



**Magnetite Network**

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Mr. D. Norris  
General Manager – Royalties Branch  
Department of Mines and Petroleum  
100 Plain Street  
East Perth WA 6004

By email: [david.norris@dmp.wa.gov.au](mailto:david.norris@dmp.wa.gov.au)

Dear Mr Norris

**Proposed changes to Mining Regulations**

I am writing to present the views of the Magnetite Network in relation to the proposed changes contained in your email of 7 October, 2010 and I appreciate the opportunity to submit its views.

This submission has been prepared by MagNet, an industry body representing the interests of three member companies and the wider emerging Australian magnetite industry. The three member companies, CITIC Pacific Mining Pty Ltd, Atlas Iron Limited and Extension Hill Pty Ltd are currently developing, financing and constructing separate greenfields magnetite projects in regional Western Australia with an expected collective capital investment in excess of AUD\$12 billion for the first stages alone. These projects each have a life span best measured in decades rather than years and represent a significant new, long term, value adding industry for Western Australia with massive job creation and regional development potential.

**Summary**

This submission is written on the basis that the proposed changes would apply:

- a new specified royalty rate for magnetite concentrate to be 5% and a pellet rate of 4.5%; and
- a new specified royalty rate to apply a further 2.5% rate to any contained vanadium i.e. within magnetite concentrate.

MagNet supports the proposal to specify these minerals as separate items rather than allow them to be caught up in the current "other minerals" specification.

However MagNet is opposed to the rates at which the royalty is proposed to be levied and also the concept of imposing a further royalty for vanadium that is contained within magnetite concentrate. This will effectively be a penalty.

We ask that the State Government acknowledge that the proposed Minerals Resource Rent Tax "MRRT" regime may not recognise any additional royalty imposed after 2 May 2010. Any drafting will need to be sensitive to this to avoid a situation where the change from "other minerals" category to a specified category might trigger an exclusion from being able to seek a royalty rebate.

MagNet proposes that:

- Magnetite concentrate should be taxed at 3%;
- Magnetite pellets should be taxed at 2%;
- An initial royalty free period ( to encourage the industry) should apply for 5 years from the date the Regulation is amended;
- That a further concessional phasing in period should apply for the next 5 years from the date the Regulation is amended i.e. years 5-10 at 1.5%;
- Current ad valorem basis of calculation to remain;
- Nil vanadium royalty for any contained in product sold as magnetite concentrate;
- In the alternative this contained royalty provision should not apply where the vanadium content is less than 1.0%; and
- That there be a further paper developed that enables wider industry consultation with magnetite projects.

MagNet submits that there are some strong public policy reasons for this to be adopted. These include:

1. The need to be competitive with other states royalty regimes and encourage investors to choose to mine magnetite in Western Australia;
2. The need to encourage and protect an emerging industry that is facing some uncertainty from the proposed MRRT and carbon tax;
3. The need to encourage and recognise the broader benefits of a value add industry to the state;
4. Equity demands that there be consideration that beneficiated (hematite) ore has a differential rate under current regulations whereas the amount of beneficiation required for magnetite ore is much greater; and
5. It is bad public policy and inequitable to double tax a product. Magnetite concentrate that contains vanadium will be sold for its magnetite properties not for its contained vanadium.

These arguments are further expanded at page 4 below.

## Background

MagNet was formed in 2009 to represent the interests of the emerging magnetite sector. Membership fluctuates but it provides an important resource to several non-member explorer level projects and has assisted with the start up of a new iron ore association in South Australia this year.

The difference between hematite or direct shipping iron ore "(DSO)" ( $Fe_2O_3$ ) and product derived from the extensive processing of magnetite ore ( $Fe_3O_4$ ) that is only saleable as magnetite concentrate is most important when considering royalty rates.

The diversification of the iron ore industry in Western Australia is especially significant given that DSO or hematite ore is going to decrease in quality in the medium to long term. The very large capital investment in new magnetite projects presents huge opportunity for our nation with flow on economic and social benefits for Western Australia and many regional communities as illustrated below.

