-60	315	200	RC	Extension	3	Chillan Viejo
VP 450	326322	6834037		-60	315	200	DD	Extension	3	Chillan Viejo
VP 451	326269	6833969		-60	315	200	DD	Extension	3	Chillan Viejo
VP 452	326215	6833899		-60	315	200	RC	Extension	3	Chillan Viejo
VP 453	326076	6833809		-60	315	200	RC	Extension	3	Chillan Viejo
VP 427	325500	6831925		-60	300	150	RC	Extension/ Exclusion	4	Mirador
VP 428	325600	6831940		-60	300	150	RC	Exploration	4	Mirador
VP 439	324350	6830550		-60	300	200	RC	Exploration	4	South
VP 461	324200	6830550		-60	300	200	RC	Exploration	4	South
VP 462	324150	6830240		-60	300	200	RC	Exploration	4	South
VP 463	324150	6830120		-60	300	200	RC	Exploration	4	South
VP 464	324150	6830020		-60	300	200	RC	Exploration	5	South

RECENT RESOURCE DRILLING RESULTS

Recent core drilling (2010-2011), a total of 3900m, was completed at Primavera, Japonesita and Mirador deposits. Twenty one holes were drilled to test and upgrade the deposits to include JORC compliant measured status.

Primavera Deposit appears open ended to NE, though less mineralised. VP418 is the north eastern most holed drilled in the recent programme and was designed to define the limits of the deposit in this direction. Hole VP418 was terminated at 180m, magnetic susceptibility data indicated that the hole is still within low grade mineralisation at this depth, hence the deposit is potentially still open to the northeast and at depth. The trend of the mineralised veins of the Primavera Deposit is thought to continue northeast towards Mirador Deposit. Recommended holes to test this are shown in Figure 8.

Drill hole VP419 was drilled in the southeast of the known limits of the Primavera Deposit and the results of this hole indicate the mineralisation is terminated is this area. Hole VP413 was terminated at 180m reportedly within mineralisation (pers comm., Peters, 2011), this is evidenced from the magnetic susceptibility data giving readings in the range of 35 – 66% Fe Mag for the bottom of hole 10-20m. This leaves the Primavera deposit open to the south (southwest) and at depth.

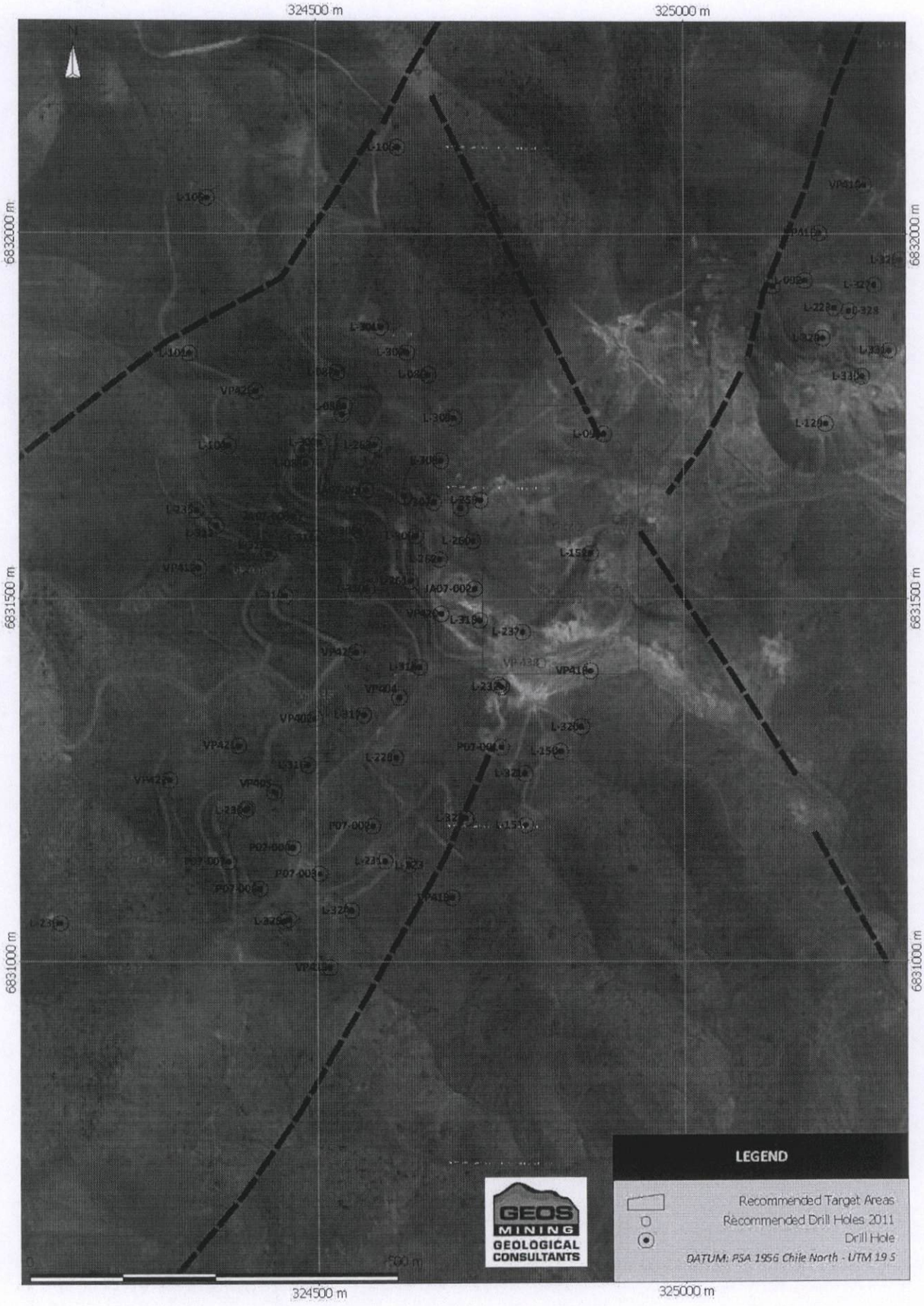


Figure 8 Recommended drilling in the Japonesita-Primavera area

Drilling at Japonesita was designed to clarify historical data and was not expected to greatly expand the deposit. However the drilling indicates that there is a core high grade pod with the general stockwork veining and that there is a slight increase in the potential depth of the deposit. Weak stockwork and veining of low to medium grades between Japonesita and Primavera has been confirmed. Further investigation, as recommended in Table 2 above, should clarify the geology and may increase resources in this area.

Drilling at Mirador has extended the known area of mineralisation and confirmed that the weak stockwork and veining continues into the southern Viviana magnetic anomaly. Drilling has also confirmed the less intense nature of the mineralisation at Mirador as compared to that at Japonesita.

Although all these holes have had internal surveys, due to a lack of available equipment these are all based on compass orientations, and hence in this magnetic environment the azimuths are not considered reliable. The changes in dip are minor, even for the deeper holes, so we consider the data acceptable for resource estimations.

RESOURCE MODELLING

DATA QUALITY

Documentation of planned QA/QC for sampling and analysis of the historic drilling (before 2008) indicates that the designed program was sufficient for this style of mineralisation and drilling work. This included duplication of a sample at every 20th sample (5%) during sampling, plus a replication of a crushed and ground sample every 20th sample (5%) and a blank sample inserted every 20 samples (5%) during laboratory preparation.

QA/QC duplicates, replicates and blanks plus certificates were to be registered within the drill hole / sample database. We have located very limited QA/QC documentation; this may have been lost when ownership of the deposits changed. Available data are insufficient to confirm the quality of the historic analytical work, hence some resampling has been undertaken (see below). Chips from the drilling were originally stored well, and despite deterioration in some cases, are available to verify the original data for much of the old drilling.

Data for all drillholes, drillhole assays and surface rock chip sampling were loaded into an Access database and checked. Minor discrepancies in hole locations etc were corrected at this stage. A Micromine project was created and linked to tables in the database.

Many samples had been analysed for both FeT and FeMag, but two thirds of the samples only had FeT. These were mainly lower grade samples, but include much of the early drilling, which was mostly at Japonesa deposit. A simple linear regression analysis was calculated from samples that had both analyses (Figure 9). The formula thus derived for Japonesita-Primavera was:

$$FeMag = FeT \times A - B$$

A = 0.97 (the slope of the linear regression line)

B = 7.8 (the estimated FeT value for samples containing zero magnetic iron, ie, unmineralised volcanic)

For the hard rock deposits, the regression was used to estimate the magnetic iron content (Est_FeMag), for those samples that had not been analysed for magnetic iron or had magnetic susceptibility readings (see below for Japonesa estimation).

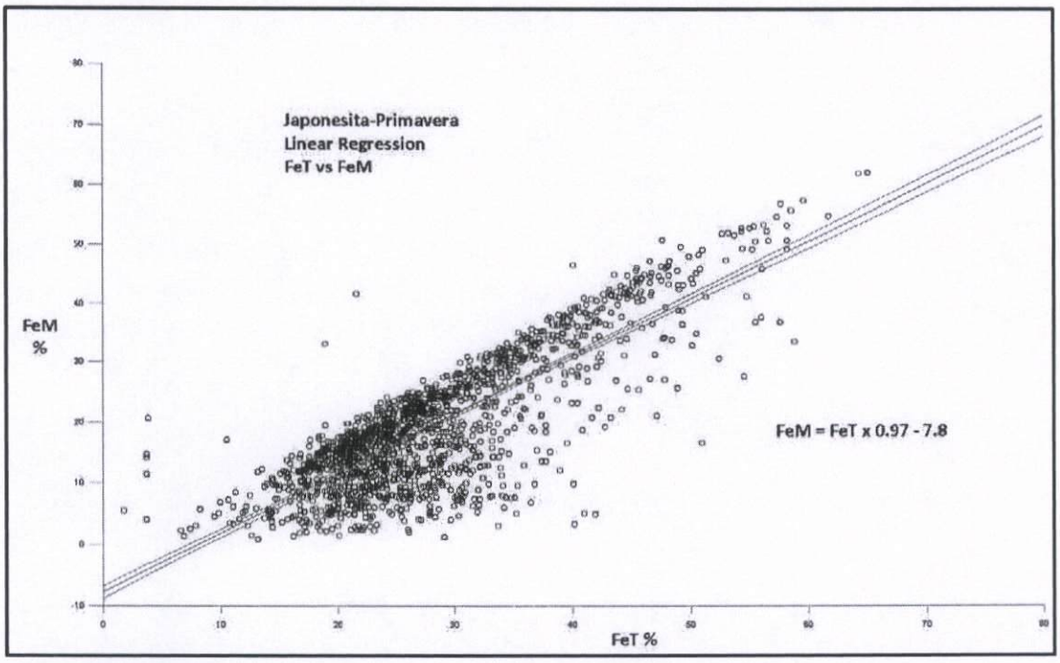


Figure 9 Linear regressions for Japonesita – Primavera drillhole assays – Fe_T% vs FeMag%

DRILLHOLE QAQC CHEMICAL ASSAYS

To establish the reliability of the historic chemical assay results, and enable a comparison with the current drilling programme results, selected intervals were resampled. The selection was made to produce a representative 'snapshot' of the range of assay values from the historical drillholes.

Initial results showed an obvious high end anomaly (Figure 10) which is skewing the statistics and results in an R value of 0.905. Removal of the anomalous sample results in a linear trend line very close to the 1:1 relationship. There is a notable higher scatter around the ~8 – 14% FeMag zone for both old and new values, this is considered to be reflecting the high proportion of samples that fall into this category and the high degree of variability of this low grade material. Further QAQC re-sampling of historical drillhole samples is recommended for to improve confidence in individual results.

In reviewing the assay results of the first pass QAQC re-sampling it was noted that Au, Ag, Ba, Cr, Co, As, Zn, Pb, Ni all show less than detection values across all re-samples. These elements were hence not required in further routine analyses.

Statistically only 10% of the re-samples showed a result greater than detection for Cu and the peak was only 0.052% (520ppm) Cu. In the context of IOCG models these results were not considered highly significant. It was noted that the first pass QAQC re-samples did not test any of the areas where azurite and malachite were noted in the field and hence we recommend that copper be included in standard analyses.

Fe, SiO2, P, S, Fe Mag % are all considered to be essential analyses to be conducted for this style of deposit.

The remainder of the elements (V, Na2O, CaO, Al2O3, TiO2, Mn, MgO, and K2O) are important for lithology correlation of lithology and alteration. High Cu values could indicate cross cutting veining as observed on the east of Japonesita Deposit.

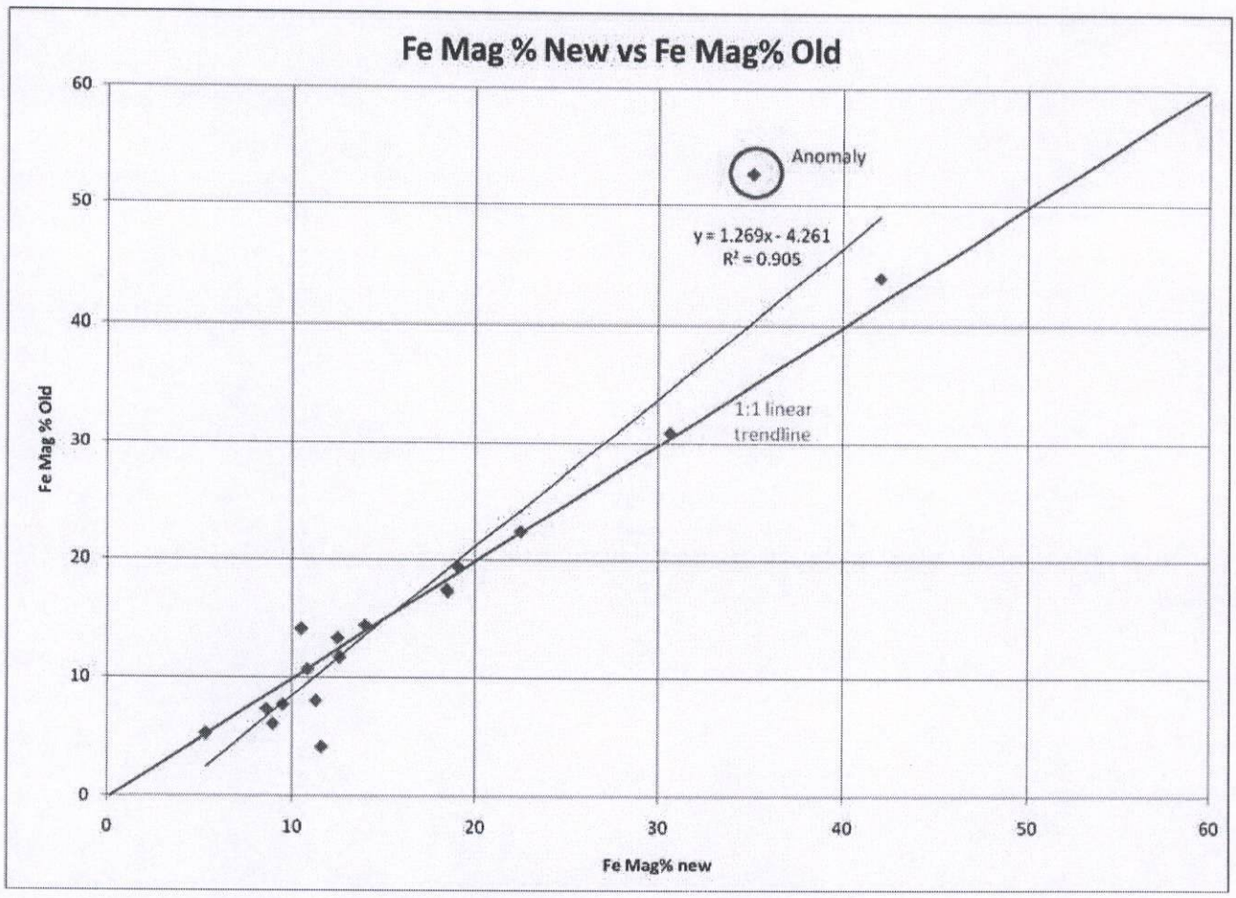


Figure 10 Comparison of new chemical assay results with the old results

MAGNETIC SUSCEPTIBILITY

Magnetic Susceptibility readings were conducted on QAQC splits of historic drillhole samples, and have been used on the 2010-11 drill core where analyses were not yet available.

The KT10-Plus magnetic susceptibility meter was set to output estimated (Fe) Magnetite % values based on internal standard processing calibrations to the instrument as per instrument manual supplied by the manufacturer. A series of test readings were conducted on available drill core at differing intervals down the core length to determine the optimum sampling density. Reading intervals of 10-15cm down core through zones of mineralisation were found to give relatively consistent results, greater sampling density in these zones did not improve the result, however lesser sampling density reduced the repeatability and increased the range of results. Through unmineralised or weakly mineralised zones the reading spacing was able to be reliably increased to 30-50cm intervals down core length (pers comm, B Peters, 2011). Reading intervals of shorter than 10-15cm down to ~5cm were used where mineralisation was noted to be of a stockwork veining style.

A re-sampled interval from historic holes was selected and used as calibration check samples for the magnetic susceptibility meter. Prior to each day's work 20 readings were conducted on each of these bags and the variability monitored. A variation difference between these morning readings of 2-3% Fe Mag per bag was set as an upper limit and trigger for re-standardisation of instrument. This trigger was reached on 2 Feb and the magnetic susceptibility meter was forward to a reputable servicing agent for recalibration,

upon return the instrument was again tested on several samples of known FeMag% and found to be well within the 2-3% variation limit.

The FeMag % estimated from the magnetic susceptibility meter was compared with chemical assay results of the historic samples and the QAQC re-sampling. The results, although from a relatively small population, with a fairly high scatter of data, do represent a relatively good fit between the FeMag % re-sampling (QAQC) chemical assay data and the averaged magnetic susceptibility meter FeMag % data (Figure 11).

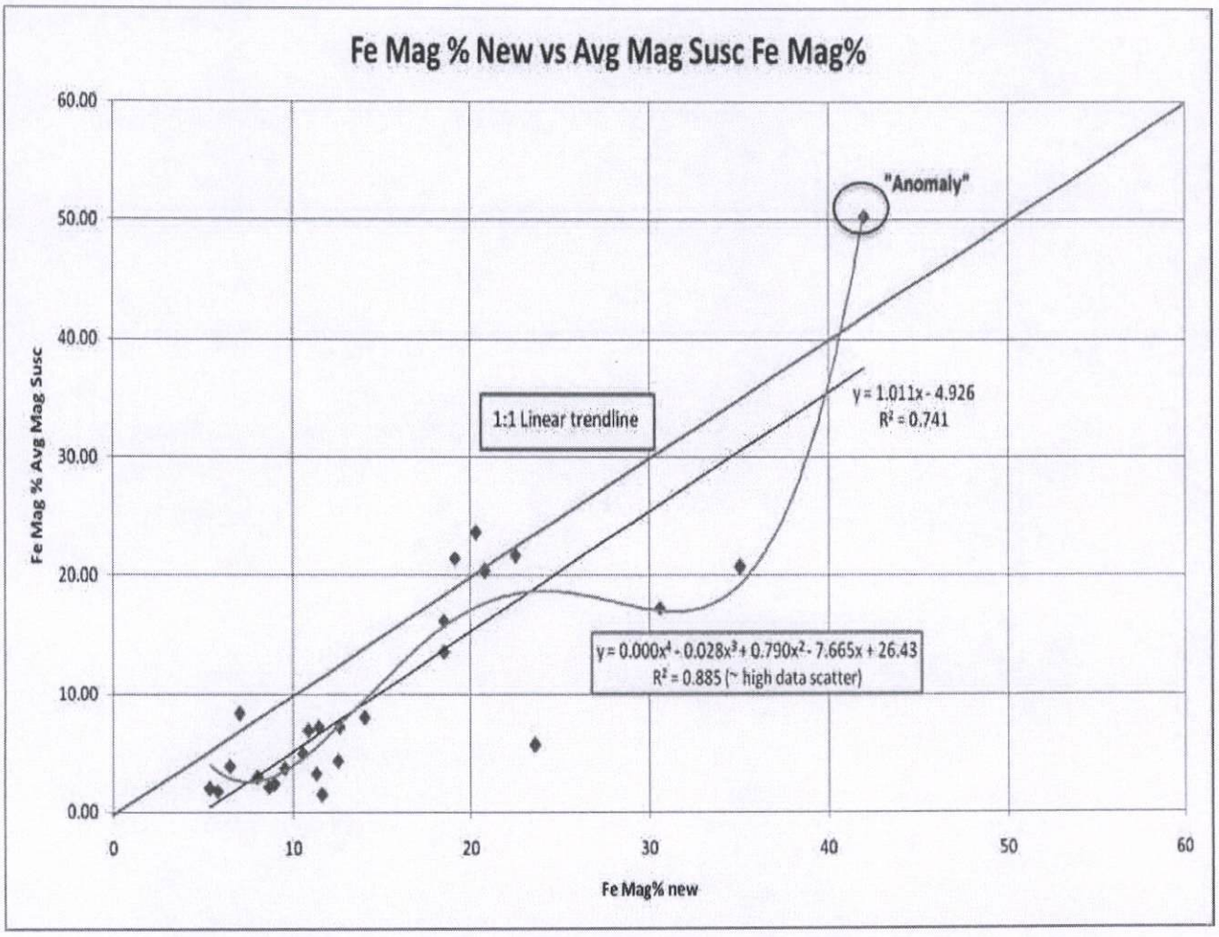


Figure 11 Comparison of magnetic susceptibility meter average FeMag % with chemical assay results

The linear trend line fit (black line in Figure 11) is consistently offset from the 1:1 trend line by - 4.88% (~5%) according to the plot equation, (- 4.7% was obtained from statistics on the raw data). This implies the average of the FeMag % given by the magnetic susceptibility meter is on average measuring ~5% less than the assayed value, for this sample batch.

Analyses on the 2010/2011 drilling received after this initial comparison were also checked against the estimated FeMag, and confirmed the general reliability of the magnetic susceptibility estimation. There is batch to batch variation (from +3.6% to the -4.7% of the initial dataset) but overall the validity of the method has been demonstrated. The batch to batch variation was in part been caused by a recalibration of the instrument during the process.

Where we do not have assay results (approximately 50% of the intervals from the 2010/2011 drilling at the time of estimation), we have accepted the estimated FeMag based on the magnetic susceptibility. The 2010/11 drill samples make up around 25% of the total sample data used in the resource estimation.

For ongoing core drilling of these deposits, recommended standard practice is:

- for magnetic susceptibility meter readings between 5-15% FeMag, samples of the material should be collected and forwarded for chemical analyses.
- Material with readings in the order of 15-30% FeMag could be considered sufficiently reliable to be used in resource determination with randomised check sampling and analysis.
- Materials with magnetic susceptibility readings of greater than 30% FeMag should also be sampled and forwarded for chemical analys1s.

Given that the majority of analyses in the database are from chemical analysis, we consider any amendments to the correlation from new data will not make any significant difference to the resources estimated here. QAQC checks and regular updates of the magnetic susceptibility should enable use of the magnetic susceptibility meter to give rapid results for grade control purposes.

BULK DENSITY ESTIMATES

A variable bulk density has been used in all resource estimates. Bulk density (SG) values for each sub-set block were calculated on the basis of the Est_FeMag value:

$$SG = 2.77 + 2.33*Est_FeMag/100$$

This calculation assumes that rocks containing zero Est_FeMag (i.e. unmineralised volcanic rocks) have an assigned SG of 2.77 (based on average in situ density values for Andesite) and rocks containing 100% magnetite have a SG of 5.2. Similar logic has been used previously for resource estimates for these deposits by SRK (SRK, 2009). Inspection of core and outcrop has indicated that very little of the andesite is clay altered or severely weathered, and voids are rare or absent, so the use of the base value of 2.77 is justified.

Density testing on thirty two samples of crushed core from the 2010/2011 drill program ranged from 2.778 for a low grade sample to a maximum of 4.701 for a high grade sample (64.7% Femag). The results were compared with those predicted using the equation above, and a very good correlation was found (r=0.94), validating the predicted values. The test values were higher on average by 0.07, but no correction has been made to the predicted bulk densities, to allow for any voids (as the tests were done on crushed core).

DATA CONFIDENCE

Although some of the database for the resource estimates is not based on chemical analysis of magnetically recoverable iron, (being either predicted from the magnetic susceptibility readings or from the total iron) we consider the available data adequate for resource estimation.

Having inspected the database carefully, we have confidence that additional results would not make a material difference to the overall global resource estimates. However, additional analyses from the 2010/2011 drilling would have the potential to affect short term mine planning and grade control.

Only at Japonesa does a lack of analysed FeMag (and no magnetic susceptibility readings) affect the confidence of the resource, and here we have used a conservative estimate of FeMag and classified the resource as inferred.

Similarly, additional drilling, while required for mine planning and grade control, is likely to alter the local detail of the resource model, but we would not expect major changes to the global picture in the areas of the measured/indicated categories. We do anticipate that local faulting (especially at Primavera) and variations in vein orientation may have displaced vein systems, and additional drilling will confirm whether this is the case. The main effects will be on local grade estimates.

Surface topography is relatively well constrained by surveyed points.

Although testing of bulk density on intact core is always preferred for the measured resource category, the general uniformity of the lithology and lack of voids in this lithology gives confidence that the test data can be used to confirm the prediction of bulk density from grade.

RESOURCE ESTIMATION PROCEDURES

The following process was undertaken to develop a resource estimation block model for the hard rock deposits of Japonesita, Primavera, Mirador and Chillan Viejo. These estimates were originally prepared in late 2010.

The Japonesita, Primavera and Mirador resource models were completely revised and updated following completion of the 2010/2011 drilling. The Japonesa and Chillán Viejo models remain unchanged.

Following QA/QC checks on the data (outlined above) a table was prepared of estimated FeMag values to be used in modelling. The process was:

- Where analysed FeMag values are available, these were used unless the analysed FeMag was greater than the analysed FeT, when the lower FeT value was used as a deliberately conservative choice.
- Where there were no FeMag data for the historic drilling, the estimated FeMag was predicted from the FeT results. As discussed above, correlations for the hard rock deposits are good.
- Where there were no FeMag data for the 2010/2011 drilling, magnetic susceptibility readings were used. Individual point readings were converted to 1m composite values, to give the same sample lengths as bulk of the samples.

A block model for each deposit was trimmed to topography (using a DTM derived from survey data) and to the limits of mineralisation. Block factors (Bfactor) were used for blocks partially falling within the volume to be estimated.

Variograms of estimated FeMag were prepared using all relevant drillholes or that deposit. Omnidirectional variograms were compared with directional data, with the final choice of variogram parameters influenced by the observed preferred strike and the variography.

Ordinary kriging was used to generate Est_FeMag values for each block. Search ellipses were oriented to the preferred orientations from variography and geology. The longer ellipse axes were based around (usually less than) the variogram ranges, while the shortest axis was based on observed geology (nature of viens and stockwork around the veins), as data limited the value of variography in this orientation.

The tonnage of each block was derived from the estimated SG multiplied by the block volume (5m x 5m x 5m x Bfactor). Contained FeMag was then calculated for each block by multiplying the Est_FeMag value by the block tonnage.

Details of variography and block models are presented in Appendix 1.

JAPONESITA-PRIMAVERA

The Japonesita and Primavera deposits were initially treated as one entity as there appeared to be statistical and spatial continuity between the two (Figure 9 and Figure 12). In the current modelling the two deposits have been recognised as having distinct orientations of major veining and have been modelled as separate domains of the one block model.

Omni-directional and directional semi-variograms were determined for the Est_FeMag values (see Appendix 1 for details).

Visual inspection of the drillhole cores and geological logs plus assays suggests that the mineralisation occurs in discrete sectors that generally correlate with high-grade veins surrounded by stockwork zones. The veins at the surface have a main orientation of 015° at Japonesita and of 040° at Primavera. The length of the veins also varies from up to 100m, as determined from the artisanal workings, at Japonesita, and up to 150m at Primavera as determined from mapping the artisanal workings and the vein continuance.

