Kalvinit Oy

KALVINIT ILMENITE PROJECT, FINLAND

Status Review and Development Plan
for a
Bankable Feasibility Study

Prepared by

Micon International Co Limited
Suite 10, Keswick Hall, Norwich, NR4 6TJ, United Kingdom

December 2005

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Micon International Co Limited (Micon) has prepared this report at the request of Dr Timo Lindborg, Chief Executive Officer, Kalvinit Oy (Kalvinit). The report complies with an agreed scope of work for a review of the current status of the Kalvinit ilmenite project (KIP) in Finland and preparation of an action plan for the production of a bankable feasibility study.

The work conducted by Kalvinit to date has generally addressed all of the expected areas to a scoping/pre-feasibility study standard. In many areas, subject to incorporation of final project technical and economic criteria into a bankable feasibility study design and cost estimate, Micon has not identified significant concerns with Kalvinit's approach to the project. However, a number of areas will require action for incorporation into the proposed bankable feasibility study, as follows:

- Limited drilling is required in order to upgrade Micon's reserve estimate for the two main deposits to a bankable standard. The ore reserves and the project economics could also benefit from further drilling of the three other deposits in the immediate vicinity.
- The process test work to date has demonstrated the potential for producing marketable ilmenite and magnetite concentrates with recoveries of up to 85% (TiO_2 basis) and 85% respectively. However, a considerable amount of predominantly small scale work is required to confirm ore type variability, ilmenite and magnetite recoveries and final process design criteria. In addition, insufficient test work has been done to demonstrate magnetite recovery to a marketable concentrate.
- There is potential for producing a marketable apatite concentrate from one other deposit in the immediate vicinity. However, a full study is required in order to confirm this potential.
- The 20-month implementation programme suggested by Kalvinit, whilst appropriate for the construction phase, excludes the time required for the bankable feasibility study, permitting, contract negotiations and financing. Micon considers that these activities would add at least nine months to the project schedule.
- Micon considers that Kalvinit has not adequately addressed the management aspects of its development and operating plans. Also, proposed operating manning levels are low and effectively non-existent in the general and administration areas.
- Micon was unable to validate Kalvinit's confidence in the intent of its potential customers for ilmenite and magnetite concentrate and the level of production supported by this intent. Ongoing marketing, including further product evaluation, is required in order to ensure that the bankable feasibility study is adequately defined and provisional contracts are in place at its completion.
- Micon considers that the current capital and operating cost estimates are reasonable but has identified a number of issues, which should be addressed.
- The project economics could benefit from an appropriate financing package, including capital and operating grants.

1.0 INTRODUCTION

Micon International Co Limited (Micon) has prepared this report at the request of Dr Timo Lindborg, Chief Executive Officer, Kalvinit Oy (Kalvinit). The report complies with an agreed scope of work for a review of the current status of the Kalvinit ilmenite project (KIP) in Finland and preparation of an action plan for the production of a bankable feasibility study.

In addition to reviewing the current status of the KIP, as part of the agreed scope of work Micon has evaluated the mineral resources and produced an optimised pit and a preliminary reserve estimate of two deposits, Koivusaarenneva (Koivu) and Kairineva (Kairi), which have been the main focus to date. The results of Micon's evaluation and estimate are summarised in this report.

As well as visiting the KIP site, between 14th and 18th November 2005 Micon's project manager, David Wells, visited Kalvinit's office in Kuusankoski, the preferred mining contractor E Hartikainen Oy (Hartikainen) in Kuopio and the Geological Survey of Finland (GTK) mineral processing laboratory in Outokumpu. Discussions were held with appropriate personnel and project documentation was obtained during the visit. In addition, project documentation was provided in electronic form by Kalvinit before and after the visit. The assistance and cooperation of all the personnel met are acknowledged, with particular thanks to Jaakko Liikanen, Chief Technical Officer of Kalvinit.

The principal documents reviewed by Micon are as follows:

- 'Further Tests on the Kälviä Ilmenite Deposit, Kalvinit Oy', VTT Mineral Processing, 6th August 2000.
- 'Kalvinit Ilmenite Project, Pre-Feasibility Study', Kvaerner E&C, October 2001.
- 'Kalvinit Ilmenite Project, Revisions to Pre-Feasibility Study', Kvaerner E&C, November 2001.
- 'Kälviä Ilmenite Project, Pre-Feasibility Study, Draft v 0.9.3', Kalvinit Oy, 28th January 2001.
- 'Geological Review of Kalvinit Oy's Ilmenite Properties, Finland', John A Clifford, August 2002.
- 'Geological Review of Kalvinit Oy's Ilmenite Properties, Finland', John A Clifford, July 2003.
- 'Kalvinit Ilmenite Project, Stage 1 Report, Kairineva and Koivusaarenneva', Outokumpu Oyj, October 2003.
- 'Kairi-Koivu Ilmenite Deposit, Feasibility Study – Pit Optimisation', Gridpoint Finland Oy, 17th January 2005.
- 'Further Pre-concentration Tests on Kälviä Ore', Geological Survey of Finland, Mineral Processing, 29th September 2005.
- 'Kairineva, Koivusaarenneva, Riutta and Peräneva Mineral Resource Estimates and Open Pit Designs', Outokumpu Technology, 8th October 2005.

- 'The Kalvinit Ilmenite Project Stage II Final Report', Kalvinit Oy, 24th October 2005.

Micon has assessed the current status of the KIP and based its recommendations for the actions required for a bankable feasibility study on the criteria presented in Table 1.1. This table is based on the guidelines of Australian Institute of Mining and Metallurgy Cost Estimation Handbook. Micon has also considered certain characteristics of industrial minerals markets, of which the TiO_2 pigment industry is typical:

- Feedstock specification is critical to the production process and end product quality.
- Even where the feedstock specification can be met, consistency and continuity of supply are critical.
- The purchaser's production process is optimised for the existing feedstock specifications.
- Existing feed stocks may be used in combination in order to meet specific production criteria.
- Evaluation of the production process performance and product quality with a new feedstock requires an extended period of operation, with the potential for loss of production and revenue.
- As a result of the above, complete replacement of an existing feedstock is unusual, other than on a progressive basis.
- Also as a result of the above, the new feedstock price is usually required to be competitive.

Micon's review findings and recommendations are presented in this report by section heading generally as required for a bankable feasibility study. As Micon's report is not intended to be a complete technical summary of the project, only limited supporting information is included. Although Micon has no reason to question the information provided by Kalvinit, it has been reviewed in good faith and has not been subjected to verification and audit.

Micon is internally owned and is entirely independent of all parties involved in the KIP. The personnel responsible for the review, conclusions and recommendations contained in this report are full-time Micon employees. Micon is receiving a fee for its services based on time and expenses and will not receive any capital stock from any of the parties involved with the KIP.