Previously overlooked by the major Australian iron ore producers due to its low ore grade, more than 20 projects based on mining and processing magnetite iron ore are now proposed, approved or under construction in Western Australia.

The first of these to come online will be CITIC Pacific Mining's Sino Iron project just south of Karratha, with more than \$5 billion invested in the Project, the target for the first shipment of magnetite concentrate for export is the first half of 2011. The Oakajee port development will not occur unless there are viable magnetite mines established to provide product to it for export.

Economic benefits of MagNet member projects – estimated as at November 2010

Company	Mine Life	CAPEX (\$A)	Employment (construction)	Employment (ongoing)	Royalties p.a. (A\$)	Annual Export Revenue (A\$)
CITIC Pacific Mining	+25 years	5.4b	4,500	+800	+125m	3.0b
Atlas Iron Ridley	+30 years	2.8b	1,100	+750	75m	1.25b
Atlas Iron Balla Balla	+26 years	1.9b Phase 1 & 2	1,650	+ 530	95m	1.1b
Extension Hill	+50 years	2.0b Phase1	2,000	+500	50-150m	1.0 b
TOTAL		\$12.1b	10,150 jobs	2,330 jobs	+\$300m	\$6.3b

MagNet, which represents three of the emerging magnetite producers, estimates that its member companies' projects alone will create 10,150 jobs during construction, 2,330 direct operational jobs and pay more that \$300 million in royalties per annum. Applying a standard multiplier there are massive new indirect jobs created – many in regional areas including the MidWest.

Unlike traditional hematite or 'direct shipping' ore (DSO), magnetite requires significant energy intensive downstream processing in Australia before it can be exported. As well as creating significant flow-on economic, regional development and employment benefits, this will also result in investment in major new infrastructure. For example, the Sino Iron project includes a new port (the first in the Pilbara in 40 years), a 450 MW combined cycle gas-fired power station, and a 51 GL desalination plant.

Given the global trend for declining grades of hematite ore in the future it is likely that magnetite concentrate will continue to grow in terms of its percentage share of total iron ore exported and will underpin regional growth in to the future.

Magnetite will be exported in concentrate or pellet form and is a highly sought after feedstock for overseas steel makers as it requires far less processing at their mills than does the traditional DSO – that processing will be done here in Australia. It is also a good feedstock to the steel mills due the magnetite product being higher grade and lower impurities.

## Further Detail Regarding the MagNet Position

### 1. The need to be competitive with other states royalty regimes and encourage investors to choose to mine magnetite in Western Australia

Magnetite exists in most other states and many other countries also possess significant undeveloped magnetite deposits and investment capital can be diverted away from Australia to other jurisdictions with more favourable taxation rates, investment regimes and lower sovereign risk.

It is important to create an incentive for investment as otherwise projects may be more attractive in other states.

Any royalty on magnetite concentrate should be at parity or lower than other states. 5% is too high when compared with other states as detailed below.

Magnetite Table 2.19 State and Territory mineral resources revenue

NSW	VIC	QLD	WA	SA	TAS	NT
4% mine mouth	2.75 % net market value	2.7% value	Proposed 5%	N/A 1.5% first 5 years	1.6%	18% net royalty value

Source - Architecture of Australia's tax and transfer system: Treasury 2009

[http://taxreview.treasury.gov.au/content/downloads/report/Architecture\\_of\\_Australias\\_Tax\\_and\\_Transfer\\_System\\_Revised.pdf](http://taxreview.treasury.gov.au/content/downloads/report/Architecture_of_Australias_Tax_and_Transfer_System_Revised.pdf)

### 2. The need to encourage and protect an emerging industry that is facing some uncertainty from the proposed MRRT and carbon tax