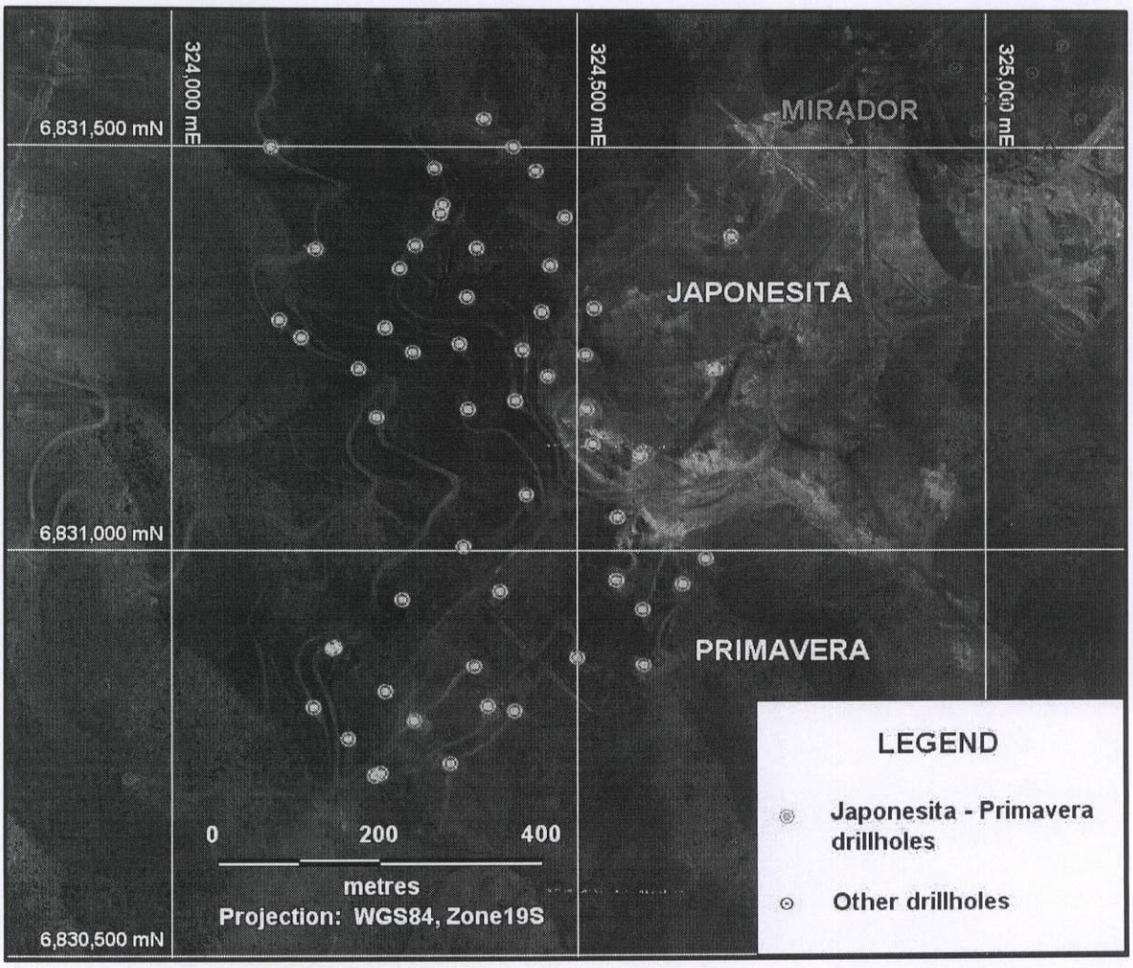


Figure 12 Japonesita – Primavera drillholes used in resources estimation

Kriging estimations were conducted for Est_FeMag in two passes for each deposit over the entire block model. The first pass of kriging for each separate deposit was using a tight orientated search ellipse as determined from statistical variograms and has a higher degree of confidence. The second pass of kriging used a broader set of statistical parameters and has a lower degree of confidence.

Resources were classified based on a combination of the following factors:

- Whether the block was run1 or run2.
- Drilling density – volumes based primarily on a single hole were restricted to inferred status even if estimated in run 1.
- Geological continuity
- Kriging variance.

These factors were discussed by the authors to ensure a bbalanced judgement was made.

The total tonnage (Measured + Indicated + Inferred) and average FeMag grade was determined for a range of FeMag cut-offs. These are tabulated below for Japonesita deposit (Table 3 and 4) and for Primavera deposit (Tables 5 and 6).

Table 3 Total Resource estimates for Japonesita

Cut-off (FeMag %)	Total Tonnage (Mt)	Grade (FeMag %)
20%	5.4	25.6
16%	10.4	21.8
12%	18	18.5
10%	22.4	17.0
8%	27.8	15.4
6%	33.8	13.9

There are a total of 40 drill holes at Japonesita, including the seven core drillholes from the recent drilling, in the Japonesita deposit, enabling parts of this deposit to be classed as Indicated and Measured Resources.

Table 4 shows the classification, which is in accordance with JORC Code 2004.

There are a total of 35 drill holes at Primavera, including 9 core drillholes from the recent drilling, in the Primavera deposit enabling parts of this deposit to be classed as Indicated and Measured Resources. Geology mapping observations have enabled a more reliable interpretation of the Primavera geology. Table 6 shows the resource classification, which is in accordance with JORC Code 2004.

The intense magnetic anomaly and deeper drilling in the Primavera area indicates that there could be further potential to increase these resources at depth. However, stripping ratios could make any depth extensions increasingly less economic to mine by open pit methods. In contrast, the Japonesita deposit is lower grade at depth and has less potential for any additional high grade resources. There is however good potential for low to medium grade resources between the two deposits and low to medium grade exploration targets SW-S and E of Japonesita.

Table 4 Resource classification for Japonesita

Cut-off (FeMag %)	Measured		Indicated		Inferred	
	Tonnage (Mt)	Grade (FeMag %)	Tonnage (Mt)	Grade (FeMag %)	Tonnage (Mt)	Grade (FeMag %)
20%	1.8	24.9	1.5	25.5	2.1	26.2
16%	3.8	21.2	2.9	21.6	3.7	22.4
12%	7	17.8	5	18.4	6	19.3
10%	9.2	16.2	6.2	17	7	18.0
8%	12.3	14.3	7.5	15.6	8	16.9
6%	16.2	12.5	8.7	14.5	8.9	16.0

Table 5 Total Resource estimates for Primavera

Cut-off (FeMag %)	Total Tonnage (Mt)	Grade (FeMag %)
20%	27.8	30.4
16%	39.5	26.7
12%	53.4	23.4
10%	63	21.5
8%	73.4	19.7
6%	86.9	17.7

Table 6 Resource classification for Primavera

Cut-off (FeMag %)	Measured		Indicated		Inferred	
	Tonnage (Mt)	Grade (FeMag %)	Tonnage (Mt)	Grade (FeMag %)	Tonnage (Mt)	Grade (FeMag %)
20%	4.6	28.9	13.2	29.5	9.9	32.4
16%	5.7	26.8	18.6	26.1	15.2	27.3
12%	6.7	24.9	24.9	23.1	21.9	23.2
10%	7.2	23.9	28.8	21.4	27	20.9
8%	7.8	22.8	32.6	20.0	33	18.7
6%	8.3	21.8	35.7	18.8	42.8	16.0

A section and plan of the model is included in Appendix 1.

MIRADOR

The current programme of drilling has added 5 cored drill holes to the database, taking the total drill holes at Mirador to 20. The recent drilling intersected weak mineralisation in 4 holes, VP 415 – VP 429, but not in drill hole VP 430, and has expanded the known mineralisation 150m to the north.

Previously the Mirador resource was based on 15 drillholes within the Mirador pit area (Figure 13). Other drillholes to the northeast of Mirador were too distant to be incorporated into the resource.

Omni-directional and directional semi-variograms were determined for the Est_FeMag values. Kriging was carried out in one pass at this deposit. Details are presented in Appendix 1, which includes an example section and plan of the model.

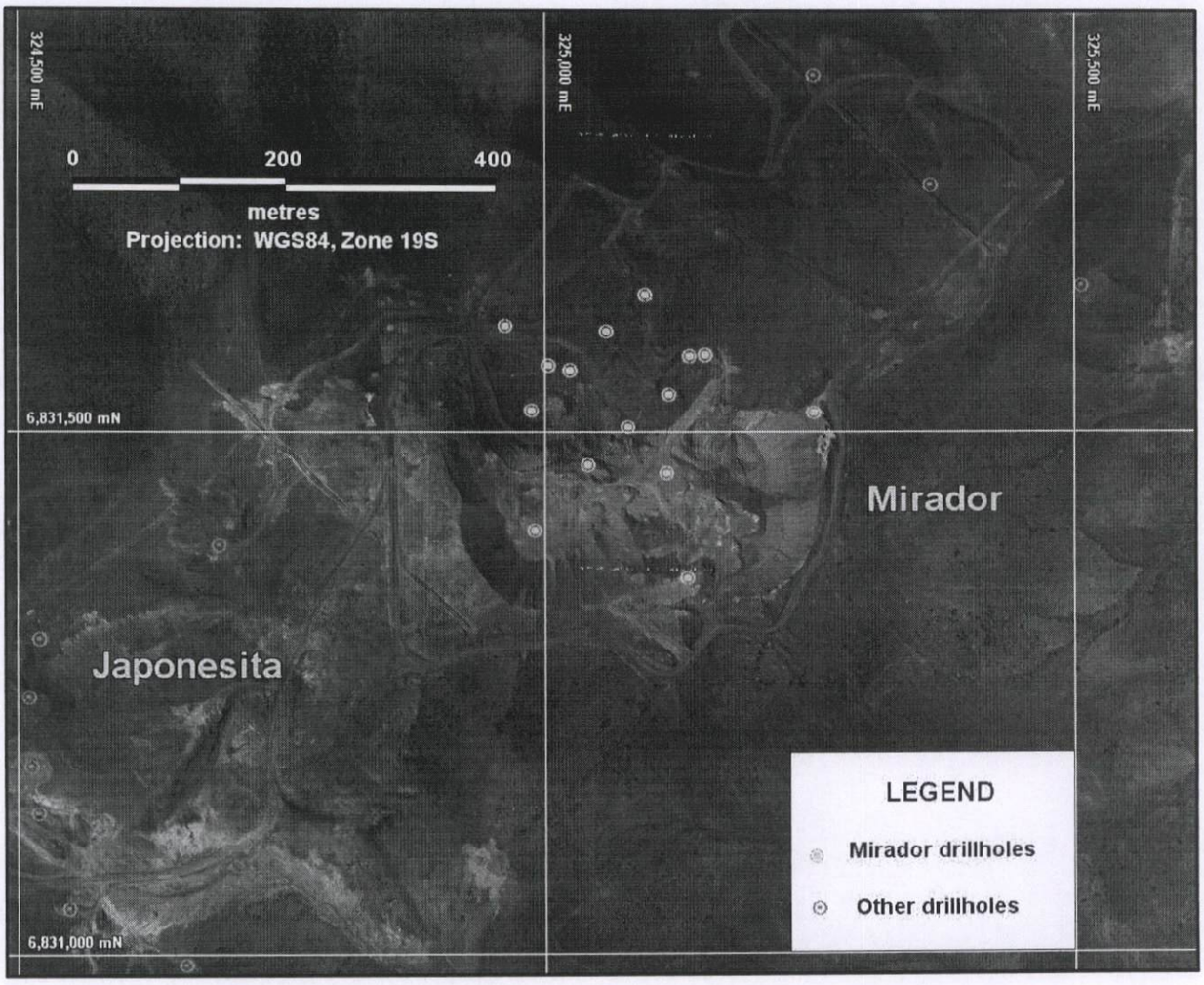


Figure 13 Mirador drillholes used in resource estimation

The total, Indicated + Inferred Resource, tonnage and average FeMag grade was determined for a range of FeMag cut-offs (Table 7).

Table 7 Total Resource estimates for Mirador

Cut-off (FeMag %)	Tonnage (Mt)	Grade (FeMag %)
20%	2.5	23.0
16%	5.5	20.2
12%	11.0	17.0
10%	15.2	15.3
8%	21.5	13.5
6%	28.5	11.9

Based on the drilling density and continued uncertainties in geological continuity in the Mirador zone, these resources are classified as Indicated + Inferred Resources, in accordance with definitions in the JORC Code 2004.

Table 8 Resource classification for Mirador

Cut-off (FeMag %)	Indicated		Inferred	
	Tonnage (Mt)	Grade (FeMag %)	Tonnage (Mt)	Grade (FeMag %)
20%	1.9	23.8	0.6	22.3
16%	3.8	20.6	1.7	19.4
12%	6.5	17.8	4.5	15.8
10%	7.9	16.6	7.3	13.9
8%	9.3	15.4	12.1	11.9
6%	10.9	14.2	17.7	10.4

JAPONESA

At Japonesa Deposit, there are a number of units that could host potential resources.

COLLUVIUM

The colluvium is the unit that was been mined previously. Previous mining was hampered by high moisture content. The colluvium of Japonesa deposit is predominantly composed of a clast supported, subrounded to subangular, uncemented sandy-cobble gravel. It is a thinly bedded to interbedded unit with beds from 20 – 50cm thick. The cobbles and sand are dominantly composed of slightly weathered andesitic material with a minor component of weakly weathered diorite. Cobbles and sand of magnetite iron also constitute a minor component of the colluvium. There are notable beds of coarse sand dominated matrix, often near the basement contact. These contain irregular beds of subangular andesite and diorite gravel.

Examination of Pits 1 and 2 showed that moisture is pooling in the colluvium immediately above the clay rich weathered basement exposed in Pit 2. Most of the colluvium is gravel without much clay matrix and this is likely to remain dry. Hence, most of the colluvium, above the basement contact zone, would be dry enough to mine and process by dry processing. Mining should be carefully monitored and any damp ore avoided. Drying is only likely to be practical for materials with low clay content, but small amounts of damp ore may be blended with dry ore (from stockpiles or hard rock deposits) to enable dry processing.

One borehole in the base of pit 1 drilled to 44m was reported to have encountered water at ~30m. The water level for this hole overflowed and then subsided down hole, after which a basic flow rate pumping test was conducted (pers. com. Field Assistant, 2010 visit) where upon the hole was pumped dry quite quickly. No data is available for this test or water levels recorded, to the author's knowledge.

We consider it is reasonable to exclude the lowest metre of the colluvium from any resource or reserve estimation, as much if not all of this material will be damp and unamenable to the beneficiation process.

Modelling of the Japonesa deposit concentrated on determining the tonnage and grade of the remaining colluvium, using the latest topography and final pit surveys. The colluvium was modelled on a sectional basis to create a solid that excluded the overlying "Tertel" and waste dumps, and the basal 1m above basement. The solid was bound at depth by a layer defined as 1 metre above basement rocks based on basement data from 2007. The resulting solid was then clipped to remove low grade material to the west of a basement high identified in the existing basement data.

Minor validation and model checks have indicated a number of inconsistencies present in the existing data such as intersecting modelled surfaces, and apparent errors in drillhole survey data with respect to RL. Extremely limited geological information, and a reliance on historic drilling, with no new holes in 2010/2011, has meant that a number of assumptions were made when modelling the colluvium. The existing data was accepted as being accurate, even though some material logged as colluvium may have included some weathered basement. Colluvium was assumed to extend to basement in all sections modelled. Hence the modelled volume is considered only an approximation, and further checks and interpretation will be required to determine a final volume.

Some check drilling is recommended to confirm the basement topography in some areas. Although it may be difficult to visually distinguish colluvium from weathered basement in drill chips, and diamond drilling may not give good core recovery in this material, whole rock analyses of samples in the vicinity of the contact may assist in identifying the top of the weathering profile.

A block model was created, restricted to the modelled solid, using block dimensions of 10m x 10m x 5m. Modelling was completed using inverse distance weighting with a search radius of 120m.

In the drill records, we have only located 6 holes with analyses for magnetic iron, and for these holes (103 samples) the ratio of FeMag to Total Fe was 0.51. In order to estimate grade, a rough figure for FeMag was calculated using a straight 50% reduction of total Fe.

We have not located any confirmed plant feed grades in Santa Barbara's records from previous mining. The recorded recovered iron is low (around 5% Fe recovered to product) compared to the expected average head grade of the colluvium processed. This supports the conclusion that around half of the iron at Japonesa may not be magnetic, although the data is insufficient to be conclusive.

Grade and tonnage estimates were summarised using a default SG of 2.2, based on a formula described in the 2007 SRK modelling report (D = 1.201 + 0.0777 *% Fe), and grade cut-offs of the estimated FeMag (Table 9).

Table 9 Japonesa indicative colluvium, Geos Mining preliminary model

Cutoff (% FeMag)	Volume	Tonnage (rounded)	Grade (%FeMag)
10	756,120	1,670,000	11.5
8	3,547,724	7,800,000	9.4
6	9,738,544	21,400,000	7.9
0	20,431,920	44,950,000	6.0

Our financial model indicates that the marginal cut-off may be around 5% - 6% FeMag, for an area without any stripping costs, if plant recovery at these grades remains at 80%. As most of the remaining colluvium is covered by Tertel (discussed below), higher cut-off grades will be applicable; hence we consider that reserves would be likely to be less than 15 MT under the modelled economic conditions.

Potential mining at Japonesa is highly sensitive to the marginal FeMag cut-off grade, and on the proportion of Fe total that is magnetic. Financial considerations would postpone further mining at Japonesa until the plant is operational, and costs and recoveries are more accurately known; however, the Japonesa pit area is a suitable area for stacking plant rejects.

Inspection of the Japonesa model for the purpose of future mine waste dump planning identified only a few small areas that could definitely be classified as having no resource (Figure 14). The base of Pit 2 at Japonesa is apparently worked out hence this could be one area of immediate potential waste depository.

To more accurately determine the areas available for dumping, the FeMag content should be tested. As samples from the Japonesa historic drilling are no longer available, we suggest colluvium from the collar locations of holes intersecting significant near surface FeT values be sampled and tested for FeMag. Sampling can be done by power auger or by backhoe. These samples should produce a reasonable basis for estimation of the FeMag content of the whole deposit. The resources should then be remodelled.

"TERTEL"

A surficial calcareous conglomerate deposit overlies portions of the Japonesa gravel magnetite deposit and above the southwest edge of the Mirador deposit. The conglomerate is discontinuous and unevenly distributed. It is composed of rounded to sub-rounded clasts of andesite, diorite, granodiorite and iron ore (magnetite, hematite and martite). The hard cemented matrix is dominantly clay, carbonate and silica, and

07/04/2011

Japonesa

Resource Outline

Vallenar Iron Company



Figure 14 Potential Resource outlined areas at Japonesa Mine

has been suggested to show evidence of low level metamorphism. This cement could result from calcrete formation processes involving low level exothermic solidification and calcification of the clay-carbonate-silica matrix. This process is driven by capillary rise due to exceptionally high evaporation rates in the upper section of an initially wet gravel deposit within a hot dry desert environment.

Locally this unit is referred to as Ferifero Tertel or "Tertel".

This irregularly shaped and sporadically occurring unit has previously been considered a potential economic resource of ground concentrated magnetite; after crushing, grinding and screening.

The average thickness of this surficial calcrete-conglomerate unit is 3 meters. Mineralogical evidence developed by Minera Santa Barbara (SB) has been reported to give concentrates with grades of 63% Fe total for the "Tertel" (SRK, 2006). It has further been reported that the "Tertel" represents around 6 million tonnes of material with an average grade of 15% Fe. This material would be required to be stripped as waste if not processed through the plant (SRK 2006).

To the authors' knowledge, little, if any, beneficiation testing has been conducted on the "Tertel" (pers comm, Thomas, 2010) and, as such, these grades and any resource statement concerning the "Tertel" are considered as historical and should not be included in reserves statements.

Additional work is required before any "Tertel" could be included in reserves, because:

- The recovery of magnetite from the "Tertel" is not known
- The level of calcium in the final product is unknown, (it may not be easy to liberate magnetite from adhering calcrete)
- Crushing of the "Tertel" may liberate clay, which may hinder plant operations
- The "Tertel" is not well represented in database / drill hole assay data
    - Drill hole logs of "Tertel" are not consistent
    - Assay data for "Tertel is also not consistent and repeat assay or QAQC data is absent
    - Results are from 189 assays for total Fe (FeT), with no FeMag assays recorded, hence the fraction of the FeT that is magnetic is unknown
    - Based on downhole average analyses available to us the grade of a large proportion of the Tertel is marginal, unless a high proportion of the FeT is magnetic (around 6.8% FeT for all intersections).

Hence new drilling and metallurgical testwork is required before the Tertel can be added to resources or reserves. No Tertel is included in the current resources.

WEATHERED BASEMENT

Some samples of the weathered basement in some Japonesa drilling contain moderate total iron grades. However, FeMag % values, where available, are generally low, as is to be expected in weathered material. For example, 29 analyses of material logged as basement in two holes, L06-007 and J07-004, returned an average FeT grade of 21.06% but an average FeMag grade of 8.07%. The best intersection was 26m (28 - 52m depth) of 12.1% FeMag in L06-007.

Geophysical magnetic RTP image does not cover this immediate area of these two drill holes. However their position west of Pit 1 and east of the main access road to the old offices site places them proximal to moderately high imaged magnetic RTP values immediately west of Pit 1.

Further work will be required to determine if any basement below any of the Japonesa colluvials could contain any significant resource.

CHILLÁN VIEJO

The Chillán Viejo resource was based on 12 drillholes collared close to the artisanal workings (Figure 15), with six other drillholes to the south and southeast of Chillán Viejo containing broad intersections, but at considerable depths (eg, L-202: 116m @ 25.3% FeMag from 118m; L-200: 108m @ 22.1% FeMag from 88m). Ground magnetic survey data suggest a deep magnetic body to the southeast of the Chillán Viejo workings.

Although the surface workings show a dominant orientation towards ~40°, with a short kink towards ~20° at the northern end, the drillhole assays do not show any well-defined structural orientation. This may be due to the drill hole spacing and drilling method not being optimally chosen to represent the structural influence.

Omni-directional and directional semi-variograms were determined for the Est_FeMag values. A block model was created with Micromine software from the Est_FeMag results. Details are presented in Appendix 1. Those blocks that fall within the Search Ellipsoid from the drillholes around the Chillán Viejo workings were assigned to Inferred Resources. Blocks that fall outside of this zone were assigned to Exploration Potential.

The total tonnage and average FeMag grade was determined for a range of FeMag cut-offs (Table 10).

Table 10 Inferred resource estimates for Chillán Viejo

Cut-off (FeMag%)	Tonnage (Mt)	Grade (FeMag%)
20%	3.9	25.0
16%	7.5	21.5
12%	14.7	17.8
10%	18.5	16.4
8%	22.3	15.1
6%	24.6	14.4

Based on the drilling density and uncertainties in geological continuity in the Chillán Viejo zone, these resources can be regarded as Inferred Resources, in accordance with definitions in the JORC Code 2004.

Outside of the zone of Inferred resources, Exploration Potential at Chillan Viejo is estimated to be in the range of 10 – 18 Mt averaging 15% - 25% FeMag. These figures are heavily influenced by assays from two vertical drillholes (L-200 and L-202), with better grade zones over 90m below surface.

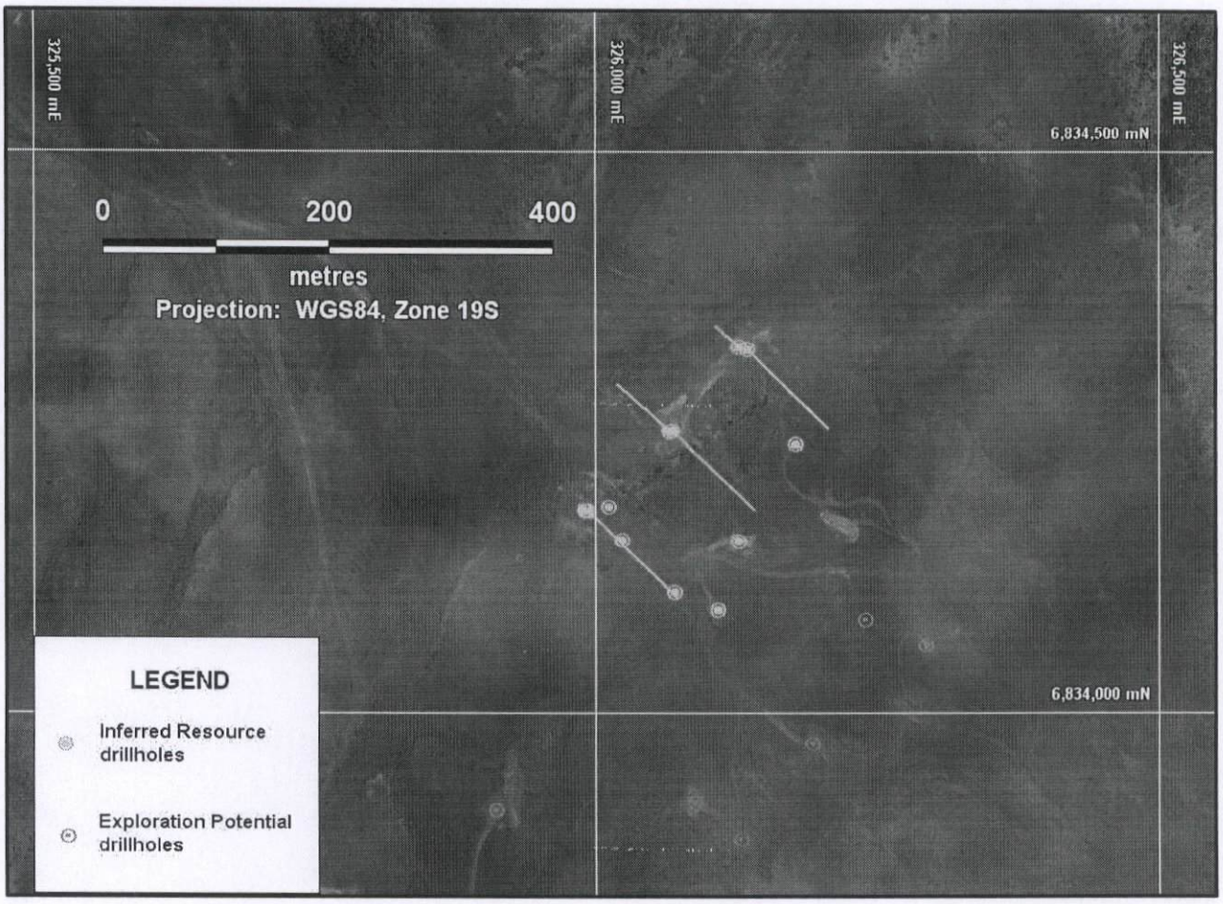


Figure 15 Chillán Viejo drillholes used in resource estimation

STOCKPILES (TORTAS)

There are a number of stockpiles around the Japonesa pits, plus one stockpile at the former workings at Mirador. Some are oversize material which could not be processed previously, some are reject material (low magnetic) from previous processing and some are fines (too fine to be sold previously). Tonnages and estimated grades are summarised in an excel file named "stockpiles Minas Harpas", reproduced in Table 11 (note that this is quoted figures, not rounded, and the figures do not imply that we consider the estimates accurate to the nearest tonne). The volumes in this table are reported to have been derived from a laser survey, but the basis of the other figures is in most cases unknown. Without this information, or some external verification, Geos Mining can only report these figures as exploration potential (not resources under the JORC code).

Two stockpiles have additional information available, the "Torta Japonesa" and the "Torta Mirador", and for these our resource estimates are shown in Table 12.

At "Torta Japonesa", we have records of drill samples which average 6.88% FeMag, and a previous estimate by SRK (which was a higher tonnage than that quoted in Table 11, but this appears to have been because a higher bulk density was assumed). We conclude that this stockpile contains an inferred resource of 2.2Mt at an estimated FeMag grade of approximately 6.4% FeMag.

Table 11 Stockpile summary from Minas Harpas file

Stockpile	m^3	Ley FeT (%)	Ley FeMag (%)	Magnetism	t/m^3	Tons
RPP-B	27,918	17.04	8.64	50.66	2.02	56,394
RPP-R2	1,309	16.77	8.79	52.39	1.98	2,592
RPP-R3	4,588	26.19	15.72	60.02	2.37	10,874
RPP-R33	1,304	25.17	14.62	58.08	2.35	3,064
+ 2 1/2"	424,359	11.94	7.00	58.63	2.20	933,590
R33 (antiguo)	57,165	32.00	16.64	52.00	2.52	144,056
R33-2	82,885	34.75	19.98	57.49	2.60	215,501
R2	69,391	21.00	11.12	52.95	2.22	154,048
RPP	27,918	18.74	9.95	53.09	2.08	58,199
Torta Japonesa	1,247,112	13.39	6.00	44.81	1.82	2,269,744
Torta Mirador	457,155	19.90	11.50	57.79	2.17	992,026
Bolones	262,814	11.94	7.00	58.63	2.20	578,191
Rech Polea Total	1,551,528	10.20	2.95	28.92	2.52	3,909,851
R1	788,023	10.08	3.10	30.75	2.22	1,749,411
R43	19,836	52.64	42.13	80.03	2.92	2,000
Total (plus 6% FeMag)			*8.72%*			*5,420,279*

A check sample from a drill spoils pile located on the Mirador stockpile was submitted for analysis to confirm the grade of this stockpile. This sample returned a FeMag grade of **9.15%** which is 77% of the total Fe grade of 11.9%. Drillhole L-129 which was drilled in the Mirador stockpile to 28 m has a range of total Fe% values of between 12.3% to 28.6%, and averages 22.7% total Fe. Measured FeMag% values of the samples for drillhole L-129 ranged from 4.42 to 11.7 and averaged **8.21%** FeMag. On average this is a reduction of 37% of the total Fe values, the percent reduction ranges from 29% to 61%. The check sample may in fact reflect the lower end of the results returned from the L-129 drillhole, both are less than the given FeMag grade in Table 11 for Torta Mirador, and indicate a relative reduction in grade for the Torta Mirador (Table 12).