Table 1.1: Comparative Quality Levels for Predevelopment Cost Estimates

Activity	Scoping	Prefeasibility	Feasibility	Definitive
Accuracy	30 - 35%	20 - 25%	10 - 15%	5 - 10%
Contingency	20 - 25%	15 - 20%	10 - 15%	5 - 10%
Mining				
Resources/Reserves status	Indicated	Probable	Proven/Probable	Proven/Probable
Resource/Reserve analysis	Limited data	Cross sections	Detailed block model	Detailed block model
Geology	Preliminary	Preliminary	Detailed	Detailed
Geotech	Preliminary	Preliminary	Detailed	Detailed
Mine plan	Sketch only	Preliminary	Firm detailed	Final
Mine schedule	Assumed	Approximated	Calculated	Firm
Mine equipment	Assumed	In house data	Optimised	Quoted specifically
Mine services	Assumed	Sketch design	Full outlines	Firm basis
Processing Facility				
Process selection	Assumed	Preliminary	Optimised	Approved
Test work	Preliminary	Preliminary	Finalised	Finalised
Design basis	None	Preliminary	Final	Fixed
Layout	Sketch	Preliminary	Optimised	Fixed
GA drawings	None	Limited	Full outlines	Fixed
Detailed drawings	None	None	Limited	Mostly completed
Specifications	None	None	Major equipment	Mostly completed
Infrastructure				
Existing services	Assumed	Investigated	Known	Fixed
Design basis	None	Preliminary	Final	Fixed
Layout	Sketch	Preliminary	Optimised	Fixed
GA drawings	None	Limited	Full outlines	Fixed
Detailed drawings	None	None	Limited	Most completed
Specifications	None	None	Major equipment	Most completed
Environmental				
Field data collection	None	Preliminary	Complete	Complete
Impact assessment	None	Approximate	Nearing completion	Complete
EIS report	None	None	Nearing completion	Complete
Impact management plan	None	None	Commenced	Complete
Capital Cost Estimate				
Equipment quotes	None. Factorised	Single check price	Multi quotes	Fixed prices
Civil/Structural	Sketched only	Take off sketch	MTO and quotes	Tender prices
Mechanical piping	% of key equipment	Mix MTO and %’s	MTO and hours	Tender prices
Electrical instruments	$ per kW	$ per kW	Take offs and hours	Detailed estimates
Indirect costs	% per total	% of total	Calculated	Calculated
Schedule	Assumed	Bar chart	CP network	Detailed CP network
Operating Cost Estimate				
Staffing levels	Factorised	Preliminary	Detailed estimate	Known
Cost rates	Factorised	Calculated	Known basis	Known
Consumables	Factorised	Factorised	Estimated	Estimated
Maintenance	Factorised	Factorised	Estimated	Estimated
Spares	Factorised	Factorised	Factorised	Some quotes

2.0 PROJECT DESCRIPTION

2.1 PROJECT HISTORY

The KIP now consists of five ilmenite-magnetite deposits approximately 7 km apart: Koivu, Kairi, Peräneva (Perä), Lylyneva (Lyly) and Riutta. Of these deposits, Kaire and Koivu have been extensively studied. The Perä, Lyly and Riutta deposits have been defined by airborne geophysics confirmed by limited drilling. Although it is the smallest deposit, Riutta has potential for its higher apatite content in addition to ilmenite and magnetite.

Koivu was first investigated by airborne geophysics, drilling and metallurgical test work in the 1970's by Rautaruukki Oy, now Ruukki Oyj (Ruukki). The deposit was extensively drilled and tested by GTK between 1992 and 1996. GTK also conducted further geophysical surveys in the area, which identified further targets including Kairi and limited drilling was conducted to confirm these targets. The Koivu exploration license was acquired by Kalvinit in 1997.

Kalvinit initiated further bench and pilot scale metallurgical test work on Koivu between 1998 and 2000, culminating in a 17,000 t pilot scale run by VTT Mineral Processing (VTT, now GTK) in 2001. The concentrate produced was evaluated by Kemira Pigments Oy (Kemira) in a full scale run at its Pori plant.

Based on this work, a positive pre-feasibility study was completed for Koivu and Kairi by Kalvinit in January 2002, in conjunction with GTK (resource estimation, ground water survey), Gridpoint Finland Oy (Gridpoint) (reserve estimation, mine design), Kvaerner E&C Ltd (Kvaerner) (process design and cost estimation), Lindborg & Hentila Oy (water supply, tailings storage, environment) and Lapin Vesitutkimus Oy (LVT) (environment).

Based on the 2002 pre-feasibility study, a decision was made to acquire the Kairi exploration license in 2002 and to conduct a drilling programme in 2003 in order to increase the resource. VTT conducted bench scale metallurgical test work on the Kairi drill core.

Outokumpu Oyj (Outokumpu) was contracted by Kalvinit to conduct a revised pre-feasibility study (Stage 1 Report) of Koivu and Kairi, including the 2003 drill results, in advance of a bankable study (Stage 2). The additional Kairi resource was not achieved and the Stage 1 Report, issued in October 2003, indicated that further mineral resources were required to make the project economically viable.

Although the general conclusion by Kalvinit and others was that the Outokumpu study was conservative, it was decided to conduct further infill drilling of Koivu in 2005 and to conduct further preliminary drilling on the Perä and Riutta deposits. GTK conducted bench scale test work on the Koivu drill core for comparison to previous test work and to address some of the issues raised by the 2001 pilot plant test work.

Further reserve estimates were made by Gridpoint in January 2005, incorporating the 2003 Kaire drilling results and by Outokumpu in October 2005, incorporating the 2005 Koivu, Riutta and Perä drilling results. Less conservative criteria for pit slopes and TiO_2 recovery were used in these estimates.

2.2 SITE DESCRIPTION

The deposits are located in the Kälviä and Halsua rural municipalities, respectively, in the West Finland administrative district, with a population of approximately 10,000. Forestry, peat production, agriculture and light manufacturing are the main industries in the area. Unemployment in the area is approximately 13%.

The Koivu site area is currently forested, but is scheduled for peat production. Peat is currently produced from the Kairi site area. The area is relatively low and flat, sloping to the east, and there is an extensive artificial drainage network.

There area has excellent municipal facilities and road, rail and port access. The site is already accessed by dirt roads and tracks for forestry and peat production. The closest habitation is approximately 5 km from the project site.

The climate is relatively mild, with average temperatures of 14 °C to 20 °C in the summer and -2 °C to -11 °C in the winter. Annual precipitation averages 470 mm to 550 mm, with a mean snow cover of 55 cm.

2.3 MINERAL PROPERTY

Kalvinit holds exploration licenses covering Koivu and Kairi valid to December 2006 and March 2006 respectively. The Koivu licenses will then reach the permitted eight years, but Kalvinit is confident that they can be renewed. The Kairi licenses can be renewed for a further three years.

Kalvinit does not currently hold mining title, which can only be granted against a technically and economically viable production plan and environmental permit. Kalvinit does not hold surface title, but under Finnish law the owners are obliged to sell or lease the rights to facilitate mining. In any case, peat production would be completed first at both sites. Micon has not confirmed the time required for obtaining mining and surface title and to what extent this process can run in parallel with the bankable feasibility study.

2.4 RECOMMENDATIONS

The project description is already well defined. An appropriate selection of national, regional and local maps, together with site photographs, should be included in the bankable feasibility study. The schedule for obtaining the mining and surface titles should be defined by the bankable feasibility study.

3.0 ECONOMIC GEOLOGY

3.1 GEOLOGY

The deposits are hosted within steeply dipping, sill-like gabbro and gabbronorite intrusions. The Kairi deposit is 5 km southwest of the Koivu deposit. Koivu has a cover of about 10 m of peat and gravel, but the depth of overburden is much less at Kairi.

The Koivu deposit is hosted in a northeast-southwest trending intrusion about 2,000 m long and 30 m to 110 m wide. The main body of mineralisation can be subdivided into three zones – a northern and southern zone hosting the majority of the resources, with a weak central zone. These zones are interpreted as being delimited by north-south trending faults. Barren pyroxenite dykes parallel the mineralised zones.

At Koivu, the bulk of the mineralisation is hosted in a central massive ilmenite-bearing horizon approximately 30 m thick, with grades from 6% to 24% TiO_2 and 2% to 25% magnetite. The ratio of ilmenite to magnetite is usually between 3:1 and 4:1. Lower grade disseminated zones at between 4% and 6% TiO_2 flank the massive mineralised zones. The mineralised zones also contain minor sulphides and ilmenomagnetite.

The length of the Kairi deposit is 400 m and it is 50 m wide on the surface. The mineralised zone at Kairi is a very similar, almost vertical, faulted sheet that is composed of strongly disseminated and massive mineralisation. A fault can be inferred which offsets the continuity of the mineralised zone by about 30 m. Minor pegmatite and granitic dykes/sills have been intersected in the drilling.

The mineralisation at Kairi forms a central core grading between 10% and 22% TiO_2 and 10% to 20% magnetite, a ratio of ilmenite to magnetite of 2:1. Bands of lower grade disseminated mineralisation are again present grading from 4% to 10% TiO_2.

3.2 PREVIOUS MINERAL RESOURCE ESTIMATES

Outokumpu produced a mineral resource estimate for the Kairi and Koivu deposits as part of its 2003 Stage 1 feasibility report. Micon considers that the principle wireframes created by Outokumpu failed to account for the waste pyroxenite bands properly. Also, the Outokumpu interpretations were based upon a 6% TiO_2 cut-off grade, which immediately eliminated all of the disseminated material between 4% and 6% at Koivu.