The other difficulties facing the establishment of magnetite mining and production should be taken in to account in setting this policy to ensure investment attraction is maximised. It is not beneficial to impose a royalty as the timing of this change is anti competitive. In addition MagNet has argued that magnetite should be exempted from the MRRT. Our submission is available at:

<http://www.futuretax.gov.au/documents/attachments/MagNet.pdf>

One key argument for this exclusion is helpful in considering the royalty regime:

- 6. Including magnetite concentrate in the MRRT regime will have an adverse impact on this fledgling industry by deterring investment and jeopardising the significant regional development, economic and social benefits that might otherwise occur. MagNet MRRT submission*

Independent experts estimate that a carbon tax will be significant for magnetite producers given their energy intensive process to make pellets and concentrate. MagNet has been actively ensuring that the Federal Department of Climate Change consider the needs of the emerging industry. To date it is still unclear whether magnetite production will be considered an energy intensive trade exposed industry.

Clearly magnetite projects are marginal for at least their first decade or so of start-up. The very capital intensive cost of infrastructure plus operating expenditure must be taken into account.

### 3. The need to encourage and recognise the broader benefits of a value add industry to the state

Clearly successive State Governments have sought to encourage a sustainable and diversified economic base for us by encouraging downstream processing and value adding. In the case of local pellet production it is logical to encourage this further beneficiation onshore with a further concession for pellets at a rate of 2% as compared to concentrate at 3%.

There are very clear benefits to regional areas that may not attract other large resource projects.

The Geraldton Iron Ore Alliance has advocated strongly for the Mid West region. It states in a submission to the PTG that:

#### **ECONOMIC AND SOCIAL BENEFITS OF THE MID WEST IRON ORE INDUSTRY**

A new nationally significant regional industry is emerging in Western Australia's Mid West region which is pioneering the development of a new national export product, namely magnetite concentrate.

This region's iron ore industry is also becoming increasingly recognised for its inclusive approach in doing business, key features being:

- Engagement with international partners, as partners in investment, mine development and value-adding processing; not just customers for export product;
- Setting new standards in regional community engagement and capacity building;
- Setting new standards in development of common-user regional infrastructure, with collaboration between miners, infrastructure providers and government that may not have been seen in regional Australia, with potential to set new benchmarks and much needed best practice examples for the broader resources industry.

This industry has enormous long-term benefits but as with any new industry of this scale facing significant mine development and infrastructure challenges, and a highly competitive international environment it needs supportive government policy settings to achieve its potential.

The Alliance has commissioned a study (Economic Consulting Services – October 2010) to quantify the potential economic and social benefits from planned and committed Mid West iron ore projects. The following information sets out the findings of the consultants:

- An average of 3,500 jobs a year during 15 years construction
- 4,500 direct jobs a year, averaged over the next 20 year period of operation;
- A total of 26,000-plus direct and indirect jobs in WA, 15,300 of these in the Mid West.
- An addition of \$5.0 billion a year Direct operational expenditure and with economic flow on effects \$7.4 billion per year to be expended in the Mid West to 2030.
- About \$12 billion in taxes and duties to the Federal Government (excluding any Resources Tax) and around \$11.6 billion in royalties and other payments to the State Government over the next 20 years.

To put this in context - The current Gross Regional Product of the Mid West is estimated at around \$4.5 billion for 2009/10; - the Annual planned expenditure by the iron ore miners is anticipated to equal the current Gross Regional Product for the Mid-West by the year 2016

-The ABS 2006 Census records the number of jobs in the Mid West at 25,535. The Region is estimated to gain an average annual additional 4,500 jobs from construction work and an additional 10,800 operational jobs as an outcome of the region's planned iron ore projects. This is equivalent to an increase of 60% on the 2006 level of jobs, averaged over the next 20 years.