Modelling of this stockpile gave an estimated volume close to that in Table 11. A revision of the estimated density for the Torta Mirador due to void space within the loose sand – gravel sized material as noted on field visits, and the percentage of magnetite from drillhole L-129 samples. The resulting averaged density for the stockpile is 2.09 t/m^3, thus there is a slight reduction in tonnage of Torta Mirador (Table 12).

Table 12 Stockpile inferred resource estimates

Stockpile	m^3	t/m^3	FeT (%)	FeMag (%)	MTons
Torta Japonesa	1,247,112	1.82	13.4	**6.4**	**2.2**
Torta Mirador	457,155	2.09	21.9	**8.5**	**1.0**

In the absence of records of the basis of the previous estimates, we recommend additional sampling so that the remaining higher grade stockpiles can be included in resources, with the priority being the larger plus 2½" material.

PRODUCT AND PRICING

SMC Vallenar Iron plan to produce an iron ore fines 62% Fe concentrate, +/-1% Fe. The grade of shipments made during production in 2007-8 ranged from 62.7% – 64.47% Fe. For this report, it has been assumed that the average final concentrate grade will be 62% Fe. The size grading will be acceptable for the fines market, i.e. less than 15% plus 3mm, less than 15% minus 0.15 mm and the plant is designed to produce this. Shipments during 2007/8 mainly fell within these specifications, with up to 17% less than 0.15mm on one occasion. None of the cargoes were rejected.

Previous production had low levels of deleterious impurities (Thomas, 2010) and we have assumed that there will be no issues with impurities in concentrates made from the hard rock deposits. Drilling results show small numbers of high phosphate grades in drill samples, but the median analysis from the recent drilling was 0.047%, well within the specifications. We anticipate that most of the phosphate will be removed during processing and, given the generally low levels of phosphate in the resource, and have assumed that any issues with phosphate in localised areas of the orebody could be resolved through blending.

Sulphur is usually low in the resources, but as with phosphate there are localised high values; most sulphur should be removed during processing. Silica, alumina and titania are major oxides in the raw ore but are reduced through processing, and, providing liberation is effective, we anticipate no problems with these elements. Therefore we have not made allowance for any discounts or rejected shipments in our project forecasts.

This grade of iron ore fines has over the last six months been sold on the spot market at Tianjin Port at US$173 - $180 /t (MBC Daily, Nov 4th and 18th, 2010; Platts report May 2011) and the reported peak was $197/t. The Steel Index 62% benchmark was US$175.50 at 26 April 2011. Contract prices were historically lower than spot prices, but this has changed with the move towards quarterly price fixing.

Informed comment predicts that spot prices are likely to retreat. It is certain that fluctuations will continue to operate over the predicted life of the Vallenar operations. Hence we feel that a reasonable range for the average delivered price of fines would be US$100 – US150. We have used a base case price of $135/t C & F in China, but have also checked the project viability at $120/t. However we must note that Geos Mining does not claim any special expertise in iron ore price forecasts. Hence, we advise any readers of this report to do their own research on anticipated prices.

MINE PLANNING

Geos Mining retained the assistance of KRC Mining Consultants, (KRC Mining Consultants, 2010,2011) to produce a pit design, schedule, and mining operational and capital costing for the Japonesita-Primavera deposit. KRC's final report is included as Appendix 3.

A simple assessment of the mining sequence was conducted to determine what equipment could work best for the project. This equipment list and mine parameters agreed upon (KRC Mining Consultants, 2010) were then modelled within "Talpac" software system.

A single "final" pitshell was designed using Whittle optimisation for the Japonesita and Primavera ore bodies, using an overall pit slope angle of 45 degrees, and mining cut-off grade of 10% FeMag. A similar pitshell was designed for the Mirador deposit. Pit slopes are in line with recommendations made in an

inspection report by Coffey Mining (Beer, 2010). The optimised pit shells were used for reserve estimation. Final pit designs detailed in Appendix 2 differed by less than 2% from the optimised pit shells.

An annual schedule of grades and tonnages enabled estimation of tonnages moved. Costings have been based upon owner mining and acquisition of new mobile equipment, mainly Komatsu (KRC Mining Consultants, 2010). Drilling and blasting has been assumed to be by contractor.

The pit models and hence the equipment fleet and mining costs have been based on a single pass of modelling. Hence they are considered feasible but NOT an optimum model.

The designed pits include all the measured resources at Primavera and Japonesita, and most of the indicated and inferred resources. Sections and plans showing resource blocks and final designed pit outlines are given in Appendix 1.

KRC's final designs include proposed locations for all dumps and tails locations required for the mining (Appendix 3 p42). Some sterilisation drilling will be required prior to confirming these locations, in particular southeast of Primavera and east of Mirador. In addition the southeast corner of the proposed low grade stockpile may impinge on a like southwest extension of the Japonesita orebody, and we recommend drilling here to check the grade of ore prior to using this area.

Coffey Geotechnical have recommended further geotechnical work prior to mining, and a review of pit slopes for the deeper parts (over 100m) of all pits.

PROJECT ECONOMICS

A model has been drawn up, based on the information available at present. This model is purely for the purpose of determining potential reserves. It currently only includes the Japonesita-Primavera and Mirador pits. This model can be considered a potentially feasible outcome (if the major parameters are confirmed by further work), but not necessarily the best.

The full forecasts are in the attached spreadsheets (Appendix 2), which include explanations of the line items in the sheets accompanying the cash flow. The forecasts are based in US$ and are based on current dollars (no inflation). The main technical parameters assumed for this financial assessment of the overall project are summarised in Table 13, and the main financial assumptions are given in Table 14. An allowance of $15m has been made over the first two years for working capital costs (including interest costs on Chilean VAT payments), but the project is assumed to be self funding from year two. No detailed analysis of working capital costs has been completed, but any difference from the assumed figure will be covered by the plant capital contingency costs. We have allowed for a three month delay between production and income in the cash flows.

The mining costs have been transferred from KRC's modelling so the details of capital and operating cost breakdown can be found in Appendix 3. The forecast plant parameters (costs and recovery of FeMag) have been provided by Worley Parsons following extensive consultation with SMC Vallenar Iron, as documented in Worley Parsons report (Appendix 4). Although based on extensive experience of similar plant operations, they are subject to variation as the plant design is finalised. Worley Parsons recommend additional testwork prior to final plant design.

Table 13 Main technical parameters of modelled project

Item	Explanation	Value
Mining sequence	Japonesita/Primavera, then Mirador, then low grade stockpiles	
Modelled mine life	In years from first production, limited to	15 years
Mine capacity	Ore and waste moved from pits per annum	Up to 22mt
Mine dilution and recovery	KRC used industry standard figures	10% and 95%
Plant feed grade, years 1-12	Varies annually, from KRC model, FeMag grade	13% - 20.3%
Plant feed grade, years 12 - 15	From Mirador and low grade stockpiles	9.5% - 11.5%
Plant feed year 1	Tonnes feed per annum, limited to allow for plant commissioning and possible port restrictions	2.5Mt
Plant feed, years 2 - 15	Tonnes feed per annum, varied with feed grade	7.7 – 10.5Mt
Plant recovery	Recovery of FeMag to product (product yield varies with head grade)	80%
Production, years 2 - 11	Iron ore fines produced per annum	1.8 – 2 Mt
Product grade	Grade of Fe	62%

Table 14 Major financial assumptions, all in US$

Parameter	Value, US$	Explanation	Source
Capex, mining equipment	$30.2 m	Mobiles plus ancillaries, initial cost	KRC model
Replacement capital on mobiles	$57.7m	Between years 3 and 12, with major fleet replacement every 5 years	KRC model
Capex, plant	$146.2m	$128.6m for plant (WP estimate) plus $15m electrical generation, plus $2.6m temporary port facilities (stockpiles etc)	Worley Parsons and SMC Vallenar
Mining cost, per t moved	$1.05 - $1.75	Depending on utilisation etc	KRC model
Drill/blast cost, per tonne	0.50	Assume contract	SRK and SMC Vallenar
Process cost, per t feed	$3.20	Includes labour, management, lab etc	Worley Parsons
Other site costs, per annum	$1.05m	Admin, management, community etc not included in above	Geos assumptions
Cost mine to FOB, yr 1 - 3	$24.50	Transport and port loading costs	SM Vallenar
Cost mine to FOB, yr 4 on	$24	Transport and port loading costs	SM Vallenar
Shipping cost yr 1 - 3	$35	Based on Panamax sized shipping	SM Vallenar
Shipping cost yr 4 onwards	$27	Based on cape sized shipping	SM Vallenar
Admiralty royalty per t sold	$6 then $1.50	Higher rate on first 10mt sold	Contract
Chile government royalty	0 – 4.5%	On all sales income, scaled	SMC Vallenar
Company Tax	17%		OECD website
Depreciation	10% or 12.5%	Higher rate for mobile equipment, straight line assumed	Assumption

The product transport chain has not been finalised, but various port options have been considered, and we are satisfied that there will be feasible transport options. Road transport has been assumed to the port in all cases; although construction of a access onto the existing railway is possible, it has not been considered in this study.

The nearest port (at Huasco) is approximately 50 km from the tenement area, and private facilities there are being used to ship iron ore pellets. SCM Vallenar has access to land near the existing port (Punta Alcalde) and has prepared studies on development of this land into a port which can handle Capesize shipping. This port development may well be the long term shipping option for this project, but port development is dependent on financing and permitting.

In the meantime there is an existing Panamax port at Totoralillo, some 260 km north of the tenements, with availability to ship up to 2mtpa, and a smaller port nearby at Caleta. In addition, Minera MMX de Chile are building a cape sized port (Castilla port) at Punta Cachos, some 80 km south of Copiapo and approximately 200 km from the tenements (MMX, 2011), and SCM Vallenar have been in discussions about using this facility. Castilla port has received environmental approval and is stated to be a $300m investment. It is expected to be ready for use within three years.

For this study we have assumed use of Totoralillo for the first three years and shipping from Castilla port thereafter. Note that any development (or access to third party facilities) at Huasco would reduce transport and shipping costs from those assumed here.

The forecast was limited to 15 years. Although there has been allowance for regular replacement of mobiles, there has been no capital allowance made for replacement of the process plant. An allowance of $5m has been made for closure costs in year 15. Given that there will be sufficient low grade stockpile for another year's processing remaining from the mining in the planned pits, without any value being assigned to the remaining resources and exploration potential in the tenements, this assumption is considered conservative.

The modelling indicates:

- The Japonesita-Primavera and Mirador pits and proposed processing form a viable project under the assumed conditions. The forecast indicates a very profitable project (**IRR=21.7%**, NPV at 12% $114m, positive cash flow in year 2, undiscounted payback in year 5).
- More aggressive assumptions on year 1 output could improve these figures slightly.
- The pit economics is dependent on processing the in pit inferred resources (discussed below).
- The modelled project is marginal at a base case of $110/t and forecast transport and shipping costs (IRR=3.6%), and profitable at $120/t (IRR=11.9%).
- The modelled resources used a cut-off of 6% FeMag. The model indicates that 6% plant feed grade is profitable. Although processing slightly lower grades (around 5.2%) of in pit material may be profitable, we consider that the plant recovery may be lower than the assumed 80% for this low grade feed.

The project model derived for this exercise is not detailed but is sufficient to demonstrate strong project economics, and hence to produce JORC compliant reserves. This model has not been derived for the purpose of a project valuation and should not be used for this purpose. Further work may be required (more sophisticated treatment of inflation, depreciation, price modelling, more detailed analysis of plant recovery, capital and operating costs, sensitivity analysis etc) to obtain the best prediction of overall project finances.

RESERVES

Reserves were estimated by cutting the resources by the two modelled optimum pit shells, and adjusting for mining and dilution. As discussed above a 6% FeMag cutoff has been used.

Deposit	Proved Reserves		Probable Reserv es		Total	
	Tonnes (Mt)	Grade FeMag %	Tonnes (Mt)	Grade FeMag %	Tonnes (Mt)	Grade FeMag %
Japonesita	16.9	11.4	9.1	13.1	26.0	12.0
Primavera	8.7	19.8	35.1	16.9	43.8	17.4
Mirador	-	-	11.0	13.0	11.0	13.0
TOTAL	25.6	14.2	55.2	15.5	80.8	15.1

We have been informed that environmental permits for the project can be finalised without undue delay, and although we have made no legal checks, we have no reason to doubt this information. Similarly we have made no checks of the legal tenure of the various leases covering these reserves (see tenure section above for tenure numbers) but have no reason to question the information provided by SCM Vallenar.

In pit inferred resources are as follows:

Deposit	Resources (NOT diluted)		Adjusted for recovery and dilution	
	Tonnes (Mt)	Grade FeMag %	Tonnes (Mt)	Grade FeMag %
Japonesita	5.7	19.2	5.9	17.4
Primavera	38.4	17.1	40.1	15.6
Mirador	15.0	10.6	15.7	9.6
TOTAL	59.1	15.7	61.7	14.3

The in pit inferred makes up 43% of the scheduled ore. As this is inferred status, there is less confidence in the grade of this material. Further drilling should be undertaken to confirm the grade of this material, with priority given to in pit inferred scheduled to be mined over the first five years of operations.

As discussed above, we do not recommend any short term mine planning is carried out on these reserves until the geology model has been updated with the final chemical analyses, and further infill drilling is also recommended in areas of in-pit inferred resources.

RECOMMENDATIONS - GEOLOGY

The following geological work is recommended in order to improve and/or give more confidence in the resource base for this project. KRC and Worley Parsons have made recommendations regarding additional mining and process testwork respectively (Appendices 3 and 4).

High priority geological items include:

- The geology models should be updated following receipt of all final analyses from the current drilling, as the additional confidence in local grade predictions will be required for short term mine planning.
- Additional drilling to upgrade the in pit inferred resources. Priority should be given to material scheduled for the first five years of mining.
- More detailed (short term) mine planning.
- Infill drilling around the Japonesita/Primavera and Mirador pits to eliminate the possibility of sterilising potential resource.

The following geological recommendations are lower priority but would benefit the overall project:

- Infill drilling at Japonesa to confirm FeMag grades
- Additional drilling at Chillán Viejo to upgrade the resource and potentially enable the inclusion of this deposit in reserves
- Additional exploration and drilling at the remaining priority exploration targets to increase the hard rock resources
- Geotechnical logging of diamond cores from the current program as recommended by Coffey Geotechnics
- Further checks on the stockpile grades are a lower priority but could increase the lower grade resources available to the project.

RISKS

We consider the project to be robust financially at prices above $125/t for 62% Fe fines. There is sufficient mineralised material for a long life project, with good potential to extend the known resources and reserves.

We have not conducted a detailed risk analysis or sensitivity analysis of this project, but from the work completed, consider major apparent risks at this stage of project development to be:

- Availability of project finance
- Significant reduction in iron ore price (to below approximately $120/t)
- Low plant recovery
- Grade of in pit inferred resources

CONCLUSIONS

Preliminary geological modelling, mine planning and a financial forecast have been completed on some of the magnetite deposits forming SMC Vallenar Iron's Vallenar iron project. Positive cash flow on the modelled 2Mtpa project based on these deposits has enabled estimation of JORC compliant reserves totalling 81Mt. These reserves can be mined by open cut in two pits.

During project development additional drilling is recommended to upgrade some in-pit inferred resources and provide more confidence in detailed mine planning. Magnetic susceptibility measurements will assist in grade control to define plant feed and low grade stockpile material.

Given the resources outside the pits, together with the potential to increase the Primavera resources at depth and deepen the planned pit, there is potential to increase the project life or expand the operations.

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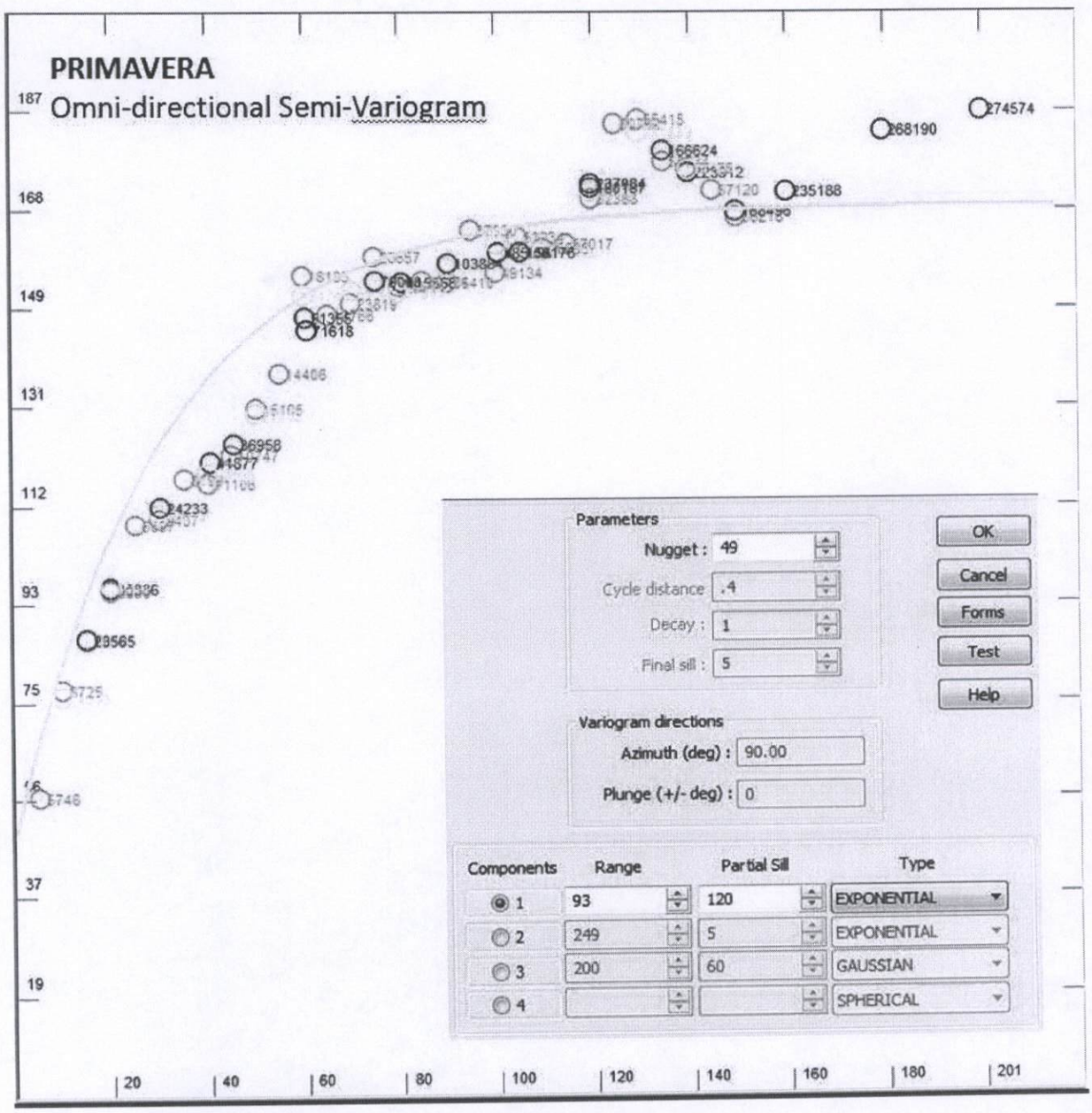
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APPENDIX 1 – BLOCK MODELLING

PRIMAVERA

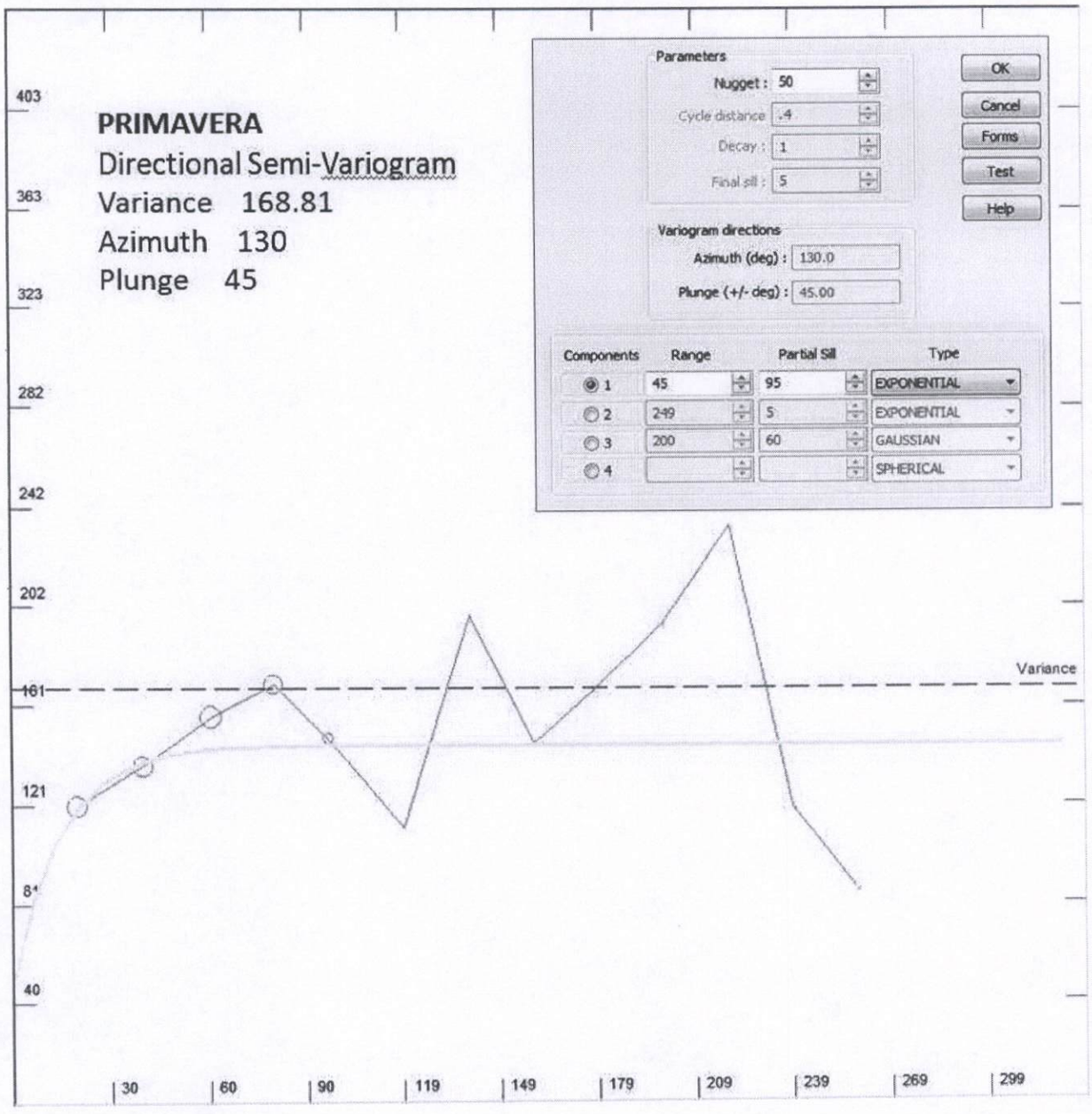
OMNI-DIRECTIONAL SEMI-VARIOGRAM

Variance	168.81		
Nugget	49		
	Range	**Partial sill**	**Type**
Component 1	93	120	Exponential



DIRECTIONAL SEMI-VARIOGRAMS

Directional semi-variograms were also constructed at various orientations in azimuth and dip.



The best-fit model for the directional semi-variograms had the following parameters:

Variance	168.81		
Nugget	50		
	Range	**Partial sill**	**Type**
Component 1	45	95	Exponential
Azimuth	130		
Plunge	45		

BLOCK MODELLING

Block sizes	5m x 5m x 5m
	Trimmed to surface DTM and conceptual pit wireframe
Kriging	Search Ellipsoid runs 1 and 2

Sectors	2
Max points / sector	4
Min points (total)	2

Run 1 ellipsoid	**Axis**	**Azimuth**	**Plunge**	**Radius**
	1	066°	79°	100
	2	219	10	65
	3	310	0°	5

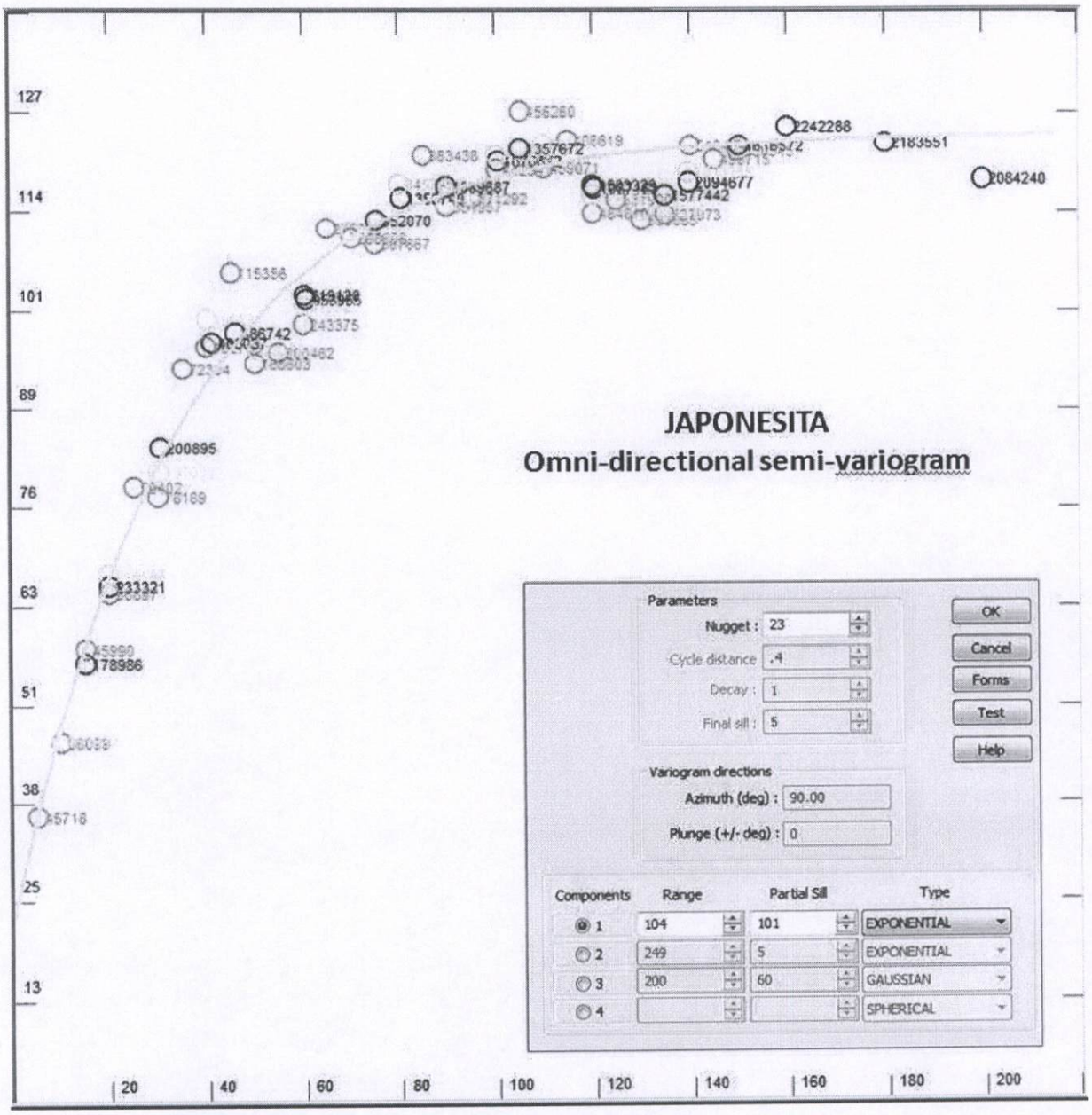
Run 2 ellipsoid	**Axis**	**Azimuth**	**Plunge**	**Radius**
	1	066°	79°	100
	2	219	10	85
	3	310	0°	25