Further resource estimates incorporating the 2003 drilling results were made for Koivu and Kairi by Gridpoint in January 2005 and additionally the 2005 drilling results for Koivu, Kairi, Riutta and Perä by Outokumpu in October 2005. This work was again conducted using the wireframes at 6% and 8% TiO_2 cut-off grades, resulting in exclusion of the disseminated material.

Despite the previous comments, and subject to a full audit, Micon considers that the general quality of the assay data that supports the interpretations and the geological models in these studies are of a good standard. The geological database for Koivu consists of 2,389 assay samples from 173 drill holes, and for Kairi 498 assay samples from 31 drill holes.

3.3 MICON MINERAL RESOURCE ESTIMATES

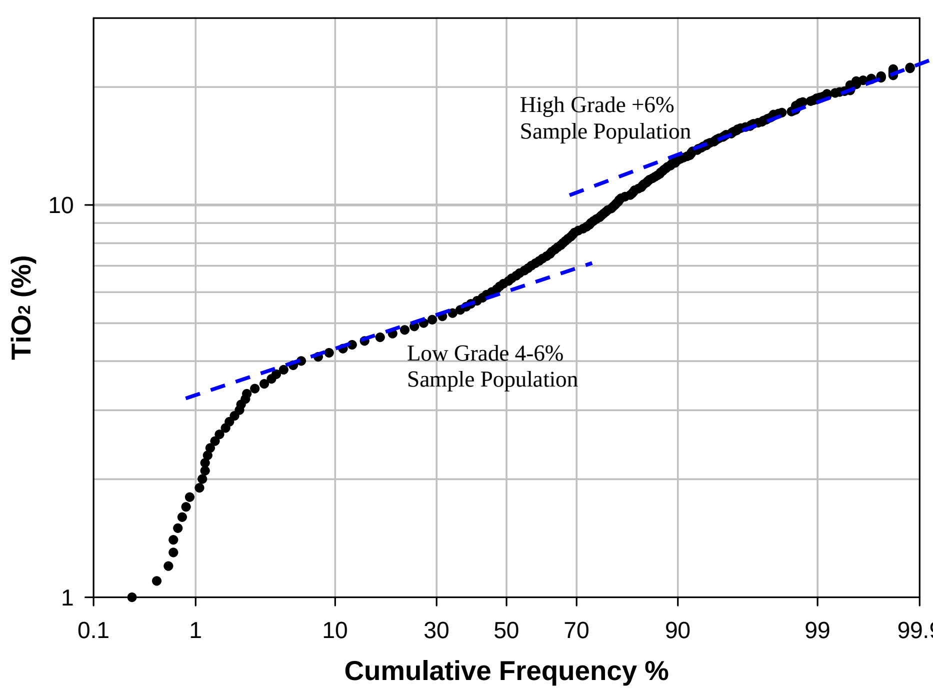
A geological database was provided for the Koivu and Kairi deposits by Kalvinit Oy. The drill holes were used in combination with a surface geology plan to create the ore body wireframe interpretation for Koivu. With the absence of a surface geology plan for Kairi, only the drill holes were used.

The geological interpretations for both deposits were based upon delineating separate massive and disseminated ilmenite zones hosted within the gabbros and gabbronorites, while eliminating the barren pyroxenite dykes from the ore-zones. Geological sections were interpreted for each distinct mineralised ore band separately.

3.3.1 Ore Body Modelling and Analysis

Basic statistics on the raw samples from the Koivu deposit displayed clearly separate low and high grade sample populations at 4% and 6% TiO_2 cut-off grades respectively. The probability plot is shown in Figure 3.1.

Figure 3.1: – Probability Plot of Koivu Samples



These statistics provided the basis for modelling and estimating the 4% and 6% TiO_2 zones in the ore body models separately. Mineralised areas were delineated for both Koivu and Kairi using cut-off grades of 4% and 6% on the raw assay data.

Mineralised zone sections were created at each 50 m spaced section lines from the drill hole database. Three-dimensional (3-D) wireframe models were created by linking the mineralised zone sections between sections. Mineralised zones were projected 25 m beyond the last cross section or to the midpoint between mineralised and adjacent barren sections at the end of each model in order to close the 3-D wireframes. The mineralisation remains open at depth so the wireframe interpretations were extended to 230 m below surface at Koivu and 150 m below surface at Kairi. The weathered zone was modelled as a surface, and the ore body solids were clipped below this surface.

3.3.2 Block Model

A partial percentage model was created with the following block size and dimensions: (X,Y,Z) 10 m x 10 m x 10 m. The partial percentage model was chosen as it allows improved accuracy over sub-blocked block models in volume calculations from narrow closely banded deposits such as Koivu and Kairi. Also this method reduced the effect of dilution from waste pyroxenite dykes on the estimated grades and volumes along the contacts of the wireframe.

Two metre drill core composites were created for each ore body model individually, with a minimum of 25% of the composite length being deemed acceptable.

The blocks inside the wireframe interpretation shells were estimated individually using the inverse distance squared method. Kriging was not possible due to the lack of samples inside each individual ore body band, which did not permit comprehensive semi-variogram analysis. It would not be correct to perform semi-variogram statistics across the different distinct ore bands.

Block model grades were estimated for each wireframe shell in three rounds using three different search radii. Grades were estimated for TiO_2, magnetite (from Satmagan analysis) , Fe_2O_3, P_2O_5, Cr_2O_3 and V. The grades for each ore body were interpolated separately, and in Koivu, the 4% and 6% TiO_2 wireframe shells were also interpolated separately. Search ellipses were tilted to match the dip and strike of the ore body bands.

The first ellipse, with a 300 m search radius, was used in order to give each ore block inside the ore-model wireframes a grade estimate. A maximum limit of three samples was used to prevent excessive grade smoothing. A second ellipse with a 75 m search radius was used with 3 to 6 samples from at least two drill holes. A third pass ellipse using a 50 m radius and minimum of four and maximum of eight samples was used.

Mineral resource blocks which satisfied the primary search criteria of the 75 m search ellipse were assigned to the indicated category. All remaining ore blocks were assigned inferred category.

The bulk density was calculated on a block by block basis in the block model using the interpolated TiO_2 and Fe_2O_3 grades. The following equation was used to calculate bulk density:

$$\text{Bulk Density} = 0.018 \text{ x } (\%Fe_2O + \%TiO_2) + 2.6545$$

The estimated block model and grade interpolations were validated by cross sections and block model reports for each ore body individually. A summary of block model tonnages and average grades for TiO_2, magnetite and other elements at several block grade cut-offs is given in Table 3.1.

3.3 RECOMMENDATIONS

In order to confirm a bankable standard, the QA/QC protocols on assays and density would need to be reviewed for the database to be fully validated. Surface geology mapping would be required to aid and improve the interpretation at Kairi.

Subject to this work, review of Micon's estimate by Kalvinit and pending any additional drilling of the inferred resource (see Section 4.2.3) Micon considers that its model and resource estimate is to a bankable standard.

Micon has not reviewed the reported Kalvinit/Outokumpu combined resource estimate for Perä and Riutta of 3.7 Mt at 9.2% TiO_2 and the GTK estimate for Lyly of 5.3 Mt at 5.0% TiO_2. However, it appears that significantly more drilling is required to upgrade these estimates to a bankable standard.