[http://www.futuretax.gov.au/documents/attachments/Geraldton\\_Iron\\_Ore\\_Alliance\\_\(GIOA\).pdf](http://www.futuretax.gov.au/documents/attachments/Geraldton_Iron_Ore_Alliance_(GIOA).pdf)

**4. Magnetite concentrate that contains vanadium will be sold for its magnetite properties not for its contained vanadium.**

It is bad public policy and inequitable to double tax a product. Magnetite concentrate that contains vanadium will be sold for its magnetite properties not for its contained vanadium. Any decision that may or may not be made by a steel mill to extract the vanadium should not lead to an implied extra value at the point of sale. It is extremely doubtful that this extraction will actually occur as it requires highly specialised process facilities.

The Balla Balla project of Atlas Iron was developed to its current stage by Aurox Resources. Atlas merged with Aurox during 2010. The main product of the proposed Balla Balla project is a titaniferous magnetite. This concentrate will also contain low levels of vanadium. The vanadium cannot be removed by either conventional or economical processes at the mine site. Apart from several specialist steel mills that may or may not be looking for alternative supplies of the titaniferous magnetite concentrate the non ferrous content will be treated as a penalty by the majority of steel mill customers, resulting in a lower price for the concentrate than would be achieved in the absence of the non ferrous elements. The taxing of the contained vanadium would effectively be a penalty and is not logical given that it is unlikely to be extracted by a purchaser.

Atlas does not consider that extraction is likely and in fact the vanadium content is more likely to be a disincentive to potential buyers with a consequent price reduction for its non-ferrous content.

The contained vanadium is not to be confused with the V80 Vanadium flake which has a high vanadium content of about 80%. MagNet does not contest the entitlement of the State to a royalty for this product.

**5. Equity demands that there be consideration that beneficiated (hematite) ore has a differential rate under current regulations whereas the amount of beneficiation required for magnetite ore is much greater**

The current royalty regime recognises that lump hematite ore should have a higher royalty rate of 7.5% applied as opposed to 5.625% for fines and a rate of 5% where the ore is beneficiated. Traditionally this beneficiation has not occurred although the concept has been embodied in countless state agreements.

It is submitted that there should be close attention given to the actual degree of beneficiation required to convert ore to magnetite concentrate and that it is not appropriate to simply apply an analogy with so called "beneficiated" hematite iron ore.

**The difference between DSO hematite ore and magnetite**

Geoscience Australia notes<sup>1</sup> that:

*Iron (Fe) is ranked fourth in abundance in the Earth's crust and is a major constituent of the Earth's core. Iron rarely occurs as the native metal and is almost always found combined with oxygen as iron oxide minerals such as hematite (Fe<sub>2</sub>O<sub>3</sub>), magnetite (Fe<sub>3</sub>O<sub>4</sub>), goethite and limonite. Iron ores are rocks from which metallic iron can be economically extracted.*

*Iron ore is one of the raw materials used to make pig iron, the main raw material in steel making. Almost all (98%) of iron ore is used in iron and steel making with small amounts used in areas such as coal*

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<sup>1</sup> Geoscience Australia 2009. Australia's Identified Mineral Resources 2009. Geoscience Australia, Canberra

*washeries and cement manufacturing. When iron is alloyed with elements such as carbon, manganese, vanadium and nickel, harder and stronger steels are produced. Steel is used in many areas of manufacture including motor cars, ships, railway lines and rolling stocks, buildings, pipelines, white goods and heavy equipment.*

Whilst Geoscience Australia notes that "iron ores are rocks from which metallic iron can be economically extracted", this is a simplistic definition in that it fails to distinguish between, on the one hand, the so called DSO that, when mined, crushed and screened, are of suitable quality to be fed directly into iron making furnaces, and on the other hand, lower quality ores that require extensive processing after mining, crushing and screening to yield mineral products that are of suitable quality to be able to be fed into iron making furnaces.

### **Direct Shipping Ore (DSO)**

Rocks are comprised of discrete grains of different minerals fused together to form a solid mass. In the case of DSO, the iron oxide minerals hematite, goethite and limonite predominate and there is no requirement to separate individual mineral grains to produce acceptable quality iron making feedstock and the ore can be sold to steel makers in its "as mined" form.