JAPONESITA

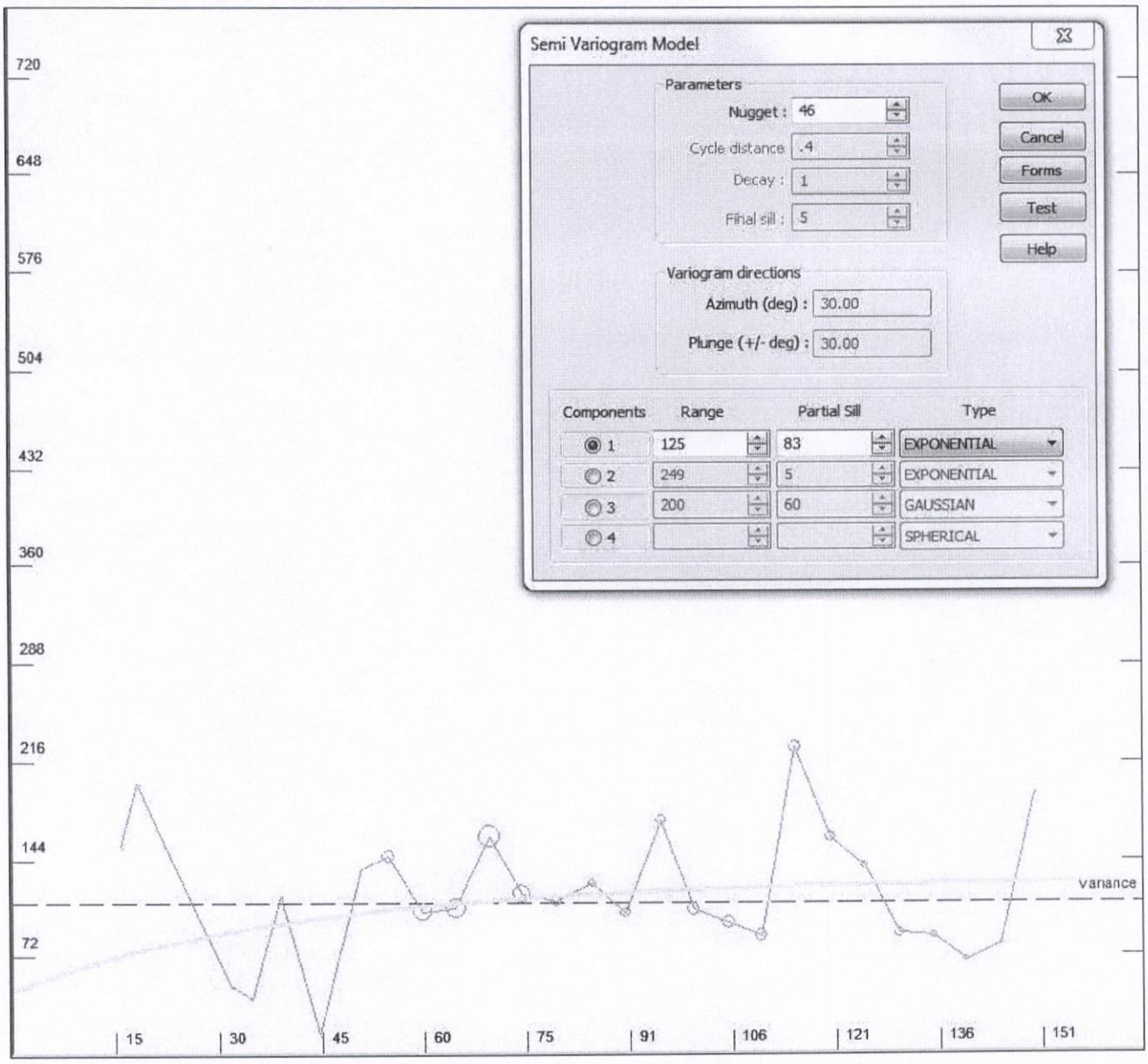
OMNI-DIRECTIONAL SEMI-VARIOGRAMS

Variance	104.80
Nugget	23

	Range	**Partial sill**	**Type**
Component 1	104	101	Exponential



Data distribution limited the directional models so geological observations and variography were used to choose the direction of maximum continuity, shown below:



The kriging search parameters were:

Kriging	Search Ellipsoid runs 1 and 2		
	Sectors	2	
	Max points / sector	4	
	Min points (total)	2	

Run 1 ellipsoid	**Axis**	**Azimuth**	**Plunge**	**Radius**
	1	020°	45°	100
	2	190	44.5	65
	3	285	5	5

Run 2 ellipsoid	**Axis**	**Azimuth**	**Plunge**	**Radius**
	1	020°	45°	100
	2	190	44.5	85
	3	285	5°	25

Cross sections and plans for Japonesita and Primavera are shown below:

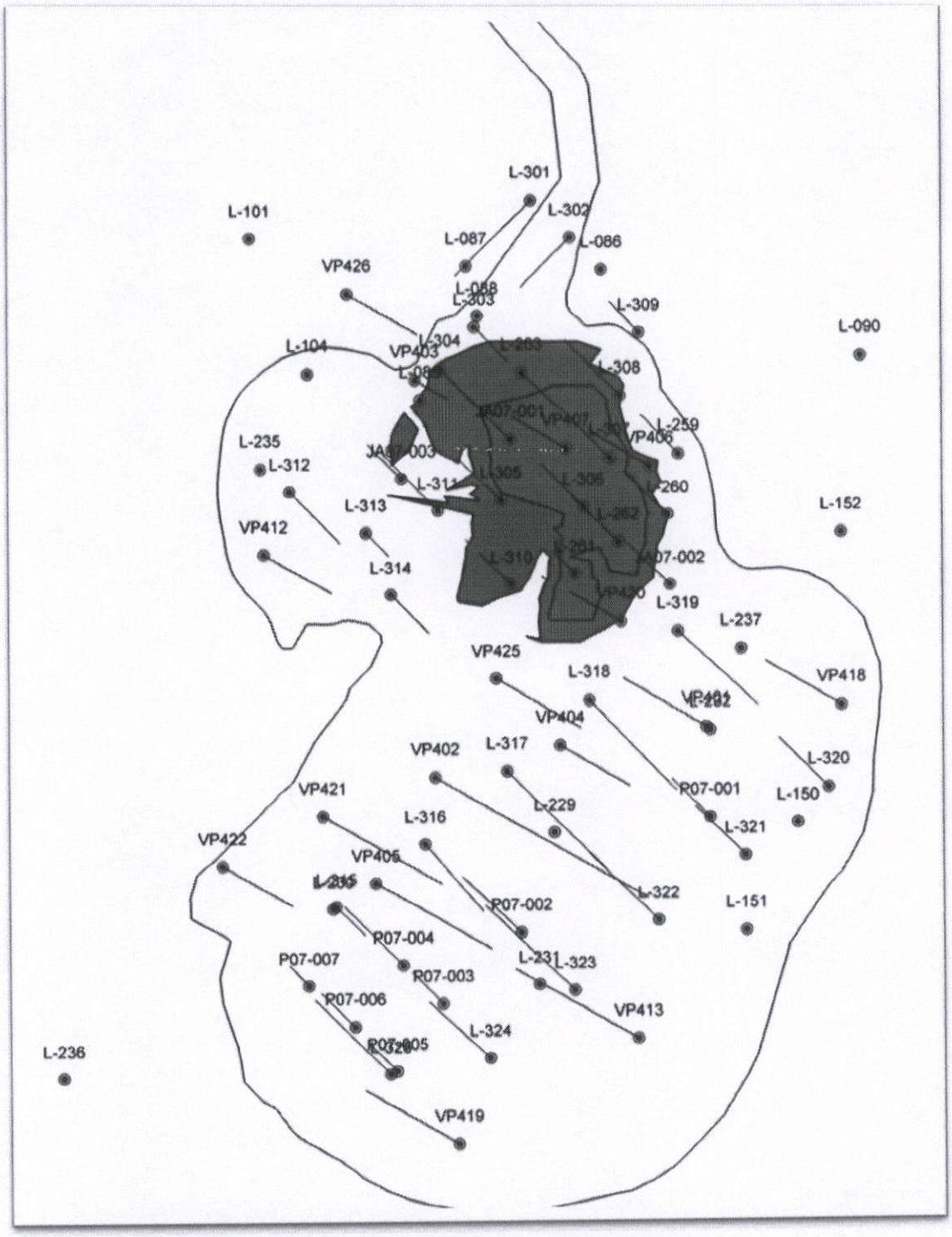


Figure 1 Plan of Japonesita-Primavera pit outline, drilling and Japonesita measured resource

NOTE – primavera measured resource not shown here.

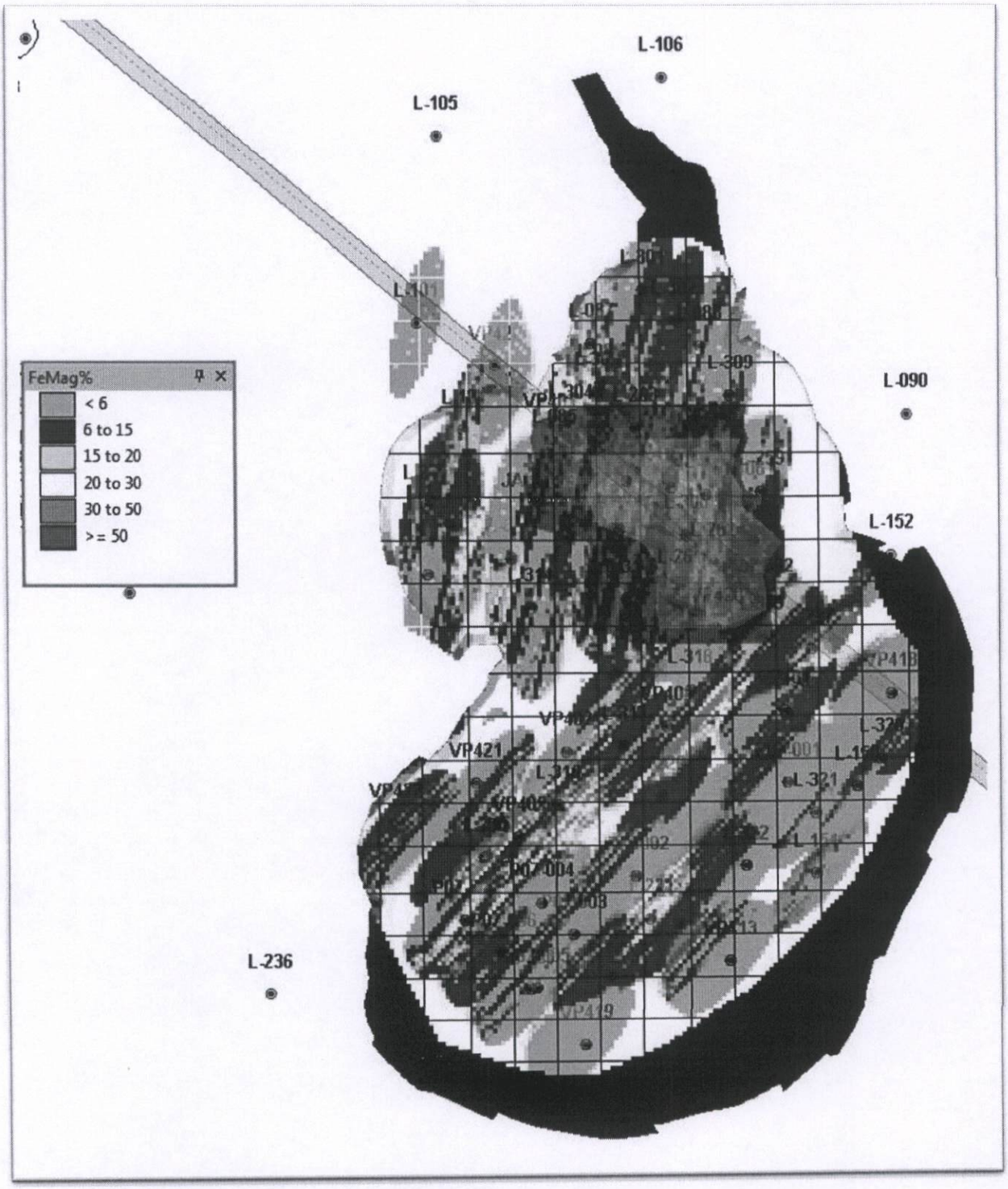


Figure 2 Japonesita-Primavera plan showing block grades and section line

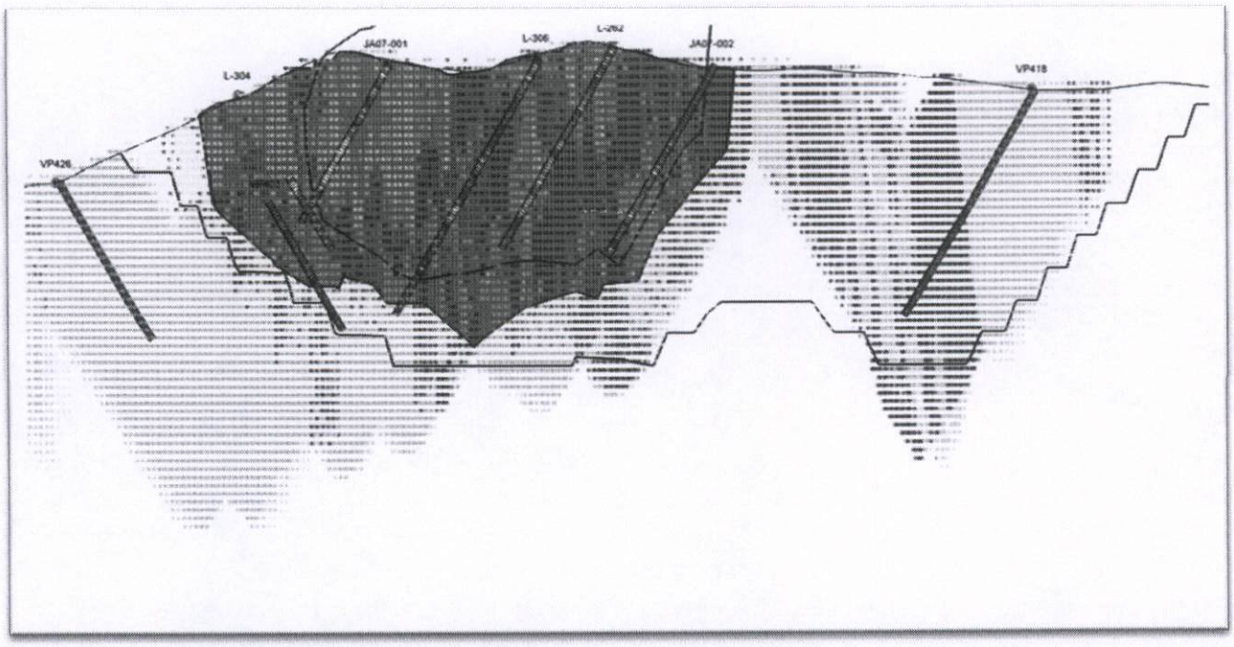


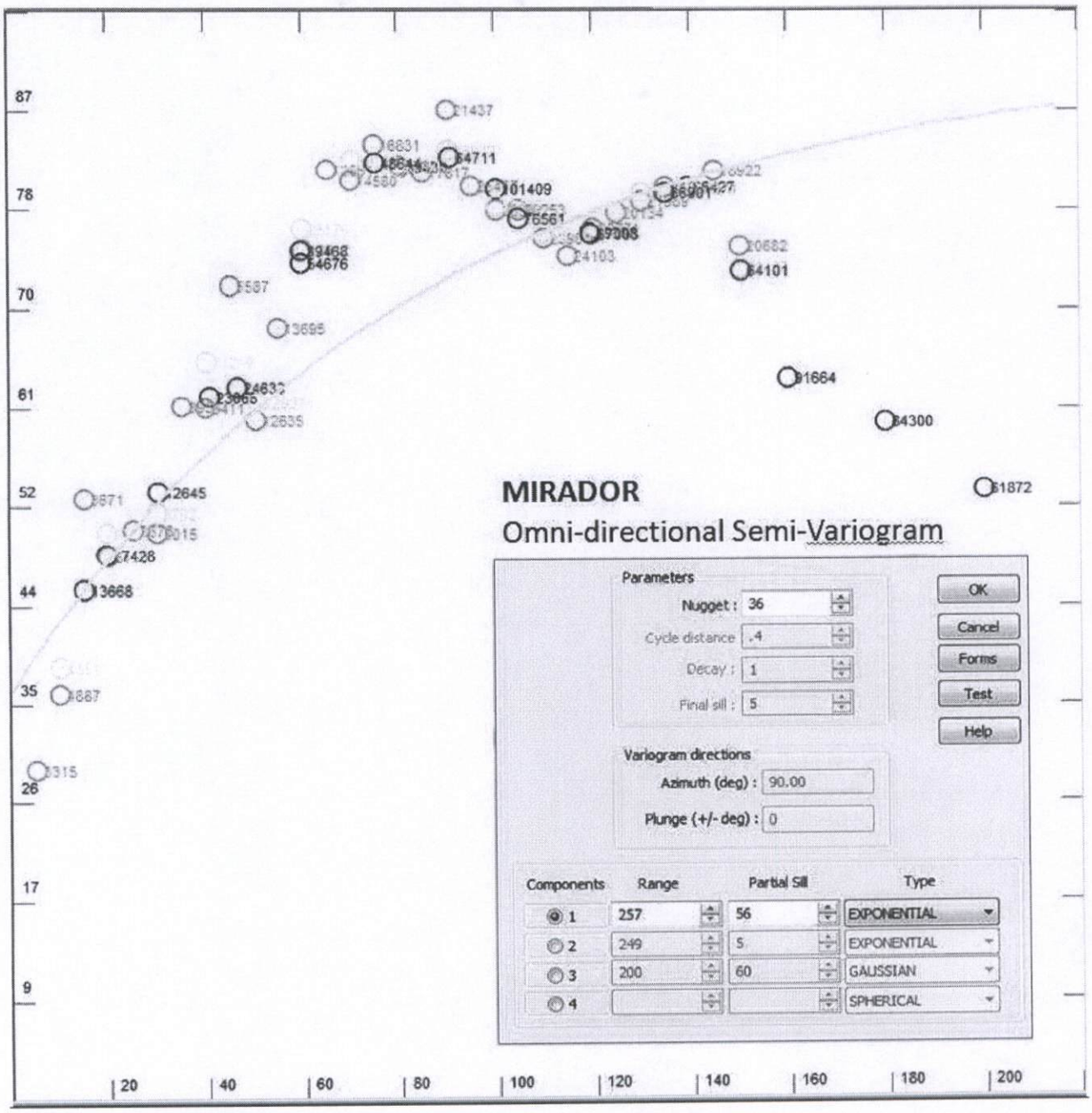
Figure 3 Cross section through northern part of planned Japonesita-Primavera pit

NB – Legend shown on Figure 2. Measured and indicated resources indicated by shading.

MIRADOR

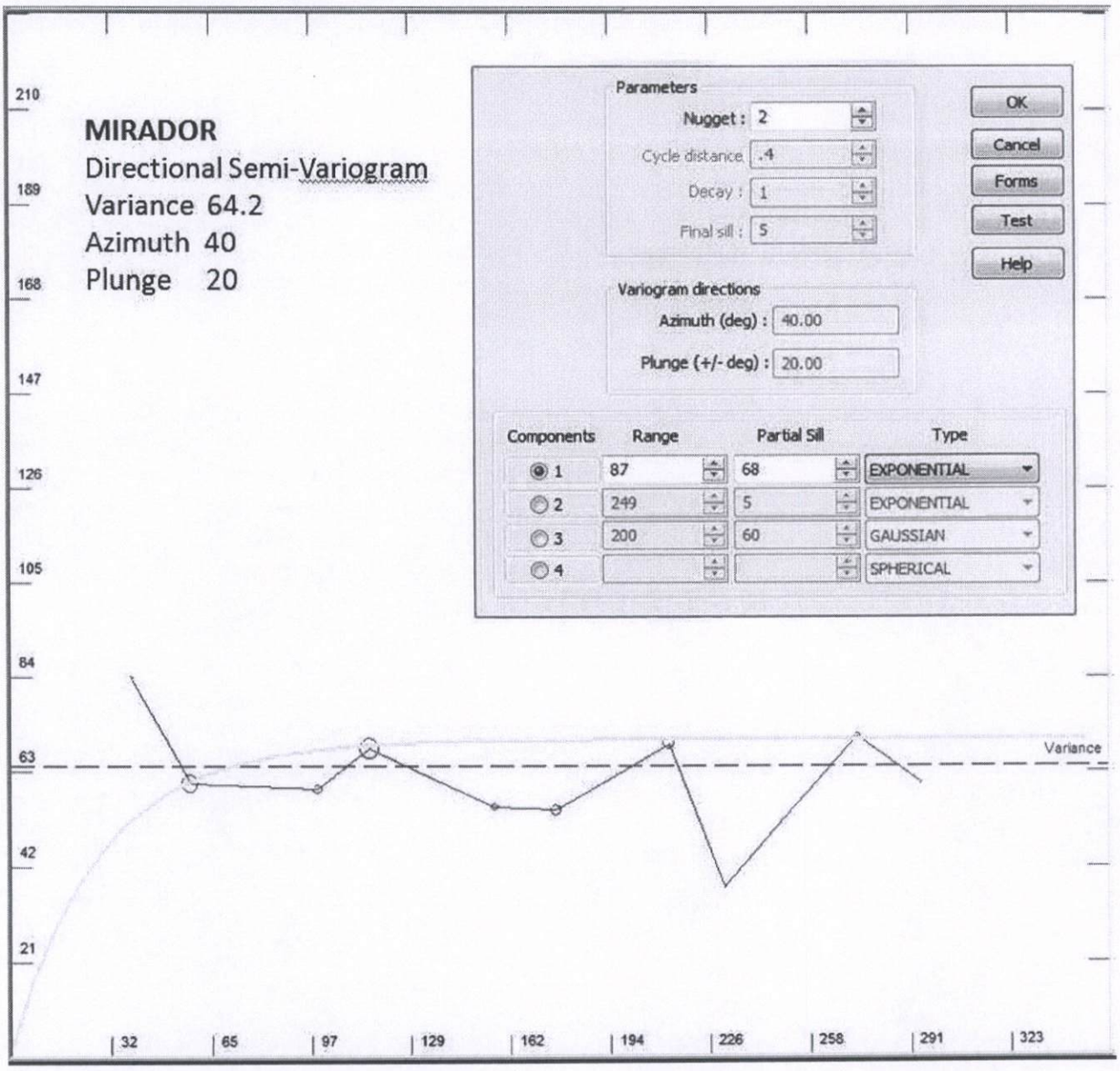
OMNI-DIRECTIONAL SEMI-VARIOGRAMS

Variance	64.22		
Nugget	36		
	Range	**Partial sill**	**Type**
Component 1	257	56	Exponential



DIRECTIONAL SEMI-VARIOGRAM

Variance	64.2		
Nugget	2		
	Range	**Partial sill**	**Type**
Component 1	87	68	Exponential



BLOCK MODELLING

Block sizes	5m x 5m x 5m			
	Trimmed to surface DTM and conceptual pit wireframe			
Kriging	Search Ellipsoid			
		Sectors	2	
		Max points / sector	4	
		Min points (total)	2	
Run 1 ellipsoid	**Axis**	**Azimuth**	**Plunge**	**Radius**
	1	030°	0°	95
	2	120	85	65
	3	300	5	25

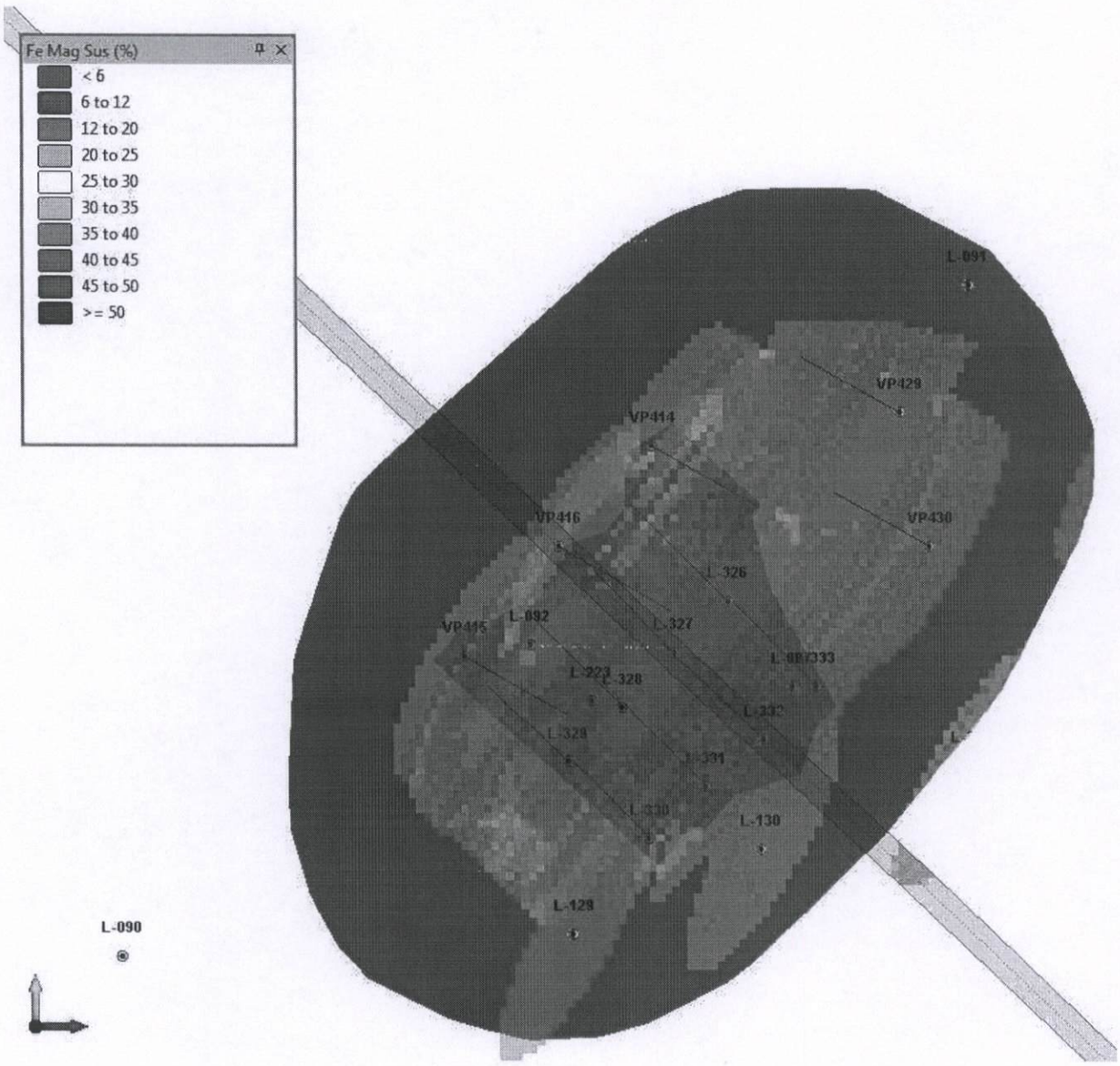


Figure 4 Mirador plan showing resource blocks and pit outline

NB – indicated resource in blue shading

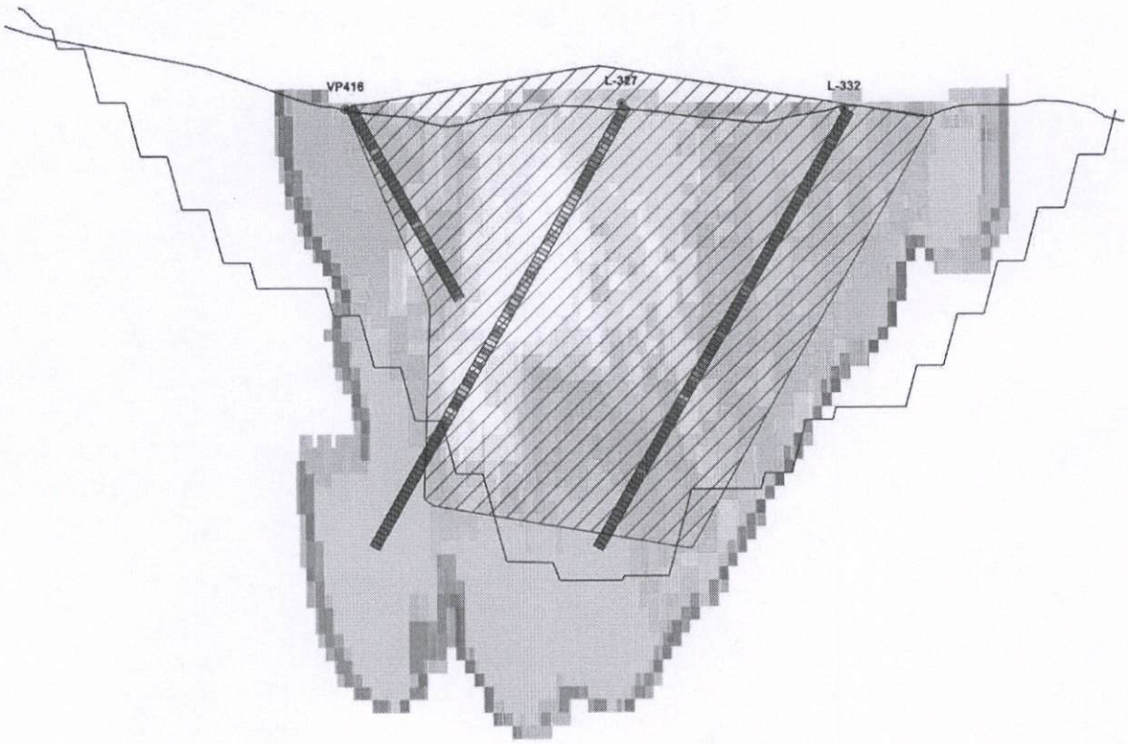


Figure 5 Mirador cross section showing resource blocks

Indicated resource outline in blue hatching, legend as in Figure 4.