Table 3.2: Micon Mineral Resource Estimate

Indicated

Koivu

Cut-Off Grade	Ore Tonnes (Millions t)	TiO_2 (%)	Magnetite (%)	P_2O_5 (%)	CR_2O_5 (%)	V (%)	Metal Tonnes (Kt) TiO_2	Magnetite
4%	32.16	7.8	5.0	0.13	-	0.13	2,494	1,617
5%	28.77	8.1	5.2	0.13	-	0.13	2,337	1,504
6%	23.26	8.7	5.5	0.13	-	0.13	2,034	1,272
7%	17.74	9.4	5.8	0.12	-	0.14	1,676	1,029
8%	12.66	10.2	6.2	0.12	-	0.14	1,297	782

Kairi

4%	6.44	10.0	9.8	0.22	0.01	0.12	645	630
5%	6.43	10.0	9.8	0.21	0.01	0.12	645	630
6%	6.31	10.1	9.9	0.18	0.01	0.12	638	624
7%	6.08	10.2	10.0	0.16	0.01	0.12	623	608
8%	5.36	10.6	10.3	0.13	0.01	0.13	568	552

Combined

Cut-Off Grade	Ore Tonnes (Millions t)	TiO_2 (%)	Magnetite (%)	P_2O_5 (%)	CR_2O_5 (%)	V (%)	Metal Tonnes (Kt) TiO_2	Magnetite
4%	38.60	8.1	5.8	0.1	0.001	0.1	3,139	2,247
5%	35.21	8.5	6.1	0.1	0.002	0.1	2,981	2,134
6%	29.57	9.0	6.4	0.1	0.002	0.1	2,672	1,896
7%	23.82	9.7	6.9	0.1	0.002	0.1	2,298	1,637
8%	18.03	10.3	7.4	0.1	0.003	0.1	1,865	1,334

Inferred

Koivu

Cut-Off Grade	Ore Tonnes (Millions t)	TiO_2 (%)	Magnetite (%)	P_2O_5 (%)	CR_2O_5 (%)	V (%)	Metal Tonnes (Kt) TiO_2	Magnetite
4%	29.99	6.7	4.5	0.15	-	0.14	1,998	1,358
5%	21.68	7.4	4.9	0.15	-	0.15	1,610	1,066
6%	13.22	8.7	5.3	0.14	-	0.14	1,150	706
7%	9.71	9.5	5.8	0.14	-	0.15	922	560
8%	6.89	10.3	6.0	0.11	-	0.15	711	413

Kairi

4%	0.10	7.3	7.3	1.29	0.01	0.08	8	8
5%	0.07	8.6	9.3	0.78	0.01	0.10	6	7
6%	0.05	9.5	10.9	0.22	0.01	0.11	5	6
7%	0.05	9.6	11.0	0.21	0.01	0.12	5	6
8%	0.04	10.6	13.0	0.11	0.01	0.13	4	5

Combined

Cut-Off Grade	Ore Tonnes (Millions t)	TiO_2 (%)	Magnetite (%)	P_2O_5 (%)	CR_2O_5 (%)	V (%)	Metal Tonnes (Kt) TiO_2	Magnetite
4%	30.09	6.7	4.5	0.16	0.00	0.14	2,005	1,366
5%	21.75	7.4	4.9	0.15	0.00	0.15	1,616	1,073
6%	13.28	8.7	5.4	0.14	0.00	0.14	1,155	712
7%	9.76	9.5	5.8	0.14	0.00	0.15	927	566
8%	6.92	10.3	6.0	0.11	0.00	0.15	715	418

Grand Totals

Koivu

Cut-Off Grade	Ore Tonnes (Millions t)	TiO_2 (%)	Magnetite (%)	P_2O_5 (%)	CR_2O_5 (%)	V (%)	Metal Tonnes (Kt) TiO_2	Magnetite
4%	62.14	7.2	4.7	0.13	-	0.13	4,491	2,905
5%	50.45	7.8	4.9	0.12	-	0.13	3,946	2,488
6%	36.48	8.7	5.4	0.13	-	0.13	3,185	1,958
7%	27.44	9.5	5.8	0.12	-	0.14	2,598	1,584
8%	19.55	10.3	6.1	0.11	-	0.14	2,009	1,196

Kairi

4%	6.55	10.0	9.7	0.23	0.01	0.12	653	637
5%	6.50	10.0	9.8	0.22	0.01	0.12	651	636
6%	6.36	10.1	9.9	0.18	0.01	0.12	643	630
7%	6.13	10.2	10.0	0.16	0.01	0.12	628	614
8%	5.40	10.6	10.3	0.13	0.01	0.13	572	557

Combined

Cut-Off Grade	Ore Tonnes (Millions t)	TiO_2 (%)	Magnetite (%)	P_2O_5 (%)	CR_2O_5 (%)	V (%)	Metal Tonnes (Kt) TiO_2	Magnetite
4%	68.69	7.5	5.2	0.14	0.00	0.13	5,144	3,542
5%	56.95	8.1	5.5	0.14	0.00	0.13	4,597	3,124
6%	42.85	8.9	6.0	0.13	0.00	0.13	3,828	2,588
7%	33.57	9.6	6.5	0.13	0.00	0.14	3,226	2,198
8%	24.95	10.3	7.0	0.12	0.00	0.14	2,581	1,753

4.0 MINE DESIGN

4.1 PREVIOUS ORE RESERVE ESTIMATES

The 2005 Outokumpu and Gridpoint studies produced mineable reserve statements for Koivu and Kairi after open-pit optimisation and subsequent pit design. Table 4.1 summarises the results of these studies.

Table 4.1: Previous Ore Reserve Estimates

Study	Outokumpu 2003		Gridpoint 2005		Outokumpu 2005	
	Ore (Mt)	TiO_2 (%)	Ore (Mt)	TiO_2 (%)	Ore (Mt)	TiO_2 (%)
Koivu	8.4	9.3	10.3	9.9	9.5	9.0
Kairi	4.1	9.4	4.2	9.2	4.5	9.6
Combined	12.5	9.3	14.5	9.7	14.0	9.2

4.2 MICON ORE RESERVE ESTIMATE

4.2.1 Pit Optimisation

The open-pit optimisation was carried out on the block models using the Surpac Pit Optimisation software. Criteria for the pit optimisation were supplied by Kalvinit Oy and are summarised in Table 4.2.

Table 4.2: Open Pit Optimisation Criteria

Criteria	Value
Stripping - excavate, transport 0-1 km, tipping (€/bcm)	2.1
Ore - blasting, loading, hauling 0-1 km, tipping - 0-30 m (€/t)	1.84
Ore - blasting, loading, hauling 0-1 km, tipping - 30-60 m (€/t)	1.87
Ore - blasting, loading, hauling 0-1 km, tipping - 60-90 m (€/t)	1.91
Ore - blasting, loading, hauling 0-1 km, tipping - 90-120 m (€/t)	1.94
Ore - blasting, loading, hauling 0-1 km, tipping - 120-150 m (€/t)	1.98
Ore > 30 m deep per 10 m deepening (€ /t)	0.03
Waste - blasting,loading,hauling 0-1 km, tipping (€ /t)	1.87
Ore Transport from Kaire - 5km (€ /t)	0.56
OreLoss (%)	2
Waste Dilution (%)	5
Overheads (€/t)	0.73
Provision for Closure (€ /t)	0.2
Processing (€ /t)	4.77
TiO_2 Recovery (%)	80
TiO_2 Price - 100% TiO_2 (%)	193.2
Magnetite.Recovery (%)	85
Magmetite Price	20
Overall Slope Angle Koivu (°)	50
Overall Slope Angle Kaire (°)	57º

Geotechnical pit design criteria, such as overall wall slope angles were not critically reviewed by Micon. However, Micon notes that the previous studies stated that the pit design parameters are challenging and must be confirmed by further geotechnical study. Mining and excavation costs, mine overheads, processing costs and recoveries are reviewed by Micon in the following sections of this report and, subject to the bankable feasibility study, are considered to be reasonable.

A diluted block model was used for the pit optimisation that was adjusted for both waste dilution and ore losses. Waste dilution was modelled by adding 5% to the ore-volume of each 10 m x 10 m x 10 m ore-block in the block model and recalculating the average grade of each block to provide a diluted grade. Ore losses were applied as a 2% reduction of revenue from ore in the ore blocks.

Undiscounted optimum pit shells from the open-pit optimisation were used to report a mineable resource from each deposit. Ore reserves are reported in Table 4.3 with diluted ore-tonnages and grades.