The only significant processing of DSO involves crushing and screening and possibly washing to separate the ore into "lumps" – typically particles of ore between 6mm and 32 mm in size – and "fines" – typically particles of ore less than 6mm in size.

The iron content of DSO is typically in excess of 58% Fe, though impurities such as silica, alumina, sulphur and phosphorous which have adverse impacts on iron making and steel quality are also present as these minerals are not removed from DSO during the crushing and screening process.

### **Magnetite Ore**

In contrast, magnetite ore is not of suitable quality for iron making furnaces. The iron content of magnetite ore as mined is typically less than 40% Fe and the impurity content is high (e.g. silica > 40% compared to < 8% for DSO). Magnetite ore must be processed to separate iron rich magnetite mineral grains from the contaminant minerals – predominantly silicates – to produce a high quality iron making feedstock.

The processing of magnetite ores exploits a unique characteristic of magnetite – it is the most strongly magnetic mineral in nature. Magnetite ore processing requires the constituent mineral grains in the rock to be liberated from one another, then separating the magnetite mineral grains by crushing and grinding the magnetite ore into very small particles (typically less than 100 µm and as small as less than 30 µm), followed by the separation of magnetite mineral grains from the other undesirable minerals with magnets. The resulting concentrate of almost pure magnetite grains is then agglomerated to form magnetite concentrate or pellets, which are sought after as feed for iron making furnaces or other direct reduction iron making processes. The magnetite concentrate typically comprises only 25% to 45% of the tonnage of ore mined – the balance of unsaleable waste product is stored on site in a waste storage facility.

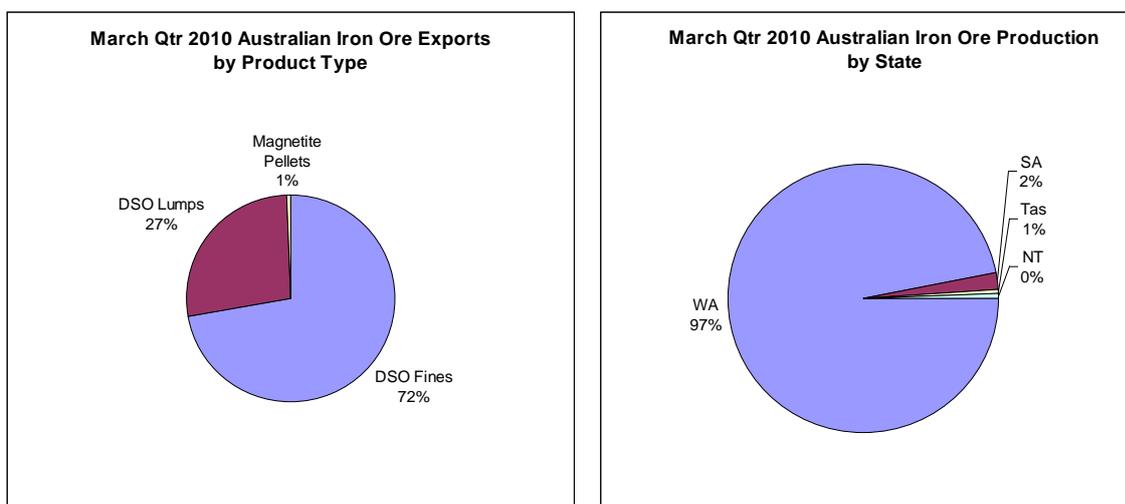
This value adding processing of magnetite ore to extract a saleable magnetite concentrate from deleterious contaminant minerals in the mined ore requires significant investment in plant and equipment and consumes significant energy in the grinding process at the mine site and requires a lot of water. However the resultant concentrate attracts premium prices from steel makers due to its high iron content (typically >68%), its low impurity content (typically <5% combined silica, alumina, phosphorous and sulphur) and its superior smelting

characteristics. The use of magnetite concentrate as feedstock to blast furnaces results in significant reductions in energy inputs and greenhouse gas emissions for steel makers.