CHILLÁN VIEJO

OMNI-DIRECTIONAL SEMI-VARIOGRAMS

DIRECTIONAL SEMI-VARIOGRAMS

BLOCK MODELLING

Block sizes	5m x 5m x 5m	
Limits	Eastings	325,870 – 325,330
	Northings	6,833,840 – 6,834,370
	Elevation	310m – 570m
	Trimmed to surface DTM	
Kriging Search Ellipsoid Radius 100m		

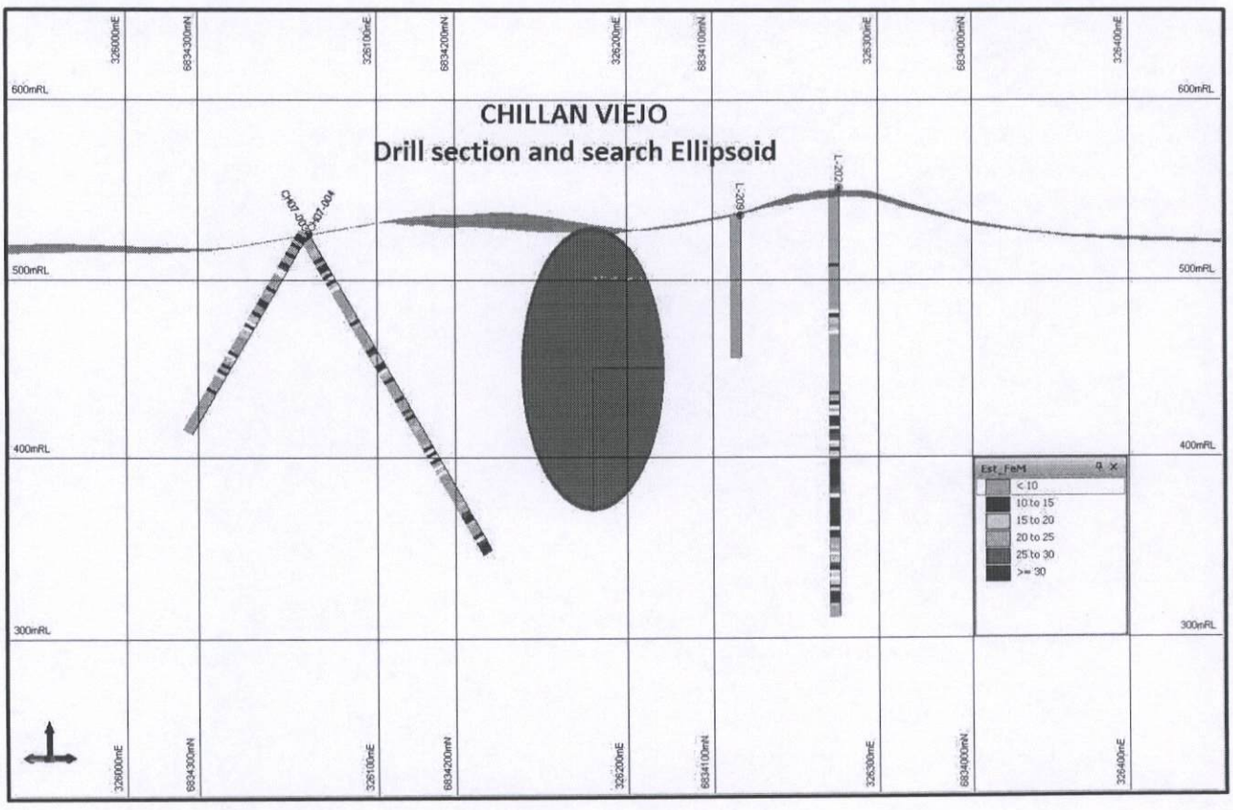
Sectors 4

Max points / sector	8
Min points (total)	2

Axis	Azimuth	Plunge	Factor
1	045°	0°	1
2	135°	90°	0.8
3	315°	0°	0.6

Inferred Resource — Restricted to those blocks within the Search Ellipsoid from drillholes around the Chillán Viejo workings.

Exploration Potential — All other blocks outside of the main Chillán Viejo zone (ie, around the drillholes to the south and southeast of the Chillán Viejo workings area).



JAPONESA

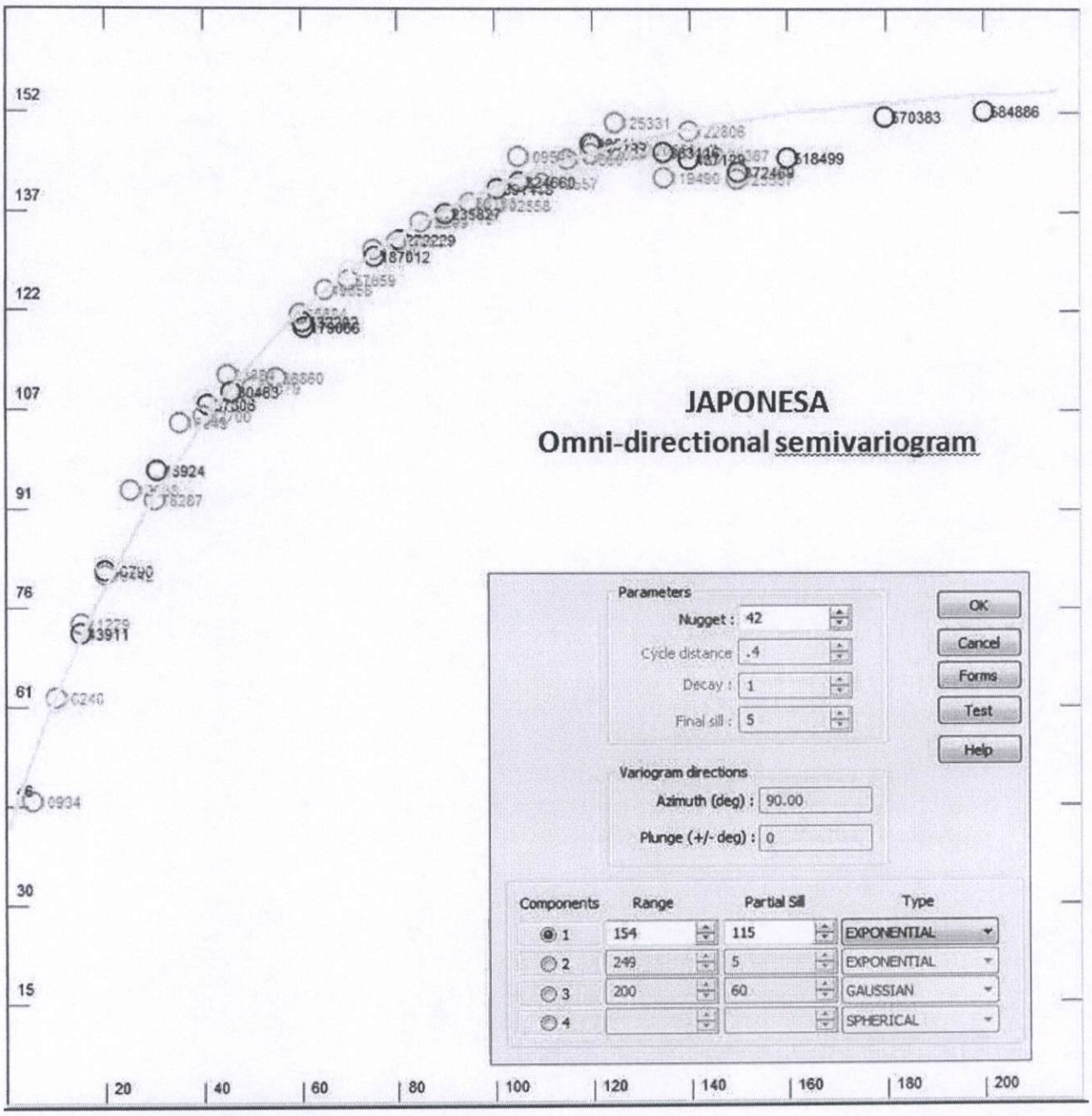
OMNI-DIRECTIONAL SEMI-VARIOGRAMS

Variance 143.17

Nugget 42

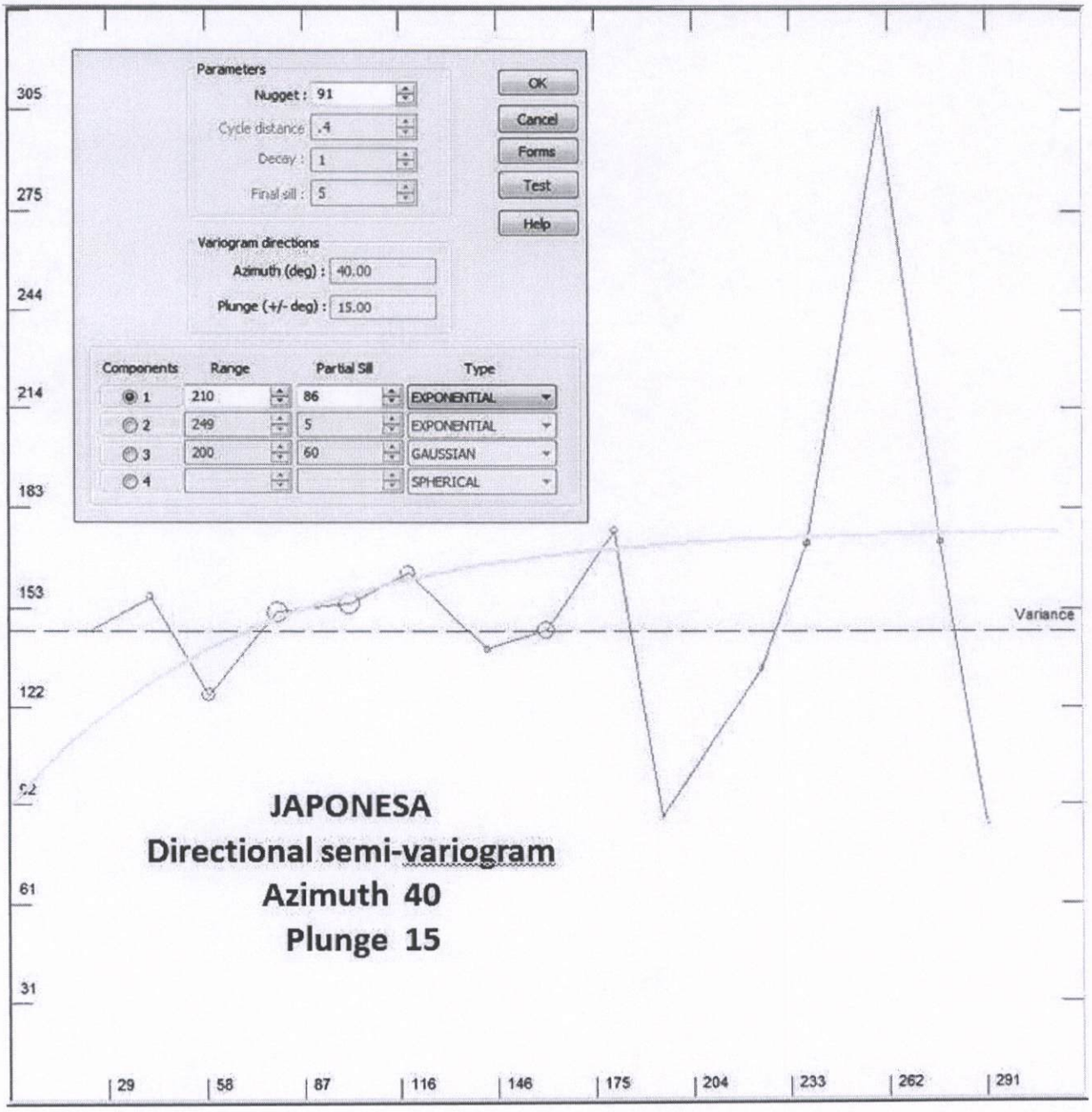
Range	Partial sill	Type

Component 1	154	115	Exponential



DIRECTIONAL SEMI-VARIOGRAMS

Variance	143.17		
Nugget	91		
	Range	**Partial sill**	**Type**
Component 1	210	86	Exponential


Parameters
Nugget : 91
Cycle distance .4
Decay : 1
Final sill : 5
OK
Cancel
Forms
Test
Help
Variogram directions
Azimuth (deg) : 40.00
Plunge (+/- deg) : 15.00
Components Range Partial Sill Type
1 210 86 EXPONENTIAL
2 249 5 EXPONENTIAL
3 200 60 GAUSSIAN
4 SPHERICAL
305
275
244
214
183
153
122
92
61
31
Variance
29
58
87
116
146
175
204
233
262
291
JAPONESA
Directional semi-variogram
Azimuth 40
Plunge 15

autoprocação

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APPENDIX 3

VALLENAR IRON ORE SCOPING STUDY – KRC MINING CONSULTANTS

PROJECT REPORT

CLIENT

Geos Mining

PROJECT NAME

Vallenar Iron Reserve update

V1.0

Job Number:	CA110414	**Date:**	26-May-2011
Ordered by:	Sue Border	**Prepared by:**	NvH

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Revision Summary

Version	Date	Changes made
V1.0	25/05/2011	Original Document

Peer Review sign-off

I attest that I have reviewed the document that follows and that it meets the requirements of the consulting agreement noted (as varied from time to time) and that I have the technical expertise to sign off on the accuracy of the work presented herein consistent with the scope of the agreement and the accuracy of the information provided.

	Nick van der Hout
Consultant signature	*Consultant name*

Project Manager sign-off

I attest that I have reviewed the document that follows and that it meets the requirements of the consulting agreement (as varied from time to time) and is a true and complete record of the work carried out on behalf of the client by KRC Mining Consultants.

	Steve Franklin
Project Manager signature	*Project Manager name*

A. Executive Summary

1. Purpose

Geos Mining retained the assistance of KRC Mining consultants to produce a pit design, schedule, and operational and capital costing for the mining operation Japonesita-Primavera and Mirador deposits.

2. Scope

Analysis carried out:

- Whittle analysis of the 3 ore deposits to determine economic shape and depth
- A simple assessment of the mining sequence to determine what equipment could work best for the project.
- The equipment simulated using Talpac.
- Costing carried out using various suppliers and previous mine costing models.

3. Deliverables

- Pit designs.
- Dump and stockpile designs
- Annual average grades.
- Mining costs.

4. What was found

i. Mining

Two pits were designed one for the Japonesita-Primavera ore bodies and a second pit for the Mirador deposit.

Table 1 - Contained mineable resource for Pit 1

Japonesita-Primavera	
Minable Ore Tonnes	123.3Mt
Insitu Fe Grade	14.9%
Insitu Waste	82.0Mt
Stripping ratio	0.7

Table 2 - Contained mineable resouce for Pit 2

Mirador	
Mineable Ore Tonnes	30.2Mt
Insitu Fe Grade	10.4%
Insitu Waste	17.8Mt
Stripping ratio	0.6

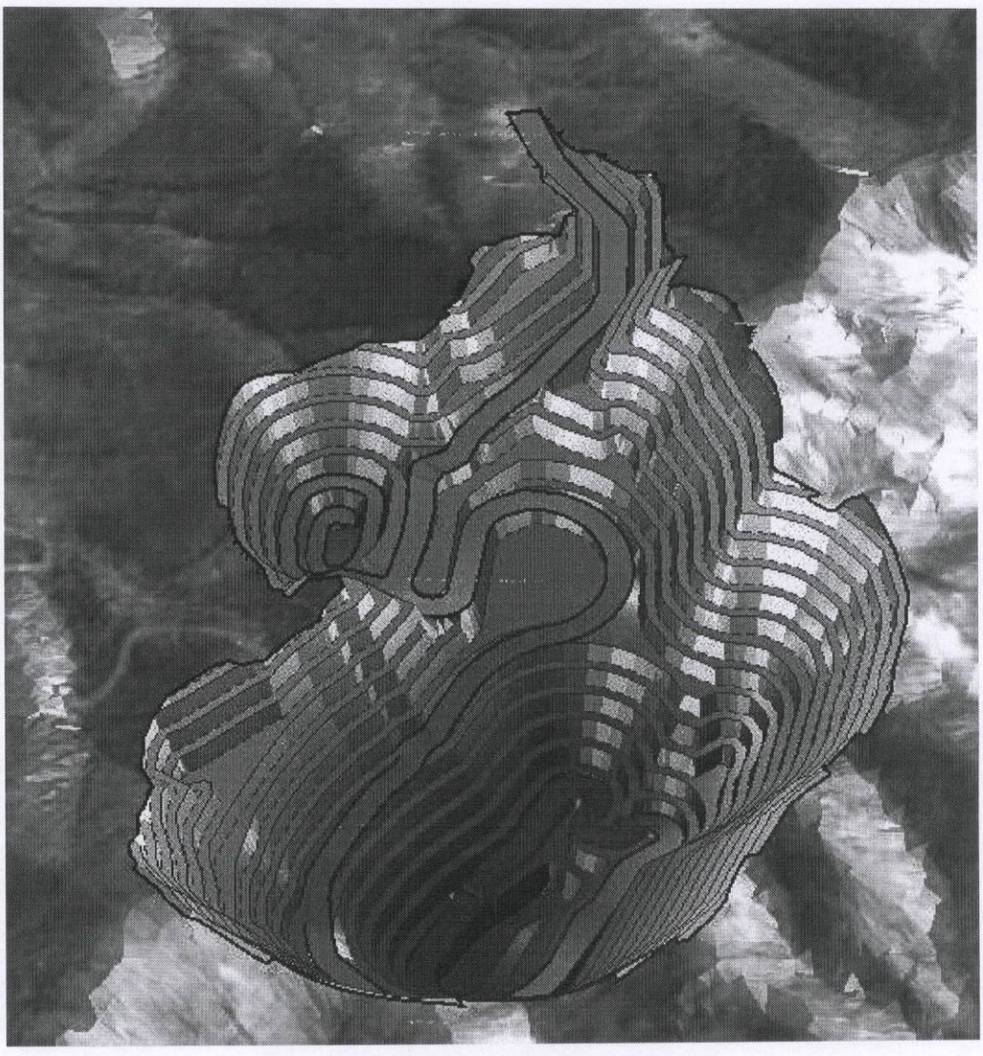


Figure 1 Japonesita/Primavera Pit design

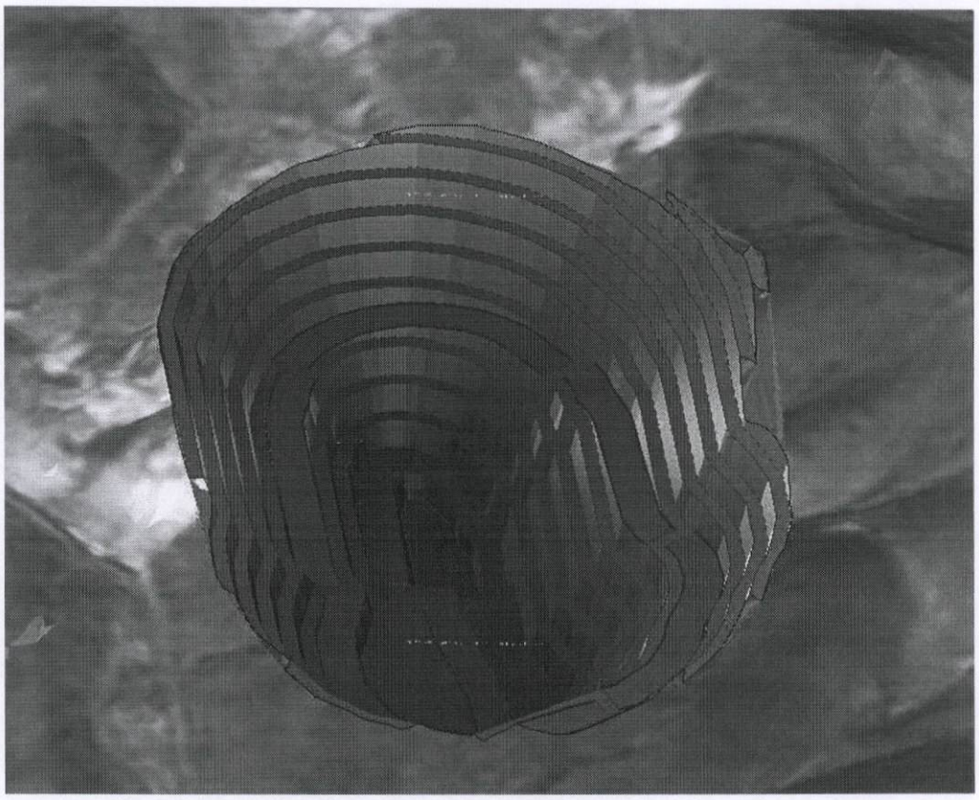


Figure 2 Mirador Pit design

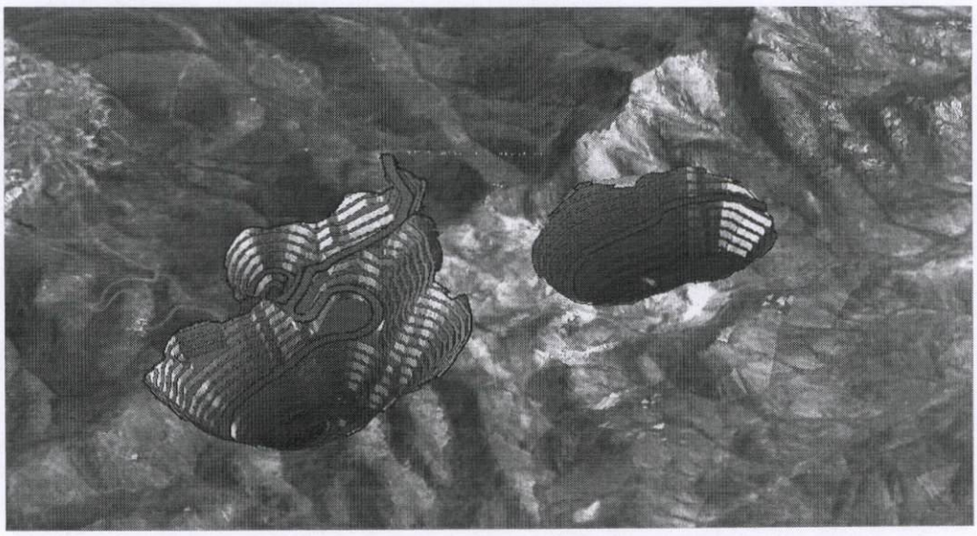


Figure 3 Japonesita/Primador and Mirador Pits

ii. Mining costs

Table 3 - Capital expenditure estimates for 22Mtpa moved[1]

Currency	Total Cost
Initial Capital	30,240,000
Total over project life[2]	87,930,000

Table 4 - Operational expenditure for 22Mtpa moved

Currency	Cost Type	Total Cost	USD/ton
USD	Cash Cost	514,700,00	2.02

5. Recommendation(s)

All listed recommendations should take place after the decision is made on detailed early shipping and processing restrictions.

i. Pit design

Detailed short-term pit design should be undertaken covering the first 24 months of the operation. The aim of this detailed design would be to maximise early cash flow given the most probable restrictions on processing and shipping.

ii. Scheduling

A detailed short term schedule on an monthly basis should be created using XPAC or XACT mining planning software. A more comprehensive yearly schedule should be produced using XPAC or other mine scheduling software package.

iii. Costing

Detailed equipment life cycle costing for local conditions should be obtained for the final equipment selected. Detailed costing and local supply information should be gathered for consumables and other supplies. A comprehensive cash flow model should be built with a focus on the initial 24 month period.

---

[1] Total movement 29mtpa including ore, waste and tailings handling

[2] Replacement capital has no inflation applied

B. How to read this report

This document is divided into three sections:

1. The Executive summary giving a high level overview of the project and recommendations.
2. The body of the report which will give you the detail of the work.
3. The appendices which give you all the supporting documents and references.

You will also find all the electronic files used in this analysis including design and analysis data, spreadsheets and Word documents on the enclosed CDROM\DVD.

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A. Overview

Japonestia-Primavera and Mirador are magnetite Iron ore deposits located south of Vallenar in Chile. The deposits are held by Vallenar Iron.

KRC Mining consultants were contracted by Geos Mining to undertake the following actions:

- Create a pit design for the Japonesita-Primavera & Mirador deposit. The design should meet broad economic cut-off and processing grades;
- Select equipment capable of meeting the desired production schedule;
- Provide a annual production and grade schedule for processing plant feed; and
- Provide a costed model for pit production, equipment and activities.

Vallenar also holds a number of other Magnetite ore deposits in the local area and these are expected to require economic evaluation and pit design work in the near future once a suitable level of geological confidence has been established.

An good out come has been achieved in all the requested areas for the Japonestia-Primavera and Mirador deposits. This study is more comprehensive than the initial study carried out in December. It includes the following updates.

- A whittle optimised pit design using more detailed financial data;
- Finalised plant production schedule and targets;
- A computer simulated mine production schedule;
- Updated list of required mining equipment; and
- Updated financial model covering equipment life cycle costs and activity costing.

B. Geology

This section details the geology for the Vallenar operation.

1. Block Model

The geological interpretation was done by was done by Geos Mining. Geos Mining provided a 5x5x5 block model of the Japonesita-Primavera deposit and a separate model for the Mirador deposit.

2. Lithological units and geological contacts

No lithological units were provided or considered in the mine design.

3. Drill hole data base

The drill hole data base was not provided in the data package and thus no consideration has been given as to inclusion or exclusion of blocks from the schedule based on the supported drilling.

4. Confidence

All resources in the provided block model for the Japonesita-Primavera and Mirador deposits were assumed for the purpose of design to be at an equal confidence level. No weighting or prioritising was factored into the pit design or schedule.

C. Whittle Optimisation

This section details the proposed whittle optimisation for the Vallenar operation.

1. Assumptions

i. Mining Assumptions

The following assumptions were used to determine the most suitable mining system:

- Mining dilution 10% by volume at 0% Fe;
- Mining recovery 95% of diluted ore; and
- All Fe grades are for magnetically recoverable iron only.
- $2.00 Mining cost per tonne
- $1.00 reclaiming cost from LG stockpile
- 21 Mtpa total mining limit

ii. Pit Design assumptions

The following assumptions were used to determine the most suitable pit design:

- 20m bench height;
- 10m berm width;
- 75° bench face angle;
- 45° overall pit slope angle;
- 25m road width; and
- 1:10 maximum haul road gradient.

iii. Processing Assumptions

- 80% processing recovery
- 5% minimum processing grade
- $3.2 cost per tonne of ore processed
- 10.5 Mtpa processing input limit on the plant

iv. Sales Assumptions

- 62% Fe concentrate grade
- $55 sales cost per tonne of concentrate made up of
    - $20pt Transport to port
    - $8pt for ship loading
    - $27pt for shipping by cape size
- 2.1 Mtpa limit on the export of concentrate from the port

v. *Financial Assumptions*

- Zero inflation. (Sale prices and costs are assumed to increase at the same rate)
- 12% cash discount rate.

2. Analysis

i. Economic Cut off Assessment.

Economic cut-off assessment was undertaken at a 62% Fe fines price of 135 USD. Three cut points were considered, a pit cut-off a LG stockpile cut off and a processing cut-off. Table 5, Table 6 and Table 7, show the values that were used in this assessment. The cut-off points were set using estimated costs and recoveries as well as identifying Fe grades that provide an income that balances the costs. To establish the processing cut-off the same exercise was undertaken with zero mining costs.