Table 4.3: Micon Ore Reserve Estimate

KOIVU

	Tonnes (Millions t)	**TiO_2** (%)	**Magnetite** (%)	**Metal Tonnes (Kt)** TiO_2	Magnetite	**Value** (Millions €)
Waste (inc. stripping)	23.21					
Probable	14.56	7.9	5.0	1,155	732	
Inferred	1.02	6.0	3.6	61	37	
Total	**38.79**			**1,216**	**769**	**47.16**

KAIRI

Waste (inc. stripping)	9.32					
Probable	5.80	9.4	9.2	546	533	
Inferred	0.03	4.3	3.4	1	1	
Total	**15.15**			**547**	**534**	**28.32**

COMBINED

	Tonnes (Millions t)	**TiO_2** (%)	**Magnetite** (%)	**Metal Tonnes (Kt)** TiO_2	Magnetite	**Value** (Millions €)
Waste (inc. stripping)	32.54					
Probable	20.36	8.4	6.2	1,701	1,265	
Inferred	1.05	6.0	3.6	62	38	
Total	**53.94**			**1,764**	**1,303**	**75.48**

Micon notes that there is an area of inferred category in the middle of the Koivu south pit shell, due to 100-m spaced drill sections. Infill drilling (five holes) is required to upgrade this area to the probable reserve category.

4.2.2 Pit Design

Micon has not conducted a pit design and final ore reserve estimation, pending Kalvinit's review of the preliminary estimate.

4.2.3 Potential for Additional Ore Reserve at Koivu and Kairi

There is only limited potential for additional ore reserves at Koivu and Kairi. At Koivu the limited potential lies in the improvement of the inferred resource category material in the southern zone. The optimisation has provided proof that the 4% disseminated material may be in some cases economic to mine. In addition to the inferred category within the pit shell noted in Section 4.2.2, there are gaps in the drilling in the disseminated lower grade bands towards the edges of the deposit where interpretation was based upon intersection of only one drill hole. However, Micon considers that the potential is limited.

The potential for improvement in Kairi is limited since many of the currently identified bands have been drilled to their limits and there was negligible inferred resources reported from the block model.

4.3 MINE OPERATIONS

Kalvinit indicated that drilling, blasting, loading and ore and waste haulage will be the responsibility of a single contractor. The contractor will also be responsible for all services and facilities in support of these activities. Kalvinit will be responsible for the following activities: planning; survey; grade control; and contract management, inspection and control.

Hartikainen is Kalvinit's preferred mining contractor. It is the main mining/earth moving contractor in Finland and is well known to Kalvinit's management team. Hartikainen indicated that it carried a large and varied fleet; Cat 775 60 t trucks and Cat 988 loaders were suggested for ore mining. However, in providing its latest budget quotation, Hartikainen indicated that it had received only limited information on ore and waste characteristics, pit design and operating criteria. As such, the quotation is probably conservatively high. Hartikainen indicated contract periods of two to three years, with no establishment fee.

4.3 RECOMMENDATIONS

Micon's recommended actions for a bankable feasibility study are as follows:

- Additional drilling to upgrade the inferred category included in the optimised pit shell and to confirm or otherwise the potential of low-grade disseminated ore at Koivu. A minimum requirement of five holes is indicated.

- As indicated in Section 3, subject to further drilling and analysis there is potential for additional ore reserves from the Riutta, Perä and Lyly deposits. Additional drilling is required to enable the resource estimates to be upgraded for conversion to ore reserves.
- Further geotechnical investigations to be included as part of the bankable feasibility study.
- The practicality of the proposed pit designs should be reviewed in the light of the further geotechnical investigations.
- Operating costs and recovery criteria should be updated to a bankable standard on the basis of the final project design.
- The mining contract should be negotiated against final ore characteristics, pit design, production schedule and operating schedule. If possible, alternative quotations should be obtained.

5.0 PROCESSING

5.1 INTRODUCTION

Test work has been conducted on various KIP ore samples for process selection and flow sheet development. Based on this work, a preliminary process design and capital and operating cost estimates have been prepared. Micon has briefly reviewed the work to date with regard to the primary processing objectives, the market characteristics and the standard of engineering and cost estimation. All of these aspects have been assessed against the requirements for a bankable feasibility study.

The primary processing objective is to maximise the recovery from the ore of ilmenite and magnetite concentrates suitable as feedstock for sulphate route TiO_2 pigment (and to a lesser extent sulphate TiO_2 slag for pigment) and steel production (and to a lesser extent various industrial uses), respectively. At the same time, the selected process route should minimise and mitigate the environmental impact, and minimise the capital and operating costs.

5.2 TEST WORK

5.2.1 To 2000

Various ad hoc mineralogical and small-scale processing tests were conducted, in conjunction with geological studies, up to the time of Kalvinit's decision to proceed with the production of a bulk sample for evaluation by Kemira in 2000. These studies are reviewed and summarised by Kvaerner, in its 2001 pre-feasibility study and by Outokumpu, in its 2003 pre-feasibility study.

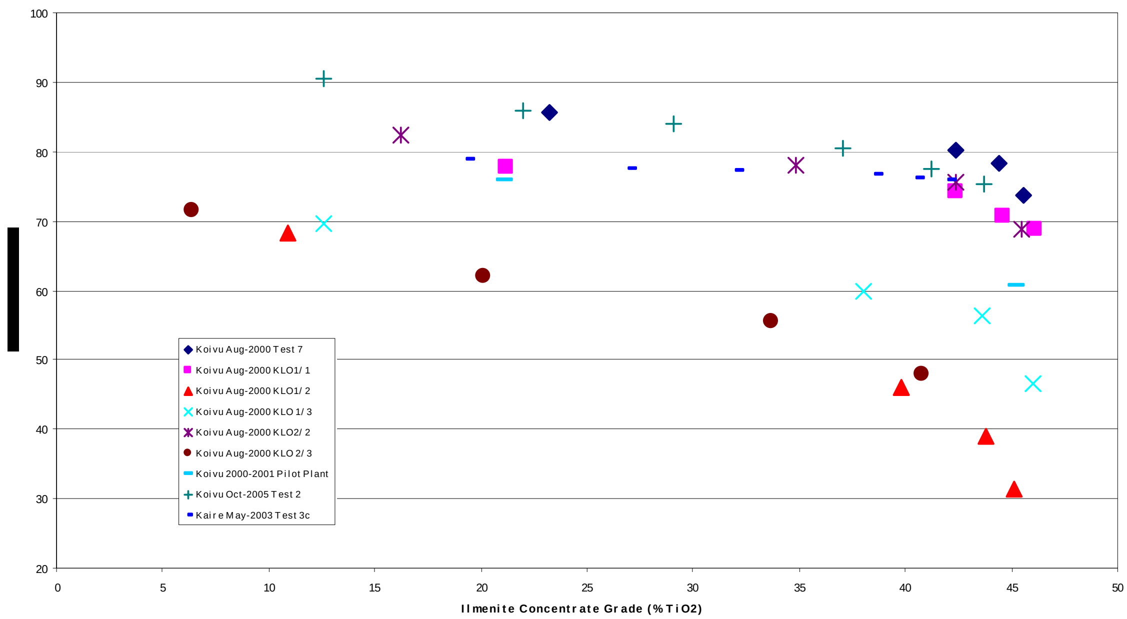
The geological, ore mineralogy and mineral chemistry studies should provide a reasonable basis for sample selection and process test work methodology, but due to the ad hoc nature of the work this is not necessarily been the case.

In general, the studies confirm the potential for production of commercially acceptable ilmenite and magnetite concentrates. Initial pre-concentration of ilmentite and separation of silicates and magnetite can be effected using a combination of gravity and/or magnetic separation at a nominal size of 500 µm. After regrinding to a nominal size of 90 µm and further rejection of silicates using flotation, an acceptable ilmenite concentrate can be produced. However, the results achieved are variable and without more analysis it is not possible to determine the causes of this variability, in particular the effect of ore type, grade and mineralogy.

5.2.1 2000 to Date

Selected test results from 2000 onwards are shown as TiO_2 recovery versus concentrate grade in Figure 1 (Note: the first point for each test, i.e. highest recovery and lowest concentrate grade, represents flotation feed). All results are from batch open circuit cleaning tests, except for the continuous pilot plant, which employed closed circuit cleaning.

Figure 1: TiO_2 Recovery versus Ilmenite Concentrate Grade



Recognising the issues highlighted in Section 5.1 and based on the indicative positive results from the early test work, Kalvinit made an arguably intrepid decision to proceed with a major pilot scale test by VTT in Outokumpu in order to produce a bulk sample of ilmenite concentrate for evaluation by Kemira.

Prior to the pilot scale test, VTT conducted a series of preliminary laboratory batch tests for flow sheet selection. The best result, with a TiO_2 recovery of 74% to a 45% TiO_2 ilmenite concentrate was achieved with a two stage grinding and processing circuit, as indicated previously, with dry magnetic separation for pre-concentration. The bulk sample was from a trial quarry established in the southern Koivu ore body. The potential for further rejection of silicates by gravity separation after regrinding and before flotation was also identified.

In addition, a series of comparative test were conducted on composite samples from different horizons of two bore holes. Acceptable ilmentite concentrate grades were achieved with all the samples. However, although the best recovery results, including that on the weathered ore horizon, are close to the previous best, the other results are very variable in both the pre-concentration and flotation stages. The reasons for the variations are not identified.

The pilot plant circuit was constrained by equipment availability and utilised spirals for pre-concentration before magnetic separation, prior to regrinding and flotation. Although the plant was operated over a number of months and produced a bulk ilmentite concentrate of acceptable quality, the best TiO_2 recovery achieved was only 61%. Again, the reasons for the low recovery are not identified, although Micon notes that both pre-concentration and flotation tailings losses are higher than for the best batch test.

Kemira's full scale evaluation of 1,275 t of pilot plant ilmentite concentrate appears to have been generally successful. However, it appears that a number of issues were raised by Kemira in respect of plant operation and product quality, which could affect any purchase agreement in terms of quantity and/or price. Micon has not clarified whether these issues have been resolved.

Drill core from the 2003 Kairi drilling was tested by Outokumpu (chemistry and microscopy) and VTT (laboratory batch processing). The Outokumpu work is well structured and includes a comprehensive mineral chemical analysis of a range of 'metallurgical' ore types identified by geological interpretation and sample assay. These analyses indicate no major variations between the high grade and normal grade ore types comprising the bulk of the resource. Unfortunately, the microscopy was somewhat cursory and insufficient to identify potential processing variability.

VTT conducted a limited programme of batch processing tests on a composite of the Outokumpu 'metallurgical' samples. The methodology was initially based on the 2000 Koivu test work. Problems were experienced with both ilmenite concentrate grade and TiO_2 recovery, and flotation performance was poor until a desliming stage was introduced. The best result achieved was a TiO_2 recovery of 74% to a 42% TiO_2 ilmenite concentrate.

GTK conducted a further limited programme of batch processing tests on a composite of the 2004 Koivu drill core. Primarily, this work focussed on the pre-concentration stage and a comparison against the pilot plant performance. On a grade versus recovery basis, the results obtained using the pilot plant and previous Koivu batch test methodologies are comparable. However, up to 5% (absolute) improvement in recovery was obtained using high gradient magnetic separation with low field strength and finer feed size. After desliming and flotation, but without further regrinding, the best result achieved was a TiO_2 recovery of 75% to a 44% TiO_2 ilmenite concentrate. This is essentially the same as the best 2000 Koivu result, but with a lower pre-concentration ratio and increased grinding requirements, which has significant implications for plant design and cost.

Although the above review has concentrated on TiO_2 recovery and ilmenite concentrate grade, the minor elements in the ilmenite concentrate were also monitored. Against the Kemira feedstock specification, only the vanadium content is of concern, occurring as it does in the ilmenite lattice. However, the vanadium content appears to be reasonably consistent, certainly as shown by Outpkumpu's Kairi study. Against the sulphate slag feedstock specification, phosphorous is of concern, but it can be controlled by acid leaching. Micon notes that although other minor elements can be controlled, it may be at the expense of ilmenite recovery.

Little attention has been given to magnetite product cleaning, in respect of both product quality and ilmenite loss in the test work to date. One series of tests has recently been conducted by GTK on the 2004 Koivu drill core. This test indicates that further liberation and magnetic cleaning are required to achieve acceptable magnetite concentrate grade and ilmenite rejection. Chrome and vanadium, which are in the magnetite lattice, and TiO_2 are on the high side of a comparable market product but may be acceptable.

5.2.3 Conclusions

Micon's conclusions are as follows:

- The test work demonstrates good potential for producing a marketable ilmenite concentrate with a TiO_2 recovery of up to 80%.
- Insufficient test work has been conducted to demonstrate magnetite recovery to a marketable concentrate, but results to date indicate that a target of 85% is not unreasonable.
- Insufficient test work has been conducted to demonstrate the viability of producing an apatite concentrate, specifically from the Riutta deposit.
- The general process flow sheet developed from the test work to date is a reasonable basis for further optimisation. However, a considerable amount of predominantly small scale test work is required to enable the flow sheet to be finalised. Critical aspects are stage grinding sizes, degree of pre-concentration and pre-concentration process selection.
- Although there are indications of consistency in certain aspects of process mineralogy over the bulk of the ore bodies, the variation in the test work results to date is of concern, both in respect of TiO_2 recovery and ilmenite concentrate consistency. Insufficient test work has been conducted on representative samples of different 'metallurgical' ore types to confirm the variability of process response and any significance for mine and process design and for concentrate marketing.
- Although the ilmenite concentrate appears to be acceptable to the target customer, doubt remains as to the significance for volume and price of the issues raised by Kemira's trial run.
- All of the above issues will need to be addressed for a bankable feasibility study (see Table 1.1).

5.3 PROCESS DESIGN

The only process design, engineering and cost estimation conducted to date is that by Kvaerner in 2001. The process design is primarily based on the ilmenite pilot plant flow sheet and performance. The level of engineering and cost estimation methodology are to an initial pre-feasibility standard, as defined by the scope of work.

Micon understands that a provisional plant site location has been selected on an area of flat moraine ground, adjacent to the Koivu pits, the existing access road and access to the tailings storage area. This appears to be appropriate, although will incur additional ore haulage cost from Kairi pit.

The initial capital and operating cost estimates, €41.7 million and €5.1/t of ore respectively, were reduced to €34.3 million and €4.5/t after consultation with Kalvinit and VTT. While in some cases these reductions reasonably reflect Finnish practice, Micon notes that at such an early stage in flow sheet selection and process design the costs could anyway be subject to significant adjustment. The foregoing cost estimates exclude contingency.

All of the above issues will need to be addressed for a bankable feasibility study (see Table 1.1).

5.4 RECOMMENDATIONS

Micon recommends the following programme of test work in order to bring the process selection and design basis and marketing aspects of the project to a bankable feasibility standard:

1) Review and consolidate all of the test work to date. Identify any aspects for incorporation into the current test programme.
2) Identify 'metallurgical' ore types and their characteristics from previous work. Suggested criteria for identification are: ore body, stratigraphy, assay (TiO_2 and other), ore mineralogy and alteration. The number of samples will of necessity have to be limited, but at least should include combinations of the following where appropriate: ore body; high grade; low grade; and weathered zones.
3) Prepare and assay representative composite samples for each 'metallurgical' ore type.
4) Conduct a process mineralogical liberation analysis on each of the 'metallurgical' ore type samples: grind (three sizes); size; heavy liquid and DTT separation of size fractions; assay and microscopy of the fractions; and SEM analysis of ilmenite and magnetite. The objective is to identify optimum stage liberation sizes, the appropriate degree of pre-concentration, the ultimate product quality and potential process variability throughout the ore bodies.
5) On selected composite samples and with various grind sizes, subject to the results of 4, conduct bench- or small-scale batch tests with pre-concentration (gravity and/or magnetic separation options), LIMS magnetite recovery, sulphide flotation and ilmenite flotation, generally as developed by GTK to date.
6) On selected composite samples, using the optimised (based on recovery versus concentrate grade) procedure determined from the previous tests, conduct further bench- or small-scale batch tests to optimise the magnetite cleaning (regrinding and LIMS stages), sulphide flotation (pH, reagents, flotation residence time, cleaning stages and ilmenite flotation (desliming, reagents, flotation residence time, cleaning stages) stages.

7) On selected composite samples, conduct standard grindability tests.

8) For selected composite samples, using the optimised procedure determined from the previous tests, conduct locked cycle ilmenite flotation tests to determine final recovery Evaluate the effect of water recirculation on ilmenite flotation. Obtain full analysis of the final concentrates. Evaluate any additional concentrate processing requirements, such as scrubbing and/or acid leaching.