Table 5 - Mining cut-off assesment

Mining Cut off	**Assessed value**
Fe price	135.00 USD
Mining Dilution	110%
Mining Recovery	95%
Processing recovery	80%
Concentrate grade	62%
Cut-Off Fe	5.54%
Costs (Per Tonne)	**Assessed value**
Mining cost	2.00 USD
Processing cost	3.20 USD
Selling cost	55.00 USD
Production	**Assessed value**
Production base	1,000 tpa
Concentrate production	65 tpa
Expenses	**Assessed value**
Mining	2,000 USD
Processing	3,200 USD
Selling	3,575 USD
Total	8,775 USD
Income	8,775 USD
Profit	0.00 USD

Table 6 – Reclaim Stockpile cut-off assessment

Processing cut off	**Assessed value**
Fe price	135.00 USD
Mining Dilution	110%
Mining Recovery	95%
Processing recovery	80%
Concentrate grade	62%
Cut-Off Fe	4.48%
Costs (Per Tonne)	**Assessed value**
Reclaim cost	1.00 USD
Processing cost	3.20 USD
Selling cost	55.00 USD
Production	**Assessed value**
Production base	1,000 tpa
Concentrate production	52.5 tpa
Expenses	**Assessed value**
Mining	1,000 USD
Processing	3,200 USD
Selling	2,288 USD
Total	7,088 USD
Income	7,088 USD
Profit	0.00 USD

Table 7 – Processing cut-off assessment

Processing cut off	Assessed value
Fe price	135.00 USD
Mining Dilution	110%
Mining Recovery	95%
Processing recovery	80%
Concentrate grade	62%
Cut-Off Fe	3.41%
Costs (Per Tonne)	**Assessed value**
Mining cost	0.00 USD
Processing cost	3.20 USD
Selling cost	55.00 USD
Production	Assessed value
Production base	1,000 tpa
Concentrate production	40 tpa
Expenses	**Assessed value**
Mining	0,000 USD
Processing	3,200 USD
Selling	2,200 USD
Total	5,400 USD
Income	5,400 USD
Profit	0.00 USD

As evident in the modelling, a mining cut-off grade at 5.5% is economic for the assumed cost data, a 4.5% cut off is economical reclaimed off the low grade stockpile and 3.4% for incremental processing.

Despite economic reclaim for the LG stockpile being possible at 4.5%, processing was restricted to material above 5% magnetic iron. It was conservatively assumed that material below 5% may not achieve 80% processing recovery and thus become uneconomic.

3. Whittle Pit Shells

Whittle produced pit shells for increasing revenue factors from 0.4 - 2.0. A pit shell was produced for each economic revenue factor, 66 in total. A graph of the pit shells for the Japonesita/Primavera deposit is shown in Figure 4. The tonnes of waste, low grade stockpile ore and direct feed ore is shown on the graph along with the undiscounted and discounted cash flow.

From the graph and the project objectives it was determined to select the pit shell with the highest undiscounted cash flow, "pit 48". This pit shell provided an additional 12% in economic ore and increased the mine life by 1 year when compared to "pit 37" which achieved the highest estimated discounted cashflow. The variation in the discounted

cashflow between the two pits was 2%. In additional more comprehensive cashflow modelling including capital assumptions and discounting was to be carried out by Geos Mining at a later stage.

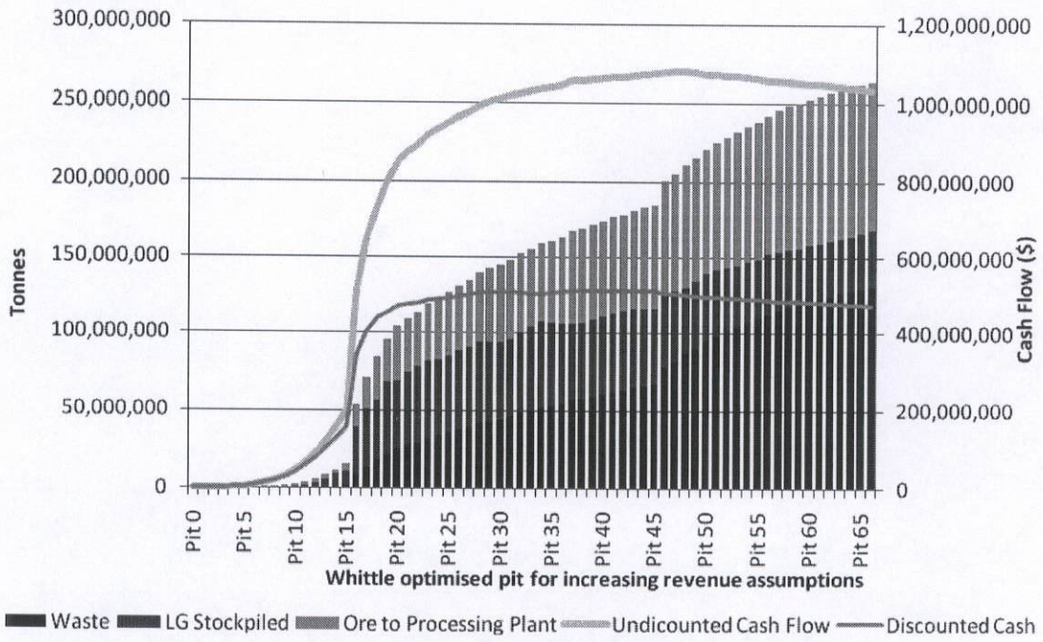


Figure 4 Graph of whittle shells for Japonesita deposit

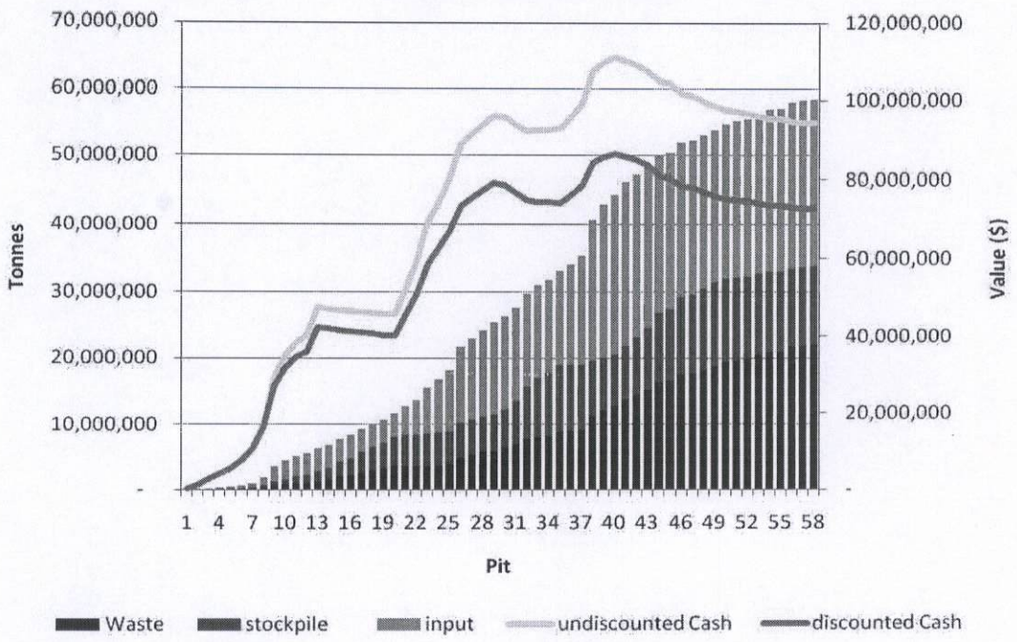


Figure 5 - Graph of whittle shells for Mirador deposit

From the graph (Figure 5)and the project objectives it was determined to select the pit shell with the highest undiscounted cash flow, "pit 39". This pit shell corresponded with both the best discounted and undiscounted cash flow. Because of the topography and grade variation with depth there is a hump in the cash flow between "pit 28" and "pit 39"

ii. Mine Design

Two pits were designed one for the Japonesita- Primavera ore bodies and one for the Mirador ore body

Table 8 - Pit 1 design results

Japonesita/Primavera Pit	
Insitu Ore Tonnes	123.3Mt
Insitu Fe Grade	16.3%
Insitu Waste	82.0Mt
Stripping ratio	0.7

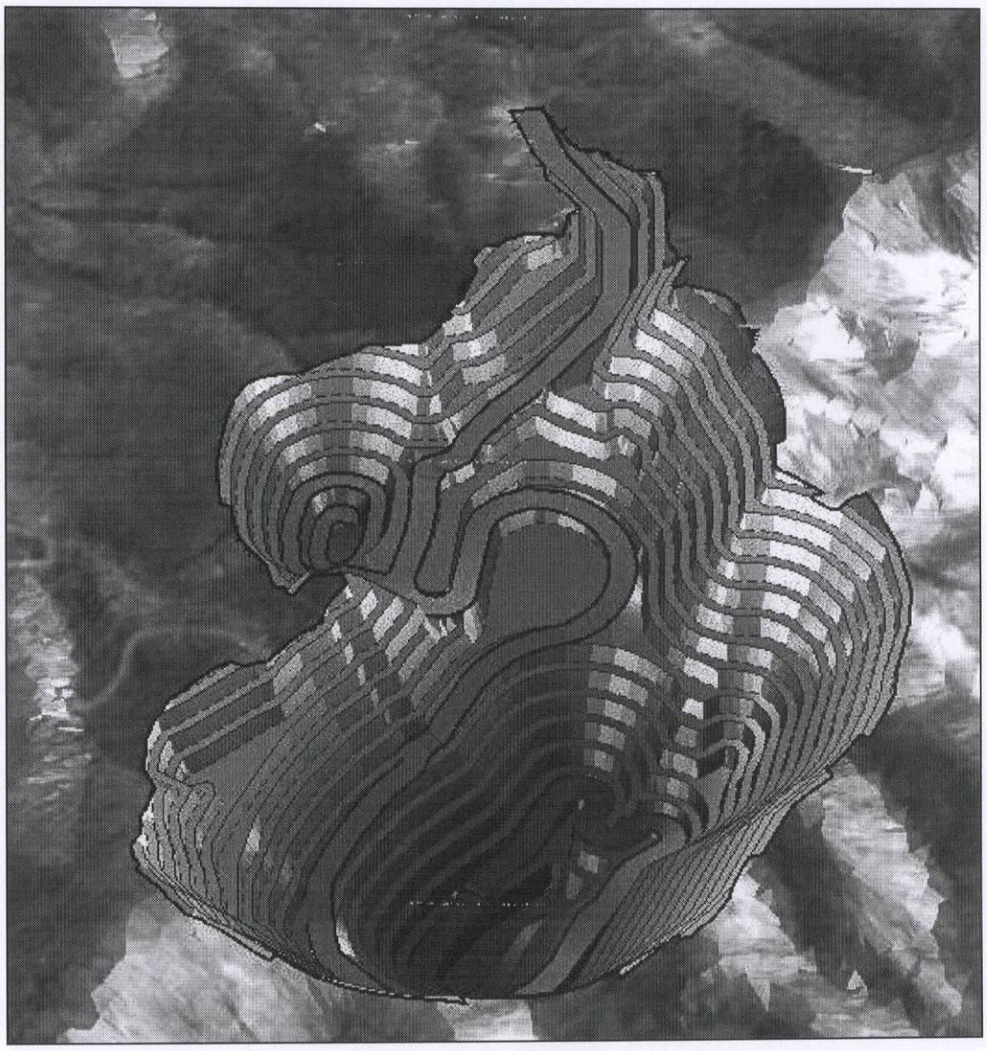


Figure 6 Japonesita/Primavera Pit design

Table 9 - Pit 2 design results

Mirador Pit	
Insitu Ore Tonnes	30.2Mt
Insitu Fe Grade	19.0%
Insitu Waste	17.8Mt
Stripping ratio	1.9

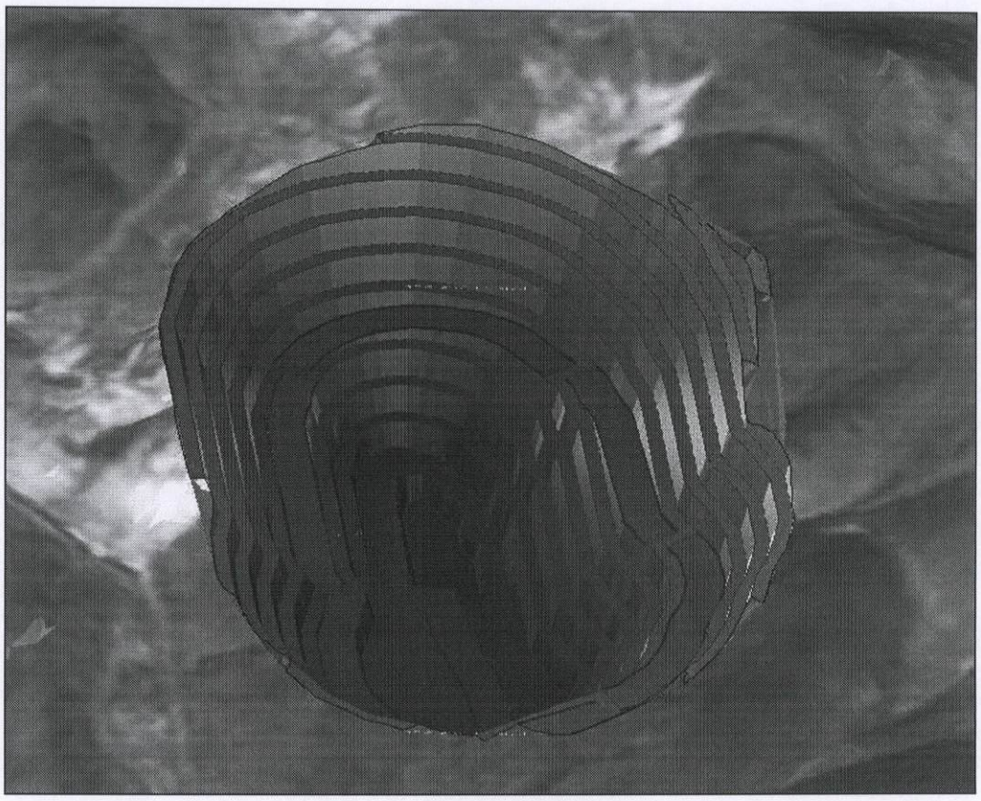


Figure 7 Mirador Pit design

iii. Dump and Stockpile Design

The Vallenar dumps have been designed to focus on limiting horizontal and vertical haulage of material while limiting the land clearing required for dump space. The Footprint utilisation number has been included in each dump design for Vallenar to describe the effects of land clearing for the dumps. The increase in the footprint utilisation number will lead to a more sustainable dump for Vallenar. One of the key consideration in maximising your Footprint Utilisation number is that you must also limit your vertical haulage of waste material as vertical haulage leads to higher fuel burning rates per km of waste haulage. Higher fuel burn rates from vertical haulage leads to costly fuel burn and also environmentally negativities associated with excessive fuel consumption.

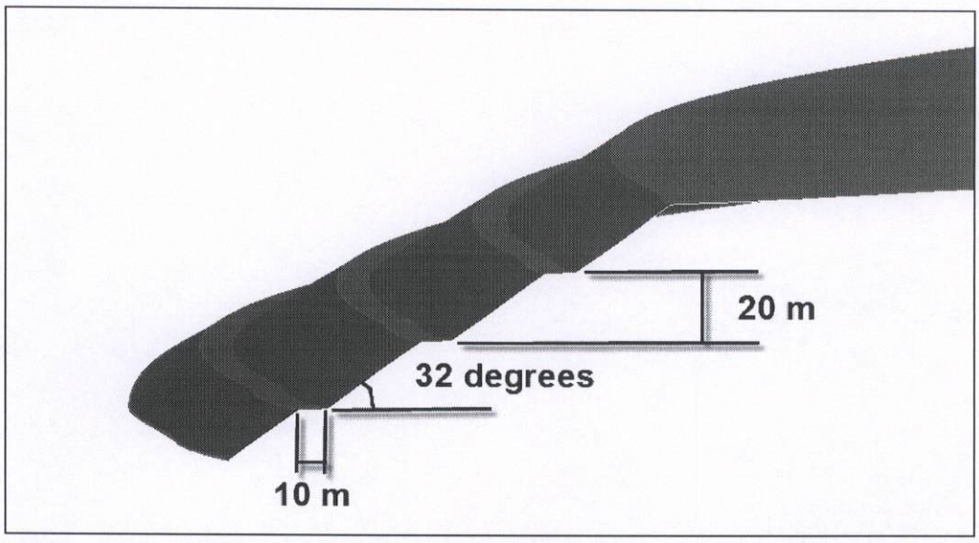


Figure 8 Design Parameters

The final overall wall angle of the dumps will be:

27 degrees with 20 m lifts at 32 degrees and 10 m berm's as can be seen in the Table 10 below.

Table 10 Design Parameters For Vallenar Dumps

Design Parameters	Indicators
Final Bench Profile (m)	20
Final Berm (m)	10
Final Bench Slope (degrees)	32
Final Overall Bench Slope (degrees)	27



Figure 9 Tailing Dump JP and Mirador

The tailing dam is located north of the Vallenar plant and has an excellent Footprint utilisation for the tailings, you can see the design parameters for the tailings below.

Table 11 Design Parameters For Tailings Dump

Design Parameters	Indicators
Tailing Dump - JP and Mirador (LCM)	66,000,000
Land Cleared Footprint (m2)	1,700,000
Footprint Utilisation (lcm/m2)	39
Height of Dump (RL)	525 RL

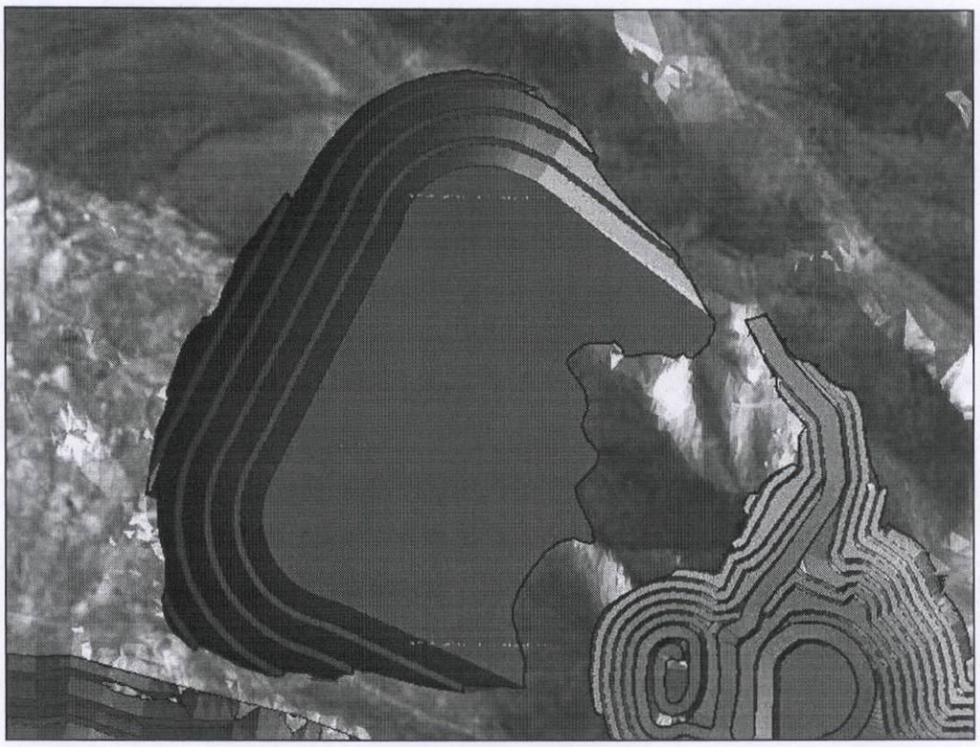


Figure 10 LG Stockpile JP and Mirador

The LG stockpile is located South of the Vallenar mill and also has an excellent Footprint Utilisation number. It is also located near the current exit point of the JC ramp, which will limit the haulage from the current JP Pit. See the LG Stockpile design parameters below in table 12.

Table 12 Design Parameters For LG Stockplie

Design Parameters	Indicators
Low Grade Stockplie - Jp and Mirador (LCM)	14,800,000
Land Cleared Footprint (m2)	470,000
Footprint Utilisation (lcm/m2)	32
Height of Dump (RL)	580 RL

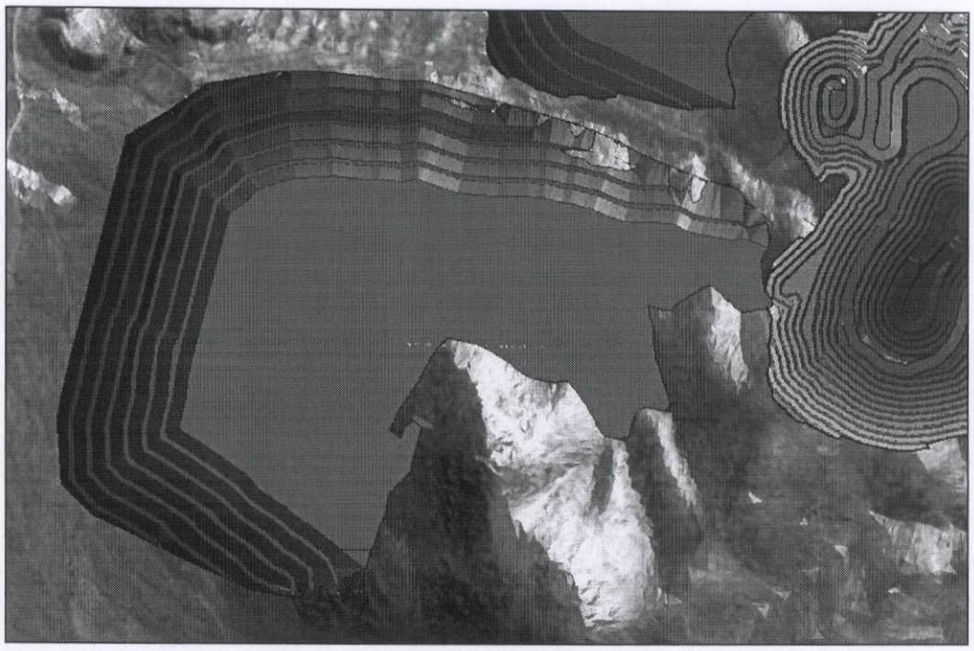


Figure 11 East Waste Dump for JP

The East Waste Dump is designed for the JP waste and has great footprint utilisation of 48. The design parameters for East Waste Dump for JP can be seen below in table 13 .

Table 13 Design Parameters For East Waste Dump

Design Parameters	Indicators
East Waste Dump for JP (LCM)	50,500,000
Land Cleared Footprint (m2)	1,050,000
Footprint Utilisation (lcm/m2)	48
Height of Dump (RL)	610 RL

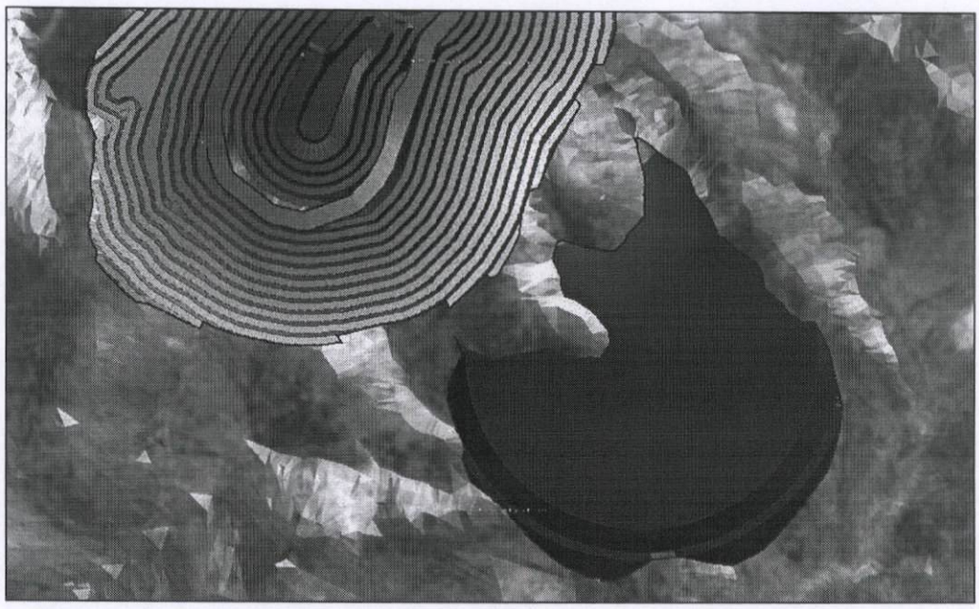


Figure 12 JP South Dump

The JP South dump is designed as a waste dump for the early stages of development of the JP pit. The design parameters can be seen below in Table 14.

Table 14 Design Parameters For JP South Dump

Design Parameters	Indicators
Tailing Dump - Jp and Mirador (LCM)	2,700,000
Land Cleared Footprint (m2)	178,000
Footprint Utilisation (lcm/m2)	15
Height of Dump (RL)	640 RL

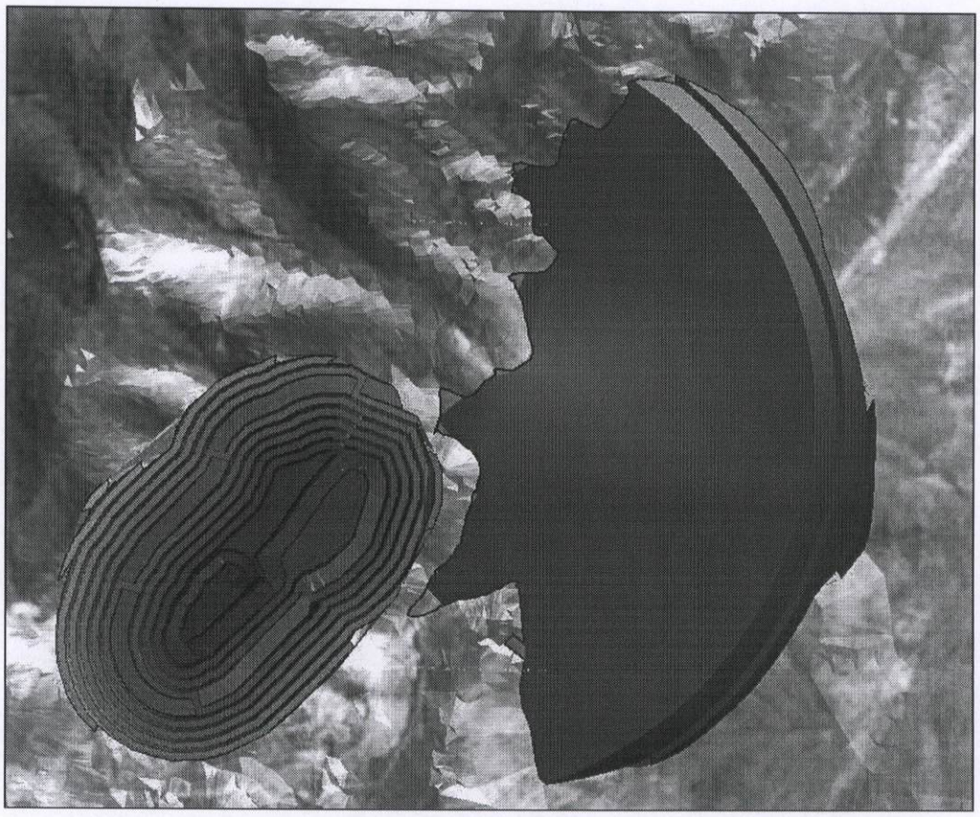


Figure 13 Mirador South West Dump

The Mirador South West Dump is located at the current exit of the Mirador pit. The design has focussed on limiting the vertical haul and horizontal haul taking advantage of the valley below the deposit as the dump location for the waste. The design parameters can be seen in Table 15 below.

Table 15 Design Parameters For Mirador South West Dump

Design Parameters	Indicators
Tailing Dump - JP and Mirador (LCM)	7,000,000
Land Cleared Footprint (m2)	400,000
Footprint Utilisation (lcm/m2)	17.5
Height of Dump (RL)	600 RL

D. Scheduling

This section details the proposed schedule for the Vallenar operation.

1. Primary assumptions

The following assumptions were used to determine an optimised schedule:

- Concentrate production rate of 0.81Mtpa year 1, 2.03Mtpa year 2+
- Concentrate grade of 62% Fe;
- processing rate of 5.0 Mtpa year 1, 10.5Mtpa year 2+
- mining rate 15Mtpa year 1, 21.0Mtpa year 2+
- Processing head grade limits
  - 18% year 1- 2 years
  - 14% years 3-4
  - 10% year 5-6
  - 5% year 7+

2. Results

The production schedule is shown in Table 16. Figure 16 shows the mine production rates and grades scheduled per year. Figure 17 shows the processing rate and grades for ore processed directly from the pit and reclaimed from the LG stockpile.

The Japonseta- Primavera deposit will be mined out in 11 years. The mining of Mirador commences in Year 11 and continues till Year 13. Mining ceases in year 13 with processing of the LG stockpile till year 17. Production of 1.8 Mtpa of concentrate can be maintained for 12 years. Concentrate production falls after this period due to the declining head grade

The schedule is shipping limited for the first 5 years after which point it become processing limited.

The production grade is set to decline over the project; it varies by 10% over the schedule. The maximum annual Fe grade variation is 2.6 percentage points.

The mining sequence is 3 cut backs on the Japonesita-Primavara pit and a simple bench-by-bench sequence for the Mirador pit. .