9) Subject to the previous test work and requirements for bulk concentrate samples for customer evaluation, conduct a confirmatory continuous pilot scale run. This should include ore type variation if possible. Also, the opportunity should be taken to evaluate semi-autogenous primary grinding, which in addition to potential capital cost saving could offer improved process performance. Other product criteria for process design should be evaluated in the pilot plant: flotation froth characteristics; thickening; filtration; and drying.

10) Once the process selection has been optimised, the test work finalised and production criteria finalised, process design and cost estimation can proceed to a bankable standard.

11) A similar programme of work to the above would be required to evaluate recovery of a marketable apatite concentrate.

6.0 WATER SUPPLY AND TAILINGS STORAGE

6.1 CURRENT STATUS

For its January 2002 pre-feasibility study, Kalvinit assumed that most of the process water will be recirculated from the tailings storage facility, with make-up supplied from the adjacent man-made lake Venetjärvi. An annual water balance after initial filling was calculated. However, as Kalvinit points out, the degree of recirculation and discharge depends on the effect of recycled water on the ilmenite flotation process, which has not been determined. Accepting this uncertainty, Kalvinit produced specifications for the recycle and fresh water intakes, pumping stations and pipelines for capital cost estimation.

Kalvinit selected a marsh area south of the plant and between it and Venetjärvi for the tailings, water sedimentation and reclaim water storage facility. Two areas, each with ten years' capacity, were identified. Dam construction is based on engineered rock and moraine construction. Micon believes that no specific site investigations were done, although of course Kalvinit has good knowledge of the ground conditions from the drilling programme. Micon has not confirmed whether the design meets Finnish criteria, but is aware of similar facilities in Scandinavia.

Kalvinit only included the cost of constructing one dam in its capital estimate; the second site is close to a preserved nature site and an alternative location must be investigated. Consideration will be given to use of the worked out pits, which Kalvinit indicated is acceptable under new legislation.

Kalvinit indicates that the final design and cost estimate will be completed in conjunction with a third-party, geotechnical consultant.

6.2 RECOMMENDATIONS

Subject to incorporation of final process criteria, tailings criteria and appropriate geotechnical site investigations into a bankable feasibility study design and cost estimate, Micon has not identified any significant concerns with Kalvinit's current proposals for the tailings storage facility.

7.0 INFRASTRUCTURE

7.1 CURRENT STATUS

For its January 2002 pre-feasibility study, Kalvinit provided for the following: power supply and distribution; process water supply (see Section 6); potable water supply; sewage treatment; access and site roads; fuel storage; communications; car parking; and main office. Micon has not verified the adequacy of these provisions.

By far the largest infrastructure cost is the power supply. This will require a 21 km, 110 kV line and 110 kV/20 kV substation to be built. Kalvinit indicated that the cost of the 110 kV supply could be supported by grant aid.

Micon notes that no provision has been made for site fire protection or security. Kalvinit considers that the former will be provided by the local authority fire service and the latter is not required. Micon understands that the following are provided for in the process plant design and cost estimate: analytical laboratory (including mine samples); workshop; stores; changing, washing and toilet facility; and lunch room. On the understanding that the mining contractor will be providing its own infrastructure, these facilities are assumed to be adequate.

7.2 RECOMMENDATIONS

Subject to incorporation of final project criteria into a bankable feasibility study design and cost estimate, Micon has not identified any significant concerns with Kalvinit’s current proposals for site infrastructure.

8.0 ENVIRONMENT, HEALTH AND SAFETY AND SOCIO-ECONOMICS

8.1 CURRENT STATUS

On the understanding that the permitting process in Finland is transparent and the work required is being undertaken by LVT, a competent group known to Micon, the environmental, health and safety and socio-economic aspects of the KIP were excluded from Micon's review scope of work. However, for completeness, Micon has included its understanding of the current status:

- The base line studies are complete.
- The impact assessment was stopped in 2004, when 50% complete, but has now recommenced for completion early 2006.
- After submission of the EIS, the review and consultation process for permitting is expected to take a minimum of nine months and up to two years.
- There do not appear to be any significant environmental or health and safety risks associated with the KIP.
- It appears that there is significant local authority and public support for the KIP, which is expected to make a significant direct and indirect contribution to the local employment and economy.

8.2 RECOMMENDATIONS

Subject to completion of the EIS and the review and consultation process, Micon has not identified any significant concerns with the current programme for permitting of the KIP.

9.0 IMPLEMENTATION

9.1 CURRENT STATUS

For its January 2002 pre-feasibility study, Kalvinit incorporated Kvaerner's process plant construction and commissioning schedule with inputs from the other contributors to the study, for mine development, site preparation and infrastructure works, into a preliminary implementation programme.

The preliminary programme indicates 20 months from the start date to commencement of production. Micon considers that this schedule is readily achievable. However, Micon notes that the schedule excludes the following: completion of the bankable feasibility study (including further resource evaluation, further process test work, basic engineering, the EIS and further product evaluation and marketing); the permitting process; financing; construction and operating contract negotiations; and the completion of peat extraction (although the subsequent activities could proceed in conjunction with the study). Micon considers that these activities would add at least nine months to the schedule.

For its January 2002 pre-feasibility study, Kalvinit did not address other aspects of its development plan, as follows:

- Overall approach, including the items noted above.
- Contracting strategy.
- Contract management, inspection and control.
- Kalvinit management team.

The following aspects of the operating plan were also not addressed in the implementation section:

- Corporate structure.
- Management structure.
- Recruitment and training.
- Contracting strategy. In addition to mining, Kalvinit indicated that other service areas would be contracted out.
- Contract management, inspection and control.
- Production schedule. This should reflect the marketing plan, particularly in respect of any sales build-up in the initial years. This period should also reflect the usual mine and process plant production build-up after commissioning.

Proposed manning levels are low and effectively non-existent in the general and administration areas. Although Kalvinit indicated that contract services would be utilised (e.g. major process plant maintenance, vehicle maintenance and accounting), Micon could not identify operating cost provisions for these services (see Section 12).

9.2 RECOMMENDATIONS

All of the above should be addressed for inclusion in a bankable feasibility study.

10.0 MARKETING

10.1 CURRENT STATUS

10.1.1 Ilmenite

For its January 2002 pre-feasibility study, Kalvinit produced a positive marketing report for its ilmenite product. Significant expressions of interest were made by Kemira for pigment and Tinfos Jernverk A/S (Tinfos) for sulphate slag. Target ilmentite sales for these customers was estimated to be 200,000 t/a within the first five years for Kemira and 50,000 t/a within the first two years and 150,000 t/a thereafter for Tinfos. Expressions of interest received were also received from other European pigment producers.

The Kalvinit January 2002 and the Outokumpu October 2003 studies assumed annual sales of approximately 302,000 t/a and 226,000 t/a (average), respectively, with no build-up in sales in the early years. Both these studies and the January 2005 Gridpoint reserve estimate used a price of €82/t ilmenite (44% TiO_2), assumed to FOB the mine site.

Micon has not verified the status of these expressions of interest or the basis for the price assumption. Currently, the reported (Industrial Minerals) price for Australian ilmenite (54% TiO_2) is €65-70/t FOB, although Kalvinit has reported a current minimum price indication from Kemira of €85/t (44% TiO_2).

10.1.2 Magnetite

No marketing study for magnetite was included in the January 2002 pre-feasibility study and magnetite was excluded from the revenue. The October 2003 Outokumpu study assumed average sales of approximately 116,000 t/a (based on a fixed ratio to ilmenite sales) and a price of €10/t C.I.F. The January 2005 Gridpoint reserve estimate assumed a price of €20/t C.I.F. The October 2005 Kalvinit study assumed a price of €40/t. Currently, the reported (Mining Journal) annual contract price for iron ore fines is €30/t.

A sample of final concentrate is currently being evaluated by Ruukki. Micon considers that the concentrate has potential for sale in the local market, although the contribution to gross revenue is not expected to be more than 10%.

10.1.3 Sulphide

Kalvinit has suggested that the sulphide concentrate may be marketable for its gold content; however, it has not been included in any of the economic analyses to date. Little information is available, but indicated production of gold could be of the order of 1,000 oz/a in 10,000 t/a concentrate. Unfortunately, the indicated base metal content is low (less than 1.5% Cu with lesser, zinc, nickel and cobalt) and the product may not be marketable. No work has been done on upgrading the base metals by selective flotation, which in any case could reduce gold recovery.