Reconciliation of iron metal has been conducted on the schedule and design. The reconciliation looked at the two deposits and calculated the following proportions:

- metal left unmined in the ground;
- metal in ore that was mined but at too a grade to be economic to process and thus sent to the waste dump;
- metal that was lost through dilution and recovery during the mining process and thus sent to the waste dump;
- metal lost in plant recovery and thus lost into tailings from the plant;
- metal sold in concentrate.

Figure 14 shows the metal reconciliation for the Japonesita/Primavera deposit. Figure 15 shows the metal reconciliation for the Mirador deposit

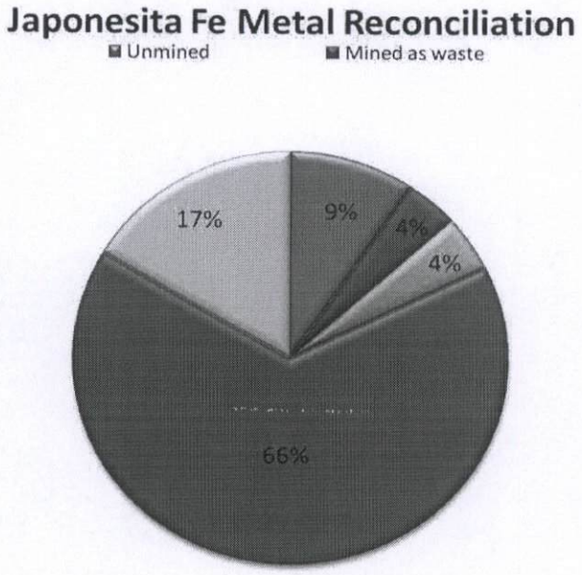


Figure 14 Modeled ore movement reconciliation

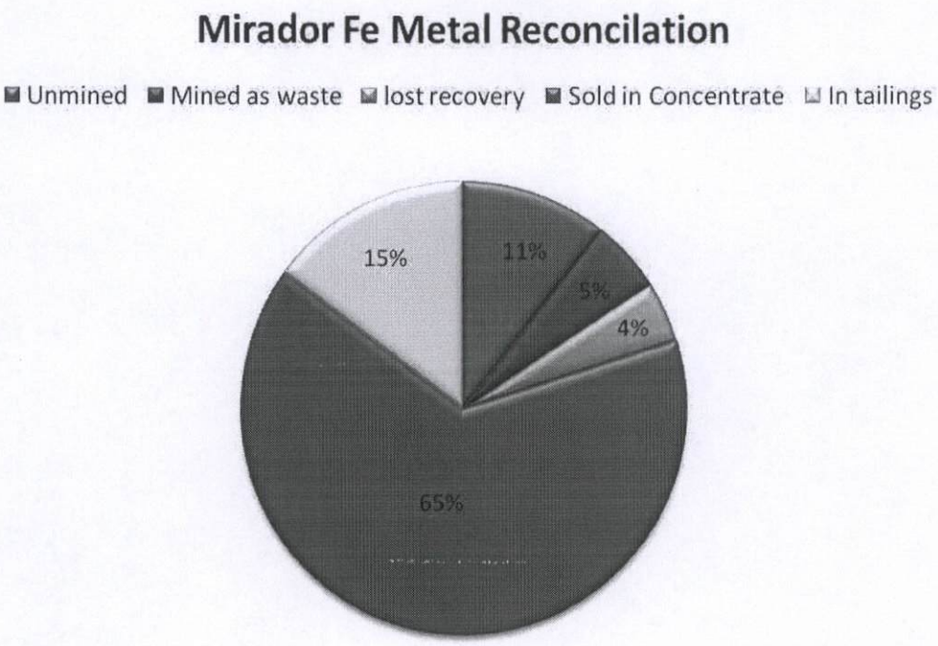


Figure 15 Modeled Fe movment reconciliation

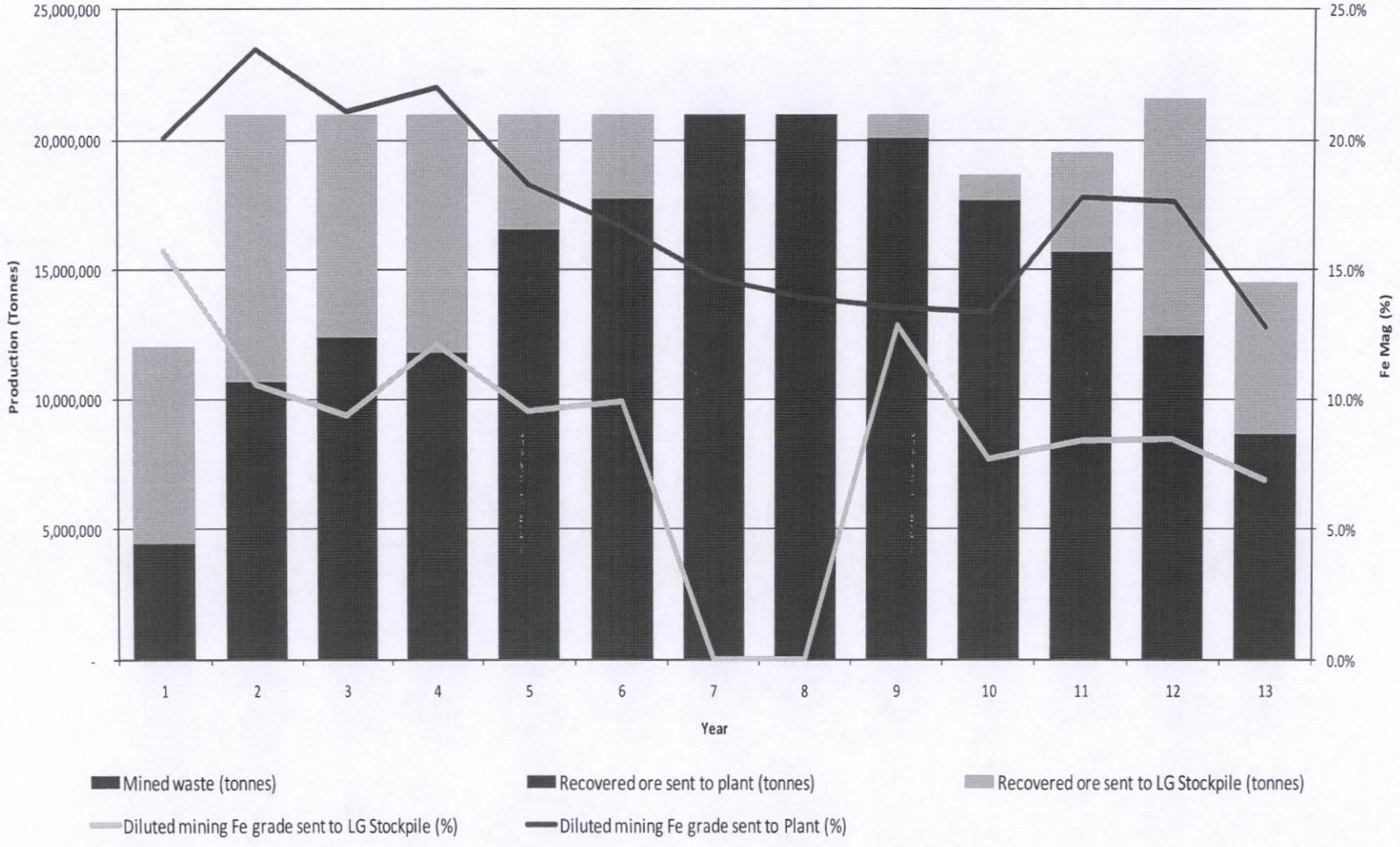


Figure 16 Graph of production and grade

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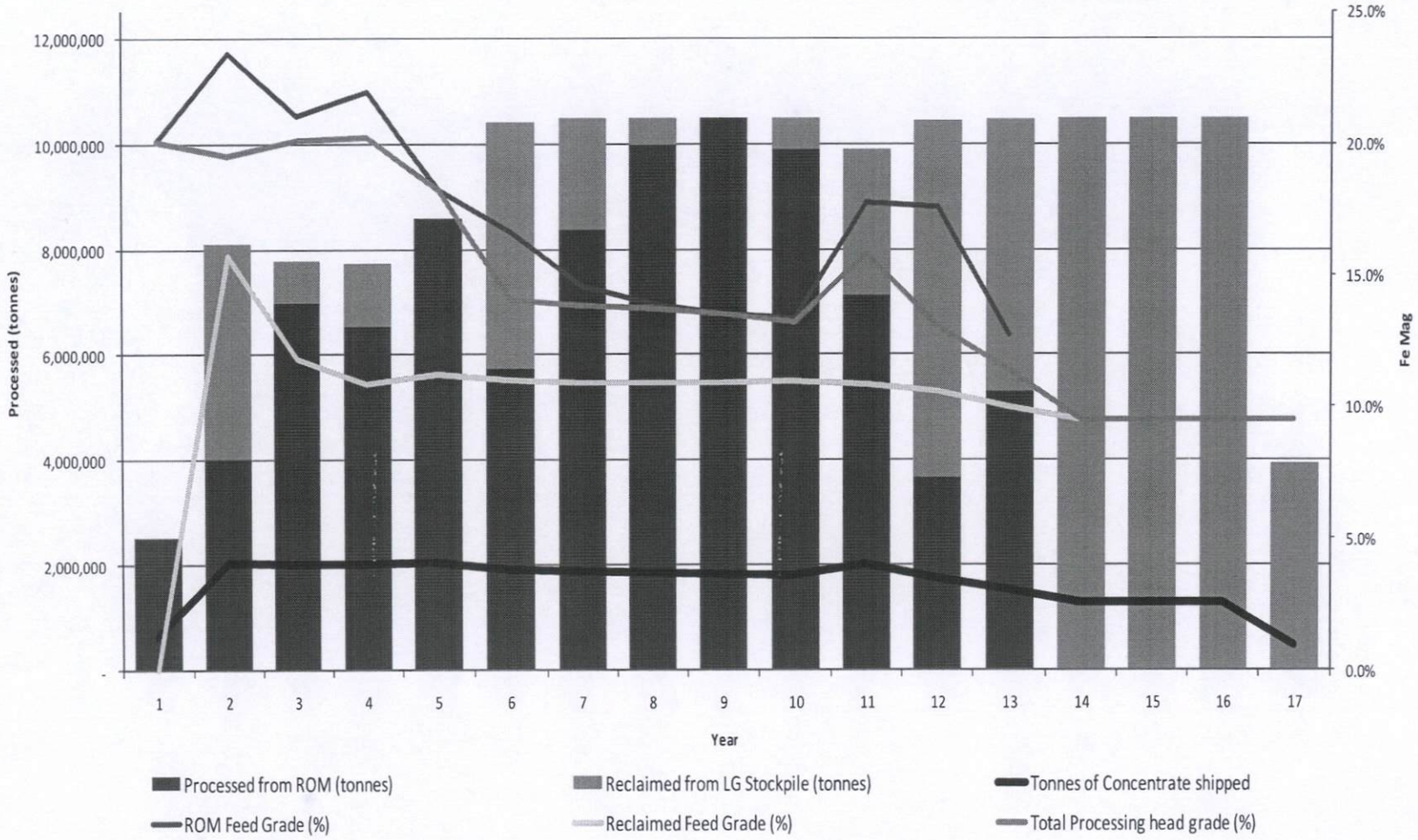


Figure 17 Graph of Processing and grades

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Table 16 - Production schedule

Mine Physicals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
Insitu model																		
Insitu material selected as waste (tonnes)	2,338	7,238	6,052	5,949	8,504	12,417	12,966	11,431	10,056	8,237	9,023	9,357	3,849					**107,418**
Insitu material selected as LG Stockpile (tonnes)	7,238	9,924	8,253	8,791	4,258	3,105	0	0	896	955	3,667	8,745	5,616					**61,448**
Insitu Fe Grade slected to LG Stockpile (%)	17.3%	11.6%	10.3%	13.3%	10.5%	10.9%	0.0%	0.0%	14.1%	8.5%	9.2%	9.3%	7.6%					**11.4%**
Insitu material selected to plant (tonnes)	2,424	3,838	6,695	6,260	8,239	5,478	8,034	9,569	10,048	9,488	6,813	3,490	5,055					**85,429**
Insitu Fe Grade slected to Plant (%)	22.1%	25.8%	23.2%	24.2%	20.1%	18.3%	16.1%	15.3%	14.9%	14.7%	19.6%	19.4%	14.0%					**18.3%**
Total material selected (tonnes)	12,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	18,681	19,503	21,592	14,519					**254,295**
Mining																		
Mined waste (tonnes)	1,903	6,619	5,379	5,272	7,941	12,031	12,604	11,001	9,564	7,767	8,551	8,807	3,369					**100,808**
Recovered ore sent to LG Stockpile (tonnes)	7,564	10,370	8,625	9,186	4,450	3,245	0	0	936	998	3,832	9,138	5,868					**64,213**
Diluted mining Fe grade sent to LG Stockpile (%)	15.7%	10.5%	9.4%	12.1%	9.5%	9.9%	0.0%	0.0%	12.8%	7.7%	8.4%	8.4%	6.9%					**10.3%**
Recovered ore sent to plant (tonnes)	2,533	4,011	6,996	6,542	8,609	5,725	8,396	9,999	10,500	9,915	7,119	3,647	5,282					**89,274**
Diluted mining Fe grade sent to Plant (%)	20.1%	23.5%	21.1%	22.0%	18.3%	16.6%	14.6%	13.9%	13.5%	13.4%	17.8%	17.6%	12.7%					**16.6%**
Stripping ratio	0.2	0.5	0.3	0.3	0.6	1.3	1.5	1.1	0.8	0.7	0.8	0.7	0.3					**0.7**
LG Stockpile																		
Closing Stocks	7,564	13,834	21,659	29,645	34,095	32,639	30,539	30,039	30,976	31,374	32,407	34,745	35,413	24,913	14,413	3,913		**408,169**
Closing Grade	15.7%	11.8%	10.9%	11.2%	11.0%	10.9%	10.9%	10.9%	11.0%	10.9%	10.6%	10.0%	9.5%	9.5%	9.5%	9.5%		
Processing																		
Processed from ROM (tonnes)	2,533	4,011	6,996	6,542	8,609	5,725	8,396	9,999	10,500	9,915	7,119	3,647	5,282					**89,274**
ROM Feed Grade (%)	20.1%	23.5%	21.1%	22.0%	18.3%	16.6%	14.6%	13.9%	13.5%	13.4%	17.8%	17.6%	12.7%	0.0%	0.0%	0.0%	0.0%	**16.6%**
Reclaimed from LG Stockpile (tonnes)	0	4,100	800	1,200	0	4,700	2,100	500	0	600	2,800	6,800	5,200	10,500	10,500	10,500	3,913	**64,213**
Reclaimed Feed Grade (%)	0.0%	15.7%	11.8%	10.9%	11.2%	11.0%	10.9%	10.9%	10.9%	11.0%	10.9%	10.6%	10.0%	9.5%	9.5%	9.5%	9.5%	**10.3%**
Total Feed Processed (tonnes)	2,533	8,111	7,796	7,742	8,609	10,425	10,496	10,499	10,500	10,515	9,919	10,447	10,482	10,500	10,500	10,500	3,913	**153,486**
Total Processing head grade (%)	20.1%	19.5%	20.1%	20.3%	18.3%	14.1%	13.9%	13.8%	13.5%	13.2%	15.8%	13.0%	11.4%	9.5%	9.5%	9.5%	9.5%	**14.0%**
Concentrate recoovered (tonnes)	657	2,046	2,026	2,025	2,030	1,897	1,881	1,865	1,835	1,795	2,028	1,757	1,540	1,286	1,286	1,286	479	**27,718**
Grade of Concentrate (%)	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	**62.0%**
Metal Recovered	407	1,268	1,256	1,256	1,259	1,176	1,166	1,156	1,138	1,113	1,257	1,090	955	797	797	797	297	**17,185**
Tailings rejected (tonnes)	1,876	6,065	5,770	5,717	6,579	8,528	8,615	8,634	8,665	8,720	7,892	8,690	8,942	9,214	9,214	9,214	3,434	**125,768**
Grade of Tailings rejected (%)	5.4%	5.2%	5.4%	5.5%	4.8%	3.4%	3.4%	3.3%	3.3%	3.2%	4.0%	3.1%	2.7%	2.2%	2.2%	2.2%	2.2%	**3.4%**
Sales																		
Tonnes of Concentrate shipped	657	2,046	2,026	2,025	2,030	1,897	1,881	1,865	1,835	1,795	2,028	1,757	1,540	1,286	1,286	1,286	479	**27,718**

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E. Equipment selection

This section details the equipment requirement for the Vallenar operation.

1. Primary assumptions

The production and auxiliary equipment is recommended based on the following fleet assumptions:

- Initial and Life of Mine (LOM) pit design hauls;
- Yearly production targets (approximately);
  - 9,000,000 tonnes of Iron Ore;
  - 13,000,000 tonnes of waste; and
  - 7,000,000 tonnes of dry tailings.
- 360 day fleet roster:
  - 7 days per week;
  - 2 shifts per day;
  - 12 hour shifts;
  - 0.5 hours of operating delays per shift; and
  - 3 days of unscheduled lost time per annum.
- Manufacturer specifications.

2. Talpac Modelling

i. Methodology

A Talpac[3] model was created to model the haulage equipment options for the Vallenar operation based on the target production rates.

By varying the number and size of the trucks, the modelling estimates the most suitable truck and loader combinations for the mapped haul routes, material and roster.

a) Determine equipment size

Larger truck and loader combinations enable higher production rates but can reduce flexibility. Given the iron concentration varies substantially throughout the deposit the successful modelling of the correct truck size is dependant on flexibility to operate in a number of locations throughout the mine simultaneously.

b) Determine equipment number

Production may be loader constrained or truck constrained, meaning that the loader can be the limiting factor for production or the truck fleet may be. To keep operating costs lower the modelling reflects a loader constrained fleet.

[3] Haulage fleet evaluation software

3. Mine equipment

i. Production fleet

Based on the results of Talpac modelling a combination of two Komatsu WA900-3 wheel loaders and eight Komatsu HD785-7 rear dump trucks were selected for the initial production equipment.

It is recommended that initially the equipment be split into a waste fleet and an ore fleet both comprising one WA900-3 wheel loader and four HD785-7 rear dump trucks.

Table 17 - Production equipment

Production Equipment	Quantity	Model
Wheel Loader	2	Komatsu WA900-3
Rear Dump Truck	8	Komatsu HD785-7

a) Wheel loaders

Wheel loaders were selected as the most suitable loading units compared to excavators as these types of loading units offer a comparatively higher production rate at a lower cost. The wheel loaders also offer comparatively greater manoeuvrability.

Komatsu WA900-3 wheel loaders were modelled with an $13m^3$ spade nosed bucket.

b) Rear dump trucks

Rear dump trucks were selected as the most suitable haulage option as these trucks offer a greater payload compared with articulated trucks, therefore reducing the number of trucks required for the fleet.

Komatsu HD785-7 rear dump trucks were modelled with a standard payload of 91 tonnes. This is a suitable combination (less than 4 passes to fill) when pared with the WA900-3 loaders.

ii. Auxiliary fleet

Based on the results of Talpac modelling an additional WA700-3 loader and four HD465-7 trucks were selected for tailings movement between the plant and the tailings dump.

Table 18 also indicates additional recommended auxiliary equipment for the Vallenar operation.

Table 18 - Auxilliary fleet summary

Auxiliary Equipment	Quantity	Model
Wheel Loader	1	Komatsu WA900-3
Rear Dump Truck	3	Komatsu HD785-7
Hydraulic Excavator	1	Komatsu PC850-8
Motor Grader	1	Cat 14H
Water Truck	1	Komatsu HD465-7
Bulldozer	3	Komatsu D475-AX5

a) Development, construction & maintenance equipment

The hydraulic excavator was selected to conduct development, clean-up and construction and maintenance work for the operation.

The Komatsu PC850-8 excavator is to be fitted with a 4.2m^3 bucket and a rock-breaking tool.

The Cat 14H grader standard specification will be required.

One additional Komatsu HD465-7 is to be configured as a water cart.

The Komatsu D275-AX5 dozers are to be fitted with a U-tilt dozer blade for greater material control.

F. Cost

This section details the costs for the Vallenar operation based on the geology, pit design, schedule and equipment as outlined in the previous sections.

1. Primary assumptions

The following assumptions were used to determine an optimised schedule:

- All costs in estimated USD (1.0102 AUD = 1 USD);
- Equipment replacement lifecycle of 35,000 hours;
- Equipment availability estimated at 85%;
- All machine costs include maintenance labour and tyres;
- Drill and Blast contractor cost[4] of 0.50 USD /tonnes;
- Water cost of 1 USD /1000L, with a quantity of 345,000L/month; and
- No cost for road binder were included.

2. Methodology

Costing was done for the mining operations only.

Equipment maintenance costing utilised zero-based costing methodology.

3. Machine capital cost estimate

Table 19 - Capital cost estimates for production equipment

Prod. equipment	Quantity	Model	Total Capital Cost
Wheel Loader	2	Komatsu WA900-3	4,400,000 USD
Rear Dump Truck	9	Komatsu HD785-7	13,500,000 USD
Bulldozer	3	Komatsu D275 – AX5	3,000,000 USD

Table 20 - Capital cost estimates for auxiliary equipment

Aux. equipment	Quantity	Model	Total Capital Cost
Wheel Loader	1	Komatsu WA900-3	2,200,000 USD
Rear Dump Truck	3	Komatsu HD785-7	4,500,000 USD
Hyd Excavator	1	Komatsu PC850-8	900,000 USD
Motor Grader	1	Cat 14H	700,000 USD
Water Truck	1	Komatsu HD465-7	1,00,000 USD

[4] See appendix 1

4. Machine operating cost estimate[5]

Table 21 - Operating cost estimates for production equipment

Prod. equipment	Op hrs/yr	Maintenance ($/h)	Operating ($/h)
Wheel Loader	7,000	53	118.25
Rear Dump Truck	7,000	42	92.75
Bulldozer	7,000	81	25

Table 22 - Operating cost estimates for auxiliary equipment

Aux. equipment	Op hrs/yr	Maintenance	Operating
Wheel Loader	7,000	51.00	118.25
Rear Dump Truck	7,000	41.00	92.75
Hydraulic Excavator	7,000	38.00	72.25
Motor Grader	5,000	28.00	43.15
Water Truck	5,000	36.00	64.00

5. Cost Summary

Table 23 - Capital expenditure estimates for 22Mtpa moved[6]

Currency	Total Cost
Initial	30,240,000
Total Project Life	87,930,000

Table 24 - Operational expenditure for 22Mtpa moved

Currency	Cost Type	Total Cost	USD/ton
USD	Cash Cost	38,576,408	2.02

Detail cost estimates are shown in Appendix 1

[5] See appendix 1

[6] Total movement 29mtpa including ore, waste and tailings handling

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Vallenar Iron - Japonesita/Primavera & Mirador Combined Minining Schedule

				0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
Mine Physicals																						
Insitu model																						
Insitu material selected as waste (tonnes)					2,337,935	7,238,459	6,052,034	5,949,274	8,503,507	12,416,762	12,965,876	11,431,313	10,056,074	8,237,355	9,022,665	9,357,412	3,848,899	-	-			107,417,564
Insitu material selected as LG Stockpile (tonnes)					7,238,456	9,923,544	8,253,274	8,790,792	4,257,922	3,244,530	-	-	896,079	955,454	3,667,334	8,744,511	5,615,518					61,447,697
Insitu Fe Grade selected to LG Stockpile (%)					17,3%	11,6%	10,3%	13,3%	10,5%	10,9%	0,0%	0,0%	14,1%	8,5%	8,2%	9,3%	7,6%					11,4%
Insitu material selected to plant (tonnes)					2,423,609	3,837,998	6,694,693	6,259,935	8,238,571	5,478,426	8,034,124	9,568,687	10,047,847	9,488,085	6,812,803	3,490,007	5,054,537					85,429,322
Insitu Fe Grade selected to Plant (%)					22,1%	25,8%	23,2%	24,2%	20,1%	18,3%	16,1%	15,3%	14,9%	14,7%	19,6%	19,4%	14,0%					18,2%
Total material selected (tonnes)					12,000,000	21,000,001	21,000,000	21,000,001	21,000,000	21,000,301	21,000,000	21,000,000	21,000,000	18,680,894	19,502,802	21,591,930	14,518,954					254,294,583
Mining																						
Mined waste (tonnes)																						
Recovered ore sent to LG Stockpile (tonnes)			95%		1,903,142	6,619,190	5,379,375	5,271,991	7,941,165	12,030,516	12,604,340	11,000,722	9,563,587	7,767,396	8,551,059	8,806,859	3,368,747					100,808,090
Diluted mining Fe grade sent to LG Stockpile (%)			10%		7,564,187	10,370,103	8,624,671	9,186,378	4,449,528	3,244,530	-	-	936,403	988,449	3,832,364	9,138,014	5,868,218					64,212,844
Recovered ore sent to plant (tonnes)			95%		15,7%	10,5%	9,4%	12,1%	9,5%	9,9%	0,0%	0,0%	12,8%	7,7%	8,4%	8,4%	6,9%					10,2%
Diluted mining Fe grade sent to Plant (%)			10%		2,532,671	4,010,708	6,995,954	6,541,632	8,609,307	5,724,955	8,395,660	9,999,278	10,500,000	9,915,049	7,119,379	3,647,057	5,281,991					89,273,641
Stripping ratio					20,1%	23,5%	21,1%	22,0%	18,3%	16,6%	14,6%	13,9%	13,5%	13,4%	17,8%	17,0%	12,7%					16,6%
					0,2	0,5	0,3	0,3	0,8	1,3	1,5	1,1	0,8	0,7	0,8	0,7	0,3					0,7
LG Stockpile																						
Closing stocks					7,564,187	13,834,290	21,658,961	29,645,339	34,094,867	32,639,397	30,539,397	30,039,397	30,975,800	31,374,249	32,406,613	34,744,627	35,412,844	24,912,844	14,412,844	3,912,844	-	0	
Closing Grade					15,7%	11,8%	10,9%	11,2%	11,0%	10,9%	10,9%	10,9%	11,0%	10,9%	10,0%	10,0%	9,5%	9,5%	9,5%	9,5%	9,5%	
Processing																						
Processed from ROM (tonnes)					2,532,671	4,010,708	6,995,954	6,541,632	8,609,307	5,724,955	8,395,660	9,999,278	10,500,000	9,915,049	7,119,379	3,647,057	5,281,991					89,273,641
ROM Feed Grade (%)					20,1%	23,5%	21,1%	22,0%	18,3%	16,6%	14,6%	13,9%	13,5%	13,4%	17,8%	17,0%	12,7%					16,6%
Reclaimed from LG Stockpile (tonnes)						4,100,000	800,000	1,200,000		4,700,000	2,100,000	500,000		600,000	2,800,000	6,800,000	5,200,000	10,500,000	10,500,000	10,500,000	3,912,844	64,212,844
Reclaimed Feed Grade (%)					0,0%	15,7%	11,8%	10,9%	11,2%	11,0%	10,9%	10,9%	10,9%	11,0%	10,9%	10,6%	10,0%	9,5%	9,5%	9,5%	9,5%	10,2%
Total Feed Processed (tonnes)					2,532,671	8,110,708	7,795,954	7,741,632	8,609,307	10,424,955	10,495,660	10,499,278	10,500,000	10,515,049	9,919,379	10,447,057	10,481,991	10,500,000	10,500,000	10,500,000	3,912,844	153,486,485
Total Processing head grade (%)					20,1%	19,5%	20,1%	20,3%	18,3%	14,1%	13,9%	13,8%	13,5%	13,2%	15,8%	13,0%	11,4%	9,5%	9,5%	9,5%	9,5%	14,0%
Concentrate recovered (tonnes)			80%		656,563	2,045,821	2,026,135	2,025,068	2,029,878	1,897,094	1,881,127	1,864,962	1,835,191	1,794,589	2,027,674	1,757,453	1,540,105	1,285,837	1,285,837	1,286,837	479,169	27,718,339
Grade of Concentrate (%)			62%		62%	62%	62%	62%	62%	52%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62,0%
Metal Recovered					407,069	1,268,409	1,256,284	1,255,542	1,258,524	1,176,198	1,166,299	1,156,276	1,137,818	1,112,645	1,257,158	1,089,621	954,865	797,219	797,219	797,219	297,085	17,185,370
Tailings rejected (tonnes)					1,876,108	6,064,887	5,769,819	5,716,564	6,579,429	8,527,861	8,614,533	8,634,316	8,664,809	8,720,460	7,891,706	8,689,605	8,941,886	9,214,163	9,214,163	9,214,163	3,433,675	125,768,147
Grade of Tailings rejected (%)					5,4%	5,2%	5,4%	5,5%	4,8%	3,4%	3,4%	3,3%	3,3%	3,2%	4,0%	3,1%	2,7%	2,2%	2,2%	2,2%	2,2%	3,4%
Sales																						
Tonnes of Concentrate shipped					656,563	2,045,821	2,026,135	2,025,068	2,029,878	1,897,094	1,881,127	1,864,962	1,835,191	1,794,589	2,027,674	1,757,453	1,540,105	1,285,837	1,285,837	1,286,837	479,169	27,718,339

Equipment Capital Cost																								
Item	**Description**	**Qty**	**Unit cost ($)**	**Total Cost**																				
Communication system between sites	4 sites - 30 Channel system	1	$ 200,000	$ 200,000	$ 200,000								$ 200,000										$ 400,000
Fuel Farm and water storage	2x50,000 fuel tanks and 25,000 water tank	1	$ 250,000	$ 250,000	$ 250,000								$ 250,000										$ 500,000
Generators for lights	1 sites	1	$ 20,000	$ 20,000	$ 20,000								$ 20,000										$ 40,000
Mine vehicles	5 vehicles 2 light trucks	1	$ 450,000	$ 450,000	$ 450,000			$ 450,000			$ 450,000				$ 450,000			$ 450,000					$ 2,250,000
Mining Equipment - Production	Komatsu WA900-3—Wheel Loader	2	$ 2,100,000	$ 4,200,000	$ 4,200,000					$ 4,200,000													$ 12,600,000
	Komatsu HD785-7—Rear Dump Truck	9	$ 1,400,000	$ 12,600,000	$ 12,600,000					$ 12,600,000					$ 4,200,000								$ 37,800,000
	Komatsu D275-AX5—Bulldozer	3	$ 1,000,000	$ 3,000,000	$ 3,000,000					$ 3,000,000					$ 12,600,000								$ 9,000,000
Mining Equipment - Auxiliary Equipment	Komatsu WA900-3—Wheel Loader	1	$ 2,100,000	$ 2,100,000	$ 2,100,000					$ 2,100,000					$ 3,000,000								$ 6,300,000
	Komatsu HD785-7—Rear Dump Truck	3	$ 1,400,000	$ 4,200,000	$ 4,200,000					$ 4,200,000					$ 2,100,000								$ 12,600,000
	Komatsu PC850-8—Hydraulic Excavator	1	$ 900,000	$ 900,000	$ 900,000								$ 900,000		$ 4,200,000								$ 1,800,000
	Cat 14H-Motor Grader	1	$ 700,000	$ 700,000	$ 700,000								$ 700,000										$ 1,400,000
	Komatsu HD465-7—Water Truck	1	$ 1,000,000	$ 1,000,000	$ 1,000,000								$ 1,000,000										$ 2,000,000
Mobile lighting	mobile lighting towers	8	$ 15,000	$ 120,000	$ 120,000								$ 120,000										$ 240,000
Ancillary equipment	Small cap plant, maintenance tooling etc	1	$ 500,000	$ 500,000	$ 500,000								$ 500,000										$ 1,000,000
Total					$ 30,340,000	$ -	$ -	$ 450,000	$ -	$ 26,100,000	$ 450,000	$ 3,890,000	$ -	$ -	$ 450,000	$ 26,100,000	$ -	$ 450,000	$ -	$ -			$ 87,930,000

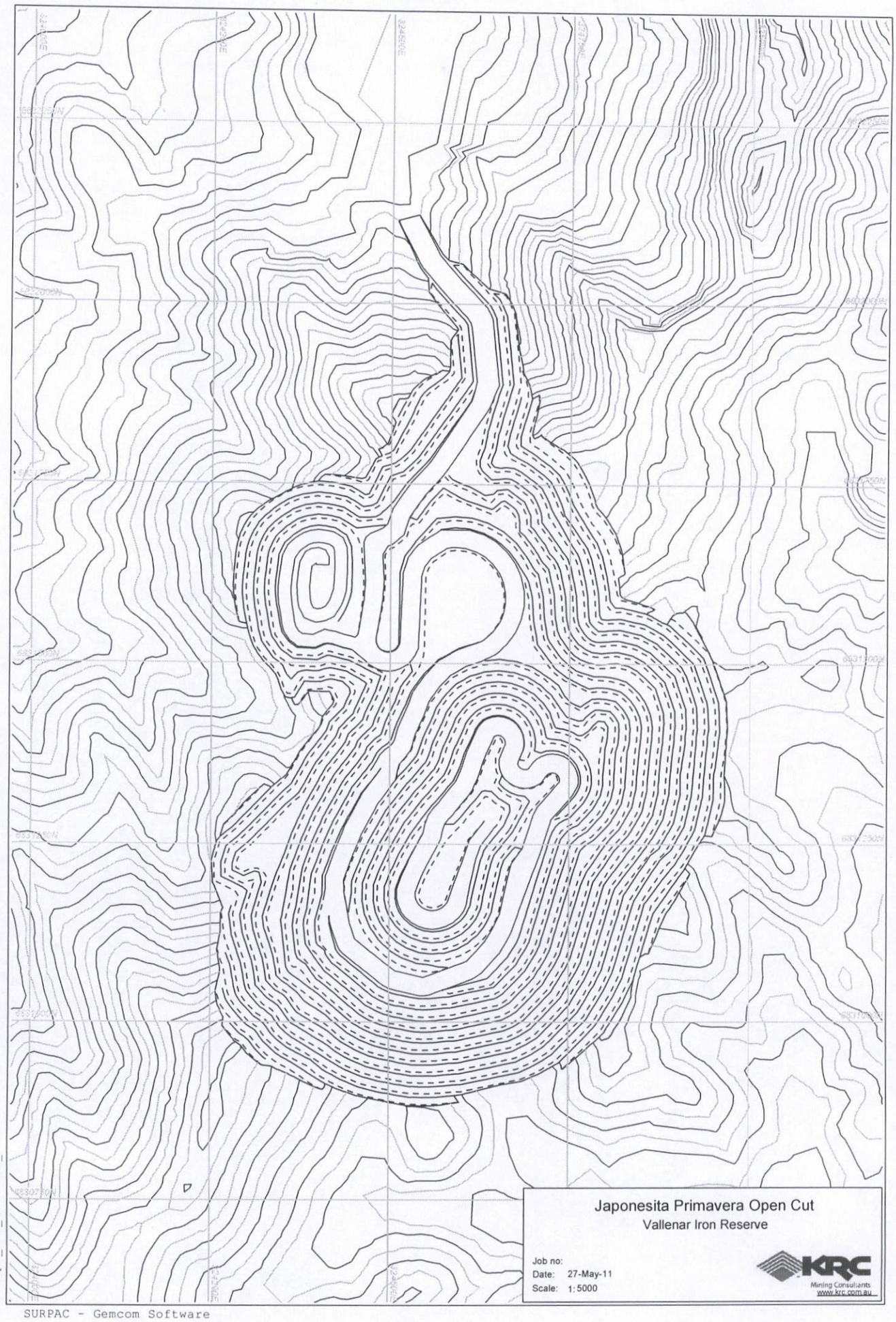
Equipment Maintenance Cost																								
		Qty	**(hours)**	**$/hour**	**Total $/hr ($)**																			
						Allocation	10%	15%	10%	30%	10%	10%	15%	10%	10%	15%	10%	30%	10%	15%	10%	10%	10%	10%	
						Allocation	10%	20%	40%	20%	10%	10%	10%	20%	40%	20%	10%	10%	20%	40%	20%	10%	10%	30%	15%	
Communication system between sites	4 sites - 30 Channel system	1	35,000	$ 2,50	$ 87,500		$ 8,750	$ 13,125	$ 8,750	$ 26,250	$ 8,750	$ 13,125	$ 8,750	$ 8,750	$ 13,125	$ 8,750	$ 26,250	$ 8,750	$ 13,125	$ 8,750	$ 8,750	$ 8,750		$ 192,500
Fuel Farm and water storage		1	35,000	$ 4,50	$ 157,500		$ 15,750	$ 23,625	$ 15,750	$ 47,250	$ 15,750	$ 23,625	$ 15,750	$ 15,750	$ 23,625	$ 15,750	$ 47,250	$ 15,750	$ 23,625	$ 15,750	$ 15,750	$ 15,750		$ 346,500
Generators for lights	1 sites	1	35,000	$ 5,00	$ 175,000		$ 17,500	$ 26,250	$ 17,500	$ 52,500	$ 17,500	$ 26,250	$ 17,500	$ 17,500	$ 26,250	$ 17,500	$ 52,500	$ 17,500	$ 26,250	$ 17,500	$ 17,500	$ 17,500		$ 385,000
Mine vehicles	5 vehicles	5	9,000	$ 5,00	$ 225,000		$ 22,500	$ 33,750	$ 22,500	$ 67,500	$ 22,500	$ 33,750	$ 22,500	$ 22,500	$ 33,750	$ 22,500	$ 67,500	$ 22,500	$ 33,750	$ 22,500	$ 22,500	$ 22,500	$ 22,500	$ 517,500
Mining Equipment - Production	Komatsu WA900-3—Wheel Loader	2	35,000	$ 53,00	$ 3,710,000		$ 371,000	$ 742,000	$ 1,484,000	$ 742,000	$ 371,000	$ 371,000	$ 371,000	$ 742,000	$ 1,484,000	$ 742,000	$ 371,000	$ 371,000	$ 742,000	$ 1,484,000	$ 371,000	$ 185,500	$ 556,500	$ 278,250	$ 11,408,250
	Komatsu HD785-7—Rear Dump Truck	9	35,000	$ 42,00	$ 13,230,000		$ 1,323,000	$ 2,646,000	$ 5,292,000	$ 2,646,000	$ 1,323,000	$ 1,323,000	$ 1,323,000	$ 2,646,000	$ 5,292,000	$ 2,646,000	$ 1,323,000	$ 1,323,000	$ 2,646,000	$ 5,292,000	$ 1,323,000	$ 661,500	$ 1,984,500	$ 992,250	$ 40,882,250
	Komatsu D275-AX5—Bulldozer	3	35,000	$ 81,00	$ 8,505,000		$ 850,500	$ 1,701,000	$ 3,402,000	$ 1,701,000	$ 850,500	$ 850,500	$ 1,701,000	$ 3,402,000	$ 1,701,000	$ 850,500	$ 850,500	$ 1,701,000	$ 3,402,000	$ 1,701,000	$ 283,500	$ 850,500			$ 25,798,500
Mining Equipment - Auxiliary Equipment	Komatsu WA900-3—Wheel Loader	1	35,000	$ 51,00	$ 1,785,000		$ 178,500	$ 357,000	$ 714,000	$ 357,000	$ 178,500	$ 178,500	$ 357,000	$ 714,000	$ 357,000	$ 178,500	$ 178,500	$ 357,000	$ 714,000	$ 357,000	$ 178,500	$ 535,500	$ 267,750		$ 6,159,250
	Komatsu HD785-7—Rear Dump Truck	3	35,000	$ 41,00	$ 4,305,000		$ 430,500	$ 861,000	$ 1,722,000	$ 861,000	$ 430,500	$ 430,500	$ 861,000	$ 1,722,000	$ 861,000	$ 430,500	$ 430,500	$ 861,000	$ 1,722,000	$ 861,000	$ 430,500	$ 1,291,500	$ 645,750		$ 14,852,250
	Komatsu PC850-8—Hydraulic Excavator	1	35,000	$ 38,00	$ 1,330,000		$ 133,000	$ 266,000	$ 532,000	$ 266,000	$ 133,000	$ 133,000	$ 266,000	$ 532,000	$ 266,000	$ 133,000	$ 133,000	$ 266,000	$ 532,000	$ 266,000					$ 3,857,000
	Cat 14H-Motor Grader	1	35,000	$ 28,00	$ 980,000		$ 98,000	$ 147,000	$ 98,000	$ 294,000	$ 98,000	$ 147,000	$ 98,000	$ 98,000	$ 147,000	$ 98,000	$ 294,000	$ 98,000	$ 147,000	$ 98,000	$ 49,000	$ 98,000	$ 98,000		$ 2,205,000
	Komatsu HD465-7—Water Truck	1	35,000	$ 36,00	$ 1,260,000		$ 126,000	$ 189,000	$ 126,000	$ 378,000	$ 126,000	$ 189,000	$ 126,000	$ 126,000	$ 189,000	$ 126,000	$ 378,000	$ 126,000	$ 189,000	$ 126,000	$ 63,000	$ 126,000	$ 126,000		$ 2,835,000
Mobile lighting	Lighting for 24Hr Operation	8	21,000	$ 1,00	$ 168,000		$ 16,800	$ 25,200	$ 16,800	$ 50,400	$ 16,800	$ 16,800	$ 25,200	$ 16,800	$ 25,200	$ 16,800	$ 50,400	$ 16,800	$ 25,200	$ 16,800					$ 336,000
Ancillary equipment	Small cap plant, maintenance tooling etc	1	35,000	$ 28,00	$ 980,000		$ 98,000	$ 147,000	$ 98,000	$ 294,000	$ 98,000	$ 147,000	$ 98,000	$ 98,000	$ 147,000	$ 98,000	$ 294,000	$ 98,000	$ 147,000	$ 98,000					$ 1,960,000
Total							$ -	$ 3,689,800	$ 7,177,950	$ 13,549,200	$ 7,782,900	$ 3,689,800	$ 3,891,450	$ 6,976,200	$ 13,549,300	$ 7,177,950	$ 3,689,800	$ 4,494,400	$ 6,976,200	$ 13,750,950	$ 5,282,300	$ 1,916,000	$ 5,507,000	$ 2,430,500	$ 111,534,000

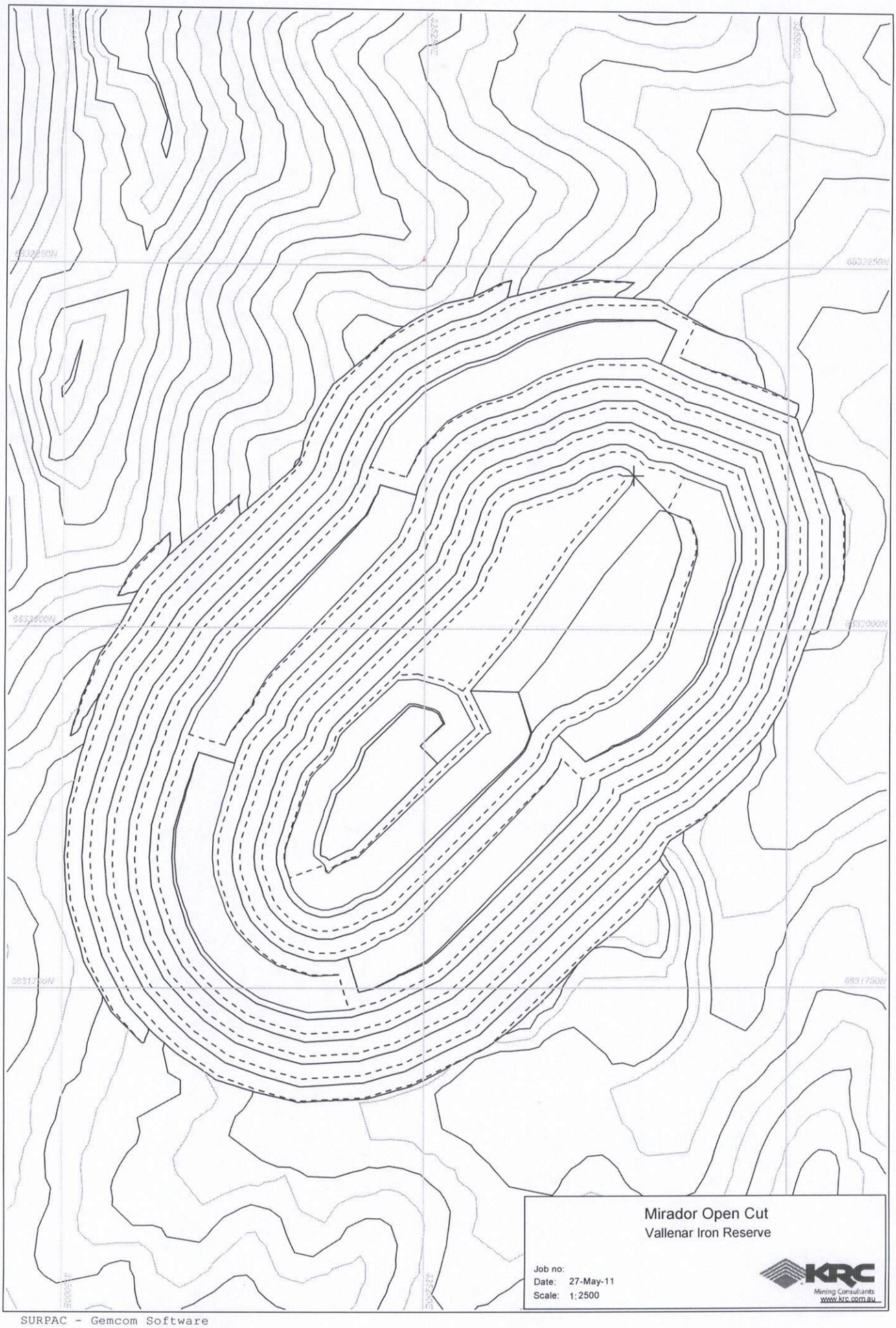
Equipment Operating Cost																								
		Qty	**Yealy hours**	**hour)**	**hour)**	**Fuel ($/l) ($/h)**																		
						$ 0,95																		
Communication system between sites	4 sites - 30 Channel system	1	5,000	$ -		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Fuel Farm and water storage	5 sites	1	7,000	$ 16,00		-	$ 16,00	112,000	112,000	112,000	112,000	112,000	112,000	112,000	112,000	112,000	112,000	112,000	112,000	112,000	112,000	112,000	112,000	$ 1,904,000
Generators for lights	1 sites	1	7,000	$ -		40,0	$ 38,00	266,000	266,000	266,000	266,000	266,000	266,000	266,000	266,000	266,000	266,000	266,000	266,000	266,000	266,000	266,000	266,000	$ 4,522,000
Mine vehicles	5 vehicles	5	3,000	$ -	$ 1,00	10,0	$ 10,50	157,500	157,500	157,500	157,500	157,500	157,500	157,500	157,500	157,500	157,500	157,500	157,500	157,500	157,500	157,500	157,500	$ 2,677,500
Mining Equipment - Production	Komatsu WA900-3—Wheel Loader	2	7,000	$ 27,00	$ 20,00	75,0	$ 118,25	1,655,500	1,655,500	1,655,500	1,655,500	1,655,500	1,655,500	1,655,500	1,655,500	1,655,500	1,655,500	1,655,500	1,655,500	1,655,500	1,655,500	827,750	827,750	$ 24,832,500
	Komatsu HD785-7—Rear Dump Truck	9	7,000	$ 16,00	$ 15,00	65,0	$ 92,75	5,843,250	5,843,250	5,843,250	5,843,250	5,843,250	5,843,250	5,843,250	5,843,250	5,843,250	5,843,250	5,843,250	5,843,250	5,843,250	5,843,250	827,750	827,750	$ 58,432,500
	Komatsu D275-AX5—Bulldozer	3	7,000	$ 22,00	$ 20,00	45,0	$ 84,75	1,779,750	1,779,750	1,779,750	1,779,750	1,779,750	1,779,750	1,779,750	1,779,750	1,779,750	1,779,750	1,779,750	1,779,750	1,779,750	1,779,750	2,921,625	2,921,625	$ 57,648,750
Mining Equipment - Auxiliary Equipment	Komatsu WA900-3—Wheel Loader	1	7,000	$ 27,00	$ 20,00	75,0	$ 118,25	827,750	827,750	827,750	827,750	827,750	827,750	827,750	827,750	827,750	827,750	827,750	827,750	827,750	827,750	889,875	889,875	$ 29,896,250
	Komatsu HD785-7—Rear Dump Truck	3	7,000	$ 16,00	$ 15,00	65,0	$ 92,75	1,947,750	1,947,750	1,947,750	1,947,750	1,947,750	1,947,750	1,947,750	1,947,750	1,947,750	1,947,750	1,947,750	1,947,750	1,947,750	1,947,750	827,750	827,750	$ 14,871,750
	Komatsu PC850-8—Hydraulic Excavator	1	7,000	$ 27,00	$ 15,00	35,0	$ 75,25	526,750	526,750	526,750	526,750	526,750	526,750	526,750	526,750	526,750	526,750	526,750	526,750	526,750	526,750			$ 33,111,750
	Cat 14H-Motor Grader	1	5,000	$ 22,00	$ 5,00	17,0	$ 43,15	215,750	215,750	215,750	215,750	215,750	215,750	215,750	215,750	215,750	215,750	215,750	215,750	215,750	215,750			$ 7,374,500
	Komatsu HD465-7—Water Truck	1	5,000	$ 16,00	$ 10,00	40,0	$ 64,00	320,000	320,000	320,000	320,000	320,000	320,000	320,000	320,000	320,000	320,000	320,000	320,000	320,000	320,000	107,875	107,875	$ 3,344,125
Mobile lighting	Lighting for 24Hr Operation	8	3,000	$ -		15,0	$ 14,25	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000	160,000	160,000	$ 4,968,000
Ancillary equipment	Small cap plant, maintenance tooling etc	2	7,000	$ 16,00		-	$ 16,00	224,000	224,000	224,000	224,000	224,000	224,000	224,000	224,000	224,000	224,000	224,000	224,000	224,000	224,000	171,000	171,000	$ 5,301,000
Total								14,218,000	14,218,000	14,218,000	14,218,000	14,218,000	14,218,000	14,218,000	14,218,000	14,218,000	14,218,000	14,218,000	14,218,000	14,218,000	14,218,000	9,578,750	8,389,125	8,389,125	8,389,125	$ 219,580,125

Mine Operating Cost																								
		$/pa		**$/tonne**																				
Drill and Blast	Rock on ground contract price,			$ 0,50				6,000,000	10,500,000	10,500,000	10,500,001	10,500,000	10,500,001	10,500,000	10,500,000	10,500,000	9,342,447	9,751,401	10,795,965	7,259,477	-	-	-	-	$ 127,147,292
Services	Air, water, de-watering, pumping			$ 0,10				1,200,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	1,868,089	1,950,280	2,159,193	1,451,895	-	-	-	-	$ 25,429,458
Consumables	Paint, signs, PPE, etc			$ 0,02				240,000	420,000	420,000	420,000	420,000	420,000	420,000	420,000	420,000	373,618	390,056	431,639	290,379	-	-	-	-	$ 5,085,892
Supervison		$	300,000					$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 150,000	$ 150,000	$ 150,000	$ 4,650,000
Geology		$	200,000					$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 2,800,000
Engineering		$	350,000					$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 5,250,000
Survey		$	215,000					$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 215,000	$ 3,332,500
Safety/Environmental		$	160,000					$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 107,500	$ 107,500	$ 107,500	$ 2,480,000
Management		$	350,000					$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 350,000	$ 80,000	$ 80,000	$ 80,000	$ 5,550,000
IT and software		$	100,000					$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 25,000	$ 25,000	$ 25,000	$ 1,475,000
Total								$ 9,115,000	$ 14,695,001	$ 14,695,000	$ 14,695,001	$ 14,695,000	$ 14,695,001	$ 14,695,000	$ 14,695,000	$ 14,695,000	$ 13,257,154	$ 13,766,737	$ 15,061,997	$ 10,576,751	$ 1,675,000	$ 829,167	$ 829,167	$ 829,167	$ 183,600,142

Totals																								
Grand Total																								
Cost per tonne mined					$ -	$ 27,022,800	$ 36,090,961	$ 42,462,300	$ 36,696,901	$ 32,602,800	$ 32,804,461	$ 36,889,300	$ 42,462,300	$ 36,090,950	$ 31,164,954	$ 32,481,137	$ 36,256,297	$ 38,645,701	$ 16,536,050	$ 11,134,292	$ 14,725,292	$ 11,648,792	$	$ 714,267
Cost Per tonne of ore mined					#DIV/0!	$ 2,25	$ 1,72	$ 2,02	$ 1,75	$ 1,55	$ 1,56	$ 1,71	$ 2,02	$ 1,72	$ 1,67	$ 1,67	$ 1,68	$ 2,68	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	$	2,02
Cost per tonne of ore processed					#DIV/0!	$ 2,68	$ 2,51	$ 3,72	$ 2,33	$ 2,50	$ 3,88	$ 4,27	$ 4,25	$ 3,16	$ 2,46	$ 2,97	$ 2,84	$ 3,47	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	$	3,35
Cost per tonne of concentrate sold					#DIV/0!	$ 10,67	$ 4,45	$ 5,45	$ 4,74	$ 3,79	$ 3,15	$ 3,42	$ 4,04	$ 3,44	$ 2,96	$ 3,27	$ 3,47	$ 3,69	$ 1,57	$ 1,06	$ 1,40	$ 2,98	$	3,35
					#DIV/0!	$ 41,16	$ 17,64	$ 20,96	$ 18,12	$ 16,06	$ 17,29	$ 19,08	$ 22,77	$ 19,67	$ 17,37	$ 16,02	$ 20,63	$ 25,09	$ 12,86	$ 8,66	$ 11,45	$ 24,31	$	19,57

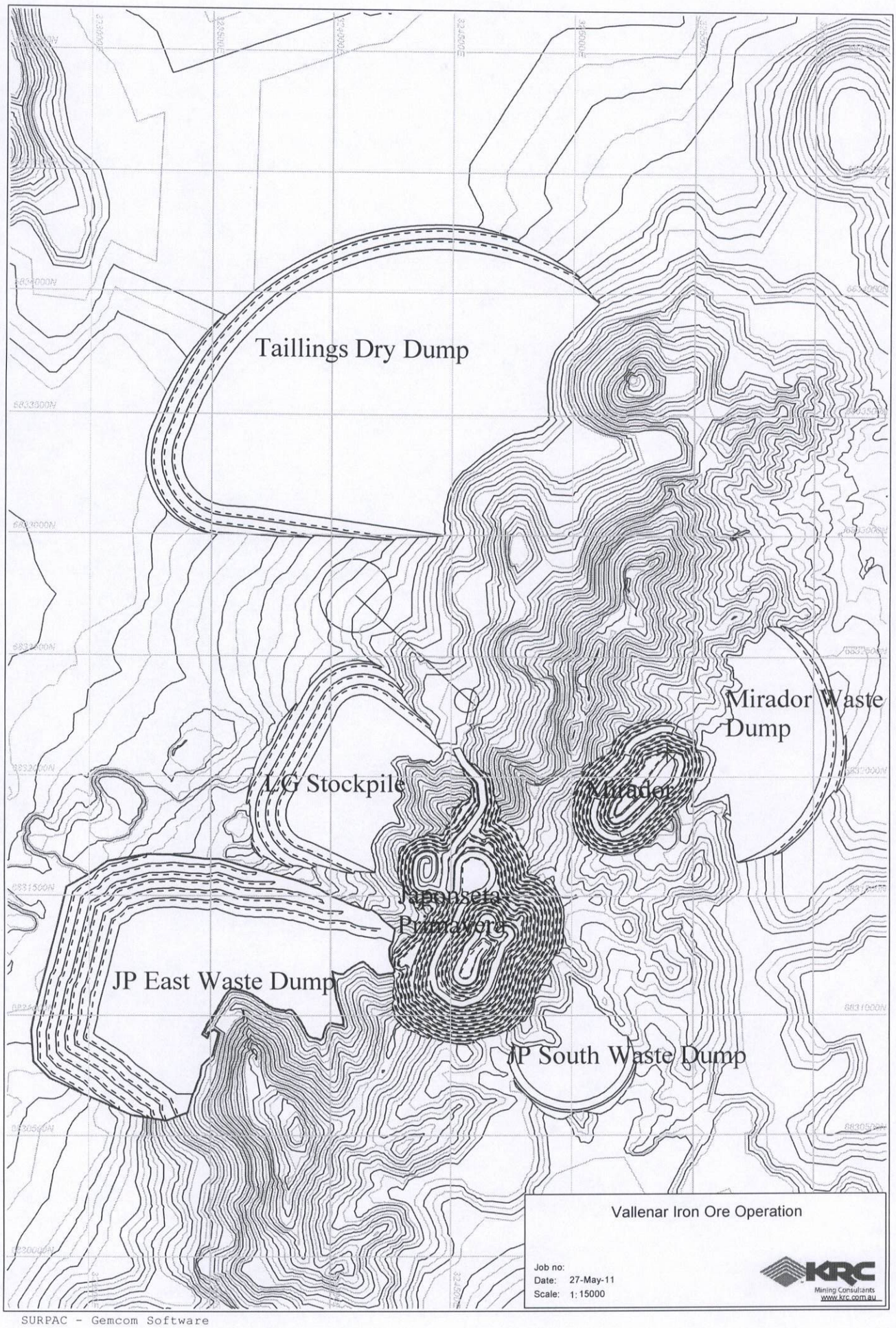
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Vallenar Iron Reserve
Job no:
Date: 27-May-11
Scale: 1:5000
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