Subject to further study, Micon considers that sale of sulphide concentrate is unlikely to contribute to revenue and at best would cover the cost of off-site disposal for environmental reasons.

10.1.4 Apatite

Kalvinit has suggested that a marketable apatite concentrate could be produced from the Riutta deposit; however, it has not been included in any of the economic analyses to date.

10.2 RECOMMENDATIONS

The close location of potential customers for both ilmenite and magnetite, and the apparent acceptance of the former by Kemira, are significant positive factors for the KIP. However, Micon reiterates its comments in Section 1 regarding industrial mineral markets and cautions against undue optimism at this stage, both in respect of ultimate sales volume and initial sales build-up. Also, Micon expects that potential lenders will require a significant proportion of production to be covered by long-term contracts as a condition precedent to loan finance closure.

In view of the above comments, Micon recommends that ongoing marketing, including further product evaluation, is initiated at an early stage in the bankable feasibility study. The objectives of the marketing are to ensure that the study is adequately defined and that provisional contracts are in place at its completion.

11.0 CAPITAL COST

11.1 CURRENT STATUS

The previous studies by Kalvinit (January 2002) and Outokumpu (October 2003) estimated initial capital cost at €45 million and €42 million, respectively. The main cost area is the process plant at between €36 million to €38 million and is based on Kvaerner's November 2001 pre-feasibility estimate. In January 2005, GTK/VTT prepared a revised capital estimate for the plant of €24.4 million, based on some design changes and the use of some second-hand equipment.

Other significant cost areas are mine stripping, the power supply and the bankable feasibility study. The estimated life of mine sustaining capital is approximately €6 million. Closure is included in the operating cost estimate.

The estimates have been prepared to a conceptual to pre-feasibility standard. Contingency, which at this standard of estimate would be expected to be 15%, has not been assigned in either of the above estimates.

Insufficient detail is provided in the Outokumpu estimate to adequately determine its basis. Although the Kalvinit estimates are complete for the main cost areas, the detail is insufficient in the minor cost areas to identify any omissions. There are some minor omissions in Kalvinit's estimate for aspects of the bankable feasibility study (only further drilling and process test work have been included) and for project management.

11.2 RECOMMENDATIONS

Micon's recommendations for a bankable feasibility study are as follows:

- General guidelines for a bankable feasibility study standard of capital cost estimate are given in Table 1, Section 1.
- The capital cost estimate should reflect revisions to the project scope and criteria arising from the bankable feasibility study investigations.
- The capital cost must be estimated and documented to a greater level of detail than has been done to date
- A contingency of at least 10% should be applied.

12.0 OPERATING COST

12.1 CURRENT STATUS

The previous studies by Kalvinit (January 2002) and Outokumpu (October 2003) have estimated LOM unit operating cost at €9.35/t and €9.53/t of ore processed, and €48.9/t and €61.8/t of ilmenite sold, respectively. The difference in unit cost of ilmenite sold is due to Outokumpu's more conservative reserve and production estimate.

The main cost areas are mining at €4.88/t and processing at €4.18/t (Outokumpu October 2003). Current estimates for these areas (Kalvinit December 2005) are €5.67/t of ore and €4.77/t respectively. Contract mining unit costs have been provided by Hartikainen and mining overheads have been estimated by Kalvinit/Outokumpu. Processing cost has been estimated by Kalvinit/Outokumpu from the November 2001 Kvaerner study, with current budget unit prices for labour and consumables.

The estimates have been prepared to a conceptual to pre-feasibility standard. Hartikainen indicated that its contract mining cost estimates reflect uncertainty over technical and operating criteria and could be up to 10% lower. Micon considers that the process cost estimate reflects Scandinavian practice in respect of its low labour element. The materials and power elements, which are based on the pilot plant operation, appear to be reasonable. Overall, Micon considers that the process cost estimate is low and not likely to be reduced further.

Micon considers that the overhead cost estimate is low, reflecting a minimal level of general and administrative services. In addition to overhead, a closure charge of €0.2/t has been estimated by Kalvinit and LVT, being the worst case expected from the upcoming mining law. This charge appears to Micon to be excessive.

12.2 RECOMMENDATIONS

Micon's recommendations for a bankable feasibility study are as follows:

- General guidelines for a bankable feasibility study standard of operating cost estimate are given in Table 1, Section 1.
- The operating cost estimate should reflect revisions to the project scope and criteria arising from the bankable feasibility study investigations.
- The issues noted in Section 12.1 should be addressed.

13.0 FINANCIAL EVALUATION

13.1 CURRENT STATUS

The previous studies by Kalvinit (January 2002), Outokumpu (October 2003) and Kalvinit (October 2005) have included financial models, which forecast cash flow before tax and financing. Kalvinit's 2002 study forecasts an NPV of €18.9 million and IRR of 18%, based on the sale of 3.1 Mt of ilmenite from 16.3 Mt of ore at a grade of 10.6% TiO_2. Outokumpu's base case forecasts an NPV of €-7.4 million and IRR of 3%, based on the sale of 1.9 Mt of ilmenite from 12.6 Mt of ore at a grade of 9.3% TiO_2. Outokumpu also studied the sensitivity to increased ore tonnage and grade. This forecasts an NPV of €12.7 million and IRR of 14%, based on the sale of 3.1 Mt of ilmenite from 18.2 Mt of ore at a grade of 10% TiO_2, although this is not supported by the Outokumpu ore reserve estimate. Kalvinit's 2005 study forecast an NPV of €25.7 million and IRR of 20.0%, based on the sale of 2.9 Mt of ilmenite from 17.7 Mt of ore at a grade of 9.1% TiO_2.

Kalvinit's 2002 forecast is higher because of the optimistic estimate of Kairi ore, which did not eventuate, and inclusion of the Perä deposit, which has yet to be evaluated to the same standard as Koivu and Kairi. Outokumpu's base case forecast of production and cash flow is lower because of its more conservative reserve estimate. Kalvinit's 2005 forecast is higher because of the inclusion of Perä, Riutta and Lyly deposits, which have yet to be evaluated to the same standard as Koivu and Kairi. Also, Kalvinit used a higher TiO_2 recovery, based on recent test work and a higher magnetite price. Other financial and technical inputs to the financial models are essentially the same.

The Kalvinit and Outokumpu financial models are acceptable to a conceptual to pre-feasibility standard. However, the forecasts are subject to the issues raised by Micon in the previous sections of this report. It is clear that the economics of the KIP are primarily dependent on the TiO_2 contained in the reserve; Micon's review of the resource and pit optimisation indicates an increase of approximately 30% over the Outokumpu October 2005 estimate. There is also the potential from the Perä, Riutta and Lyly deposits. Of the other revenue criteria, there may be potential for some increase in process recovery. However, although the international ilmenite market is currently buoyant, Micon is cautious about the potential for a price increase.

Micon considers the potential for reducing costs to be limited, other than through increased sales volume and economy of scale; this seems unlikely and anyway may not be supported by the ore reserve.

The Kalvinit and Outokumpu financial models do not incorporate tax, financing and State and regional grant aid. Although financing would be at some cost, grant aid is an aspect that could have a significant bearing on the economics of the KIP. Kalvinit indicated that the regional authority is supporting a direct State capital grant of €12 million, although to Kalvinit's knowledge actual grants have typically only been half the forecast amount. Kalvinit also indicated that there is potential for grant support for infrastructure costs, specifically for the power line and road upgrading.

13.2 RECOMMENDATIONS

Micon's recommendations are as follows:

- Update the financial model with the latest estimates of ore reserve and grade, ilmenite and magnetite recoveries, prices and costs.
- Continue to update the financial model during the bankable feasibility study.
- Finalise the financing package, including grant aid, during the bankable feasibility study.

14.0 RISK ANALYSIS

14.1 CURRENT STATUS

No formal risk analysis of the KIP has been conducted.

14.2 RECOMMENDATION

Conduct a formal risk analysis of all aspects of the KIP, as defined by the bankable feasibility study.