## The Australian Iron Ore Industry

Geoscience Australia <sup>2</sup> reported that in 2008, Australia produced around 15% of the world's iron ore and is ranked third behind China (35%) and Brazil (18%). Currently, the Australian iron ore industry is dominated by the production of DSO from the Pilbara region of Western Australia, which hosts one of the world's greatest known DSO provinces.

ABARE<sup>3</sup> reports that Australia produced 103 Mt of iron ore in the March quarter of 2010, of which 100 Mt was produced from Western Australia. Of the 94 Mt exported during the same period, 93.5 Mt was DSO lumps and fines.



Grange Resources Savage River project in Tasmania and OneSteel's Whyalla Magnet project in South Australia have been the only Australian magnetite producers to date with a very small percentage of the overall export total – less than 2%.

## Industry Trends

ABARE<sup>4</sup> expects world steel consumption and iron ore demand to continue to grow in the coming years and notes:

*Over the next 18 months, consumption and production of steel is expected to continue growing, but at a slower rate compared with the first half of 2010. Associated with continued growth in steel production,*

<sup>2</sup> Geoscience Australia 2009. Australia's Identified Mineral Resources 2009. Geoscience Australia, Canberra

<sup>3</sup> Australian mineral statistics for March quarter 2010, ABARE, Canberra, June 2010

<sup>4</sup> Australian commodities, vol 17 no 2, June quarter 2010 ABARE, Canberra, June 2010

*demand for iron ore and metallurgical coal is also expected to remain strong, underpinning growth of Australian exports in the short term.*

*In 2010, world trade of iron ore is forecast to increase by 9 per cent to 1 billion tonnes. This growth reflects increased steel production in China outpacing growth in domestic iron ore supply, and increased imports supporting recovery in steel production in many developed economies. In 2011, world trade of iron ore is forecast to increase by a further 7 per cent to 1.1 billion tonnes. The majority of increased trade in 2010 and 2011 is expected to be supplied by Australia and Brazil.*

*Although China is the world's largest importer of iron ore, it is also the world's largest producer. Because of China's significant domestic production and consumption, small changes in domestic iron ore production capacity utilisation, and therefore import demand, have the potential to significantly affect the world seaborne market. Over the outlook period, China's production is expected to respond quickly to changing iron ore prices. If iron ore prices remain high, growth in China's domestic production is expected to offset growth in consumption, thereby reducing its reliance on imports. However, if iron ore prices decline significantly, China's production is expected to decline, increasing its reliance on imports from low cost producers in Australia and Brazil.*

Demand for Australian iron ore is therefore expected to continue to grow and Western Australia's Pilbara region is expected to continue to dominate the Australian iron ore industry. Geoscience Australia <sup>5</sup> notes that Australia's Economic Demonstrated Resources (EDR) of iron ore increased by 18% to 24 gigatonnes (Gt) in 2008, and that Western Australia has 98% of Australia's EDR with about 86% occurring in the Pilbara district.

However, the quality of Western Australia's DSO is declining as the highest grade DSO orebodies are depleted and increasing proportion of production is derived from lower grade DSO orebodies. The average iron content of DSO reserves reported by the three major Pilbara producers<sup>6</sup> are:

Rio Tinto	61.2%Fe
BHP Billiton	61.0%Fe
FMG	58.5%Fe

This downward trend in Australia DSO quality is expected to continue in the future, driving demand for higher quality magnetite concentrates and attracting investment to the sector.

## **The Australian magnetite industry**

Australia is well endowed with magnetite resources and Geoscience Australia<sup>7</sup> notes that magnetite ore currently constitutes 24% or 5.7 Gt of Australia's EDR. Yet less than 2% of Australia's iron ore production is currently derived from magnetite iron ores.

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<sup>5</sup> Geoscience Australia 2009. Australia's Identified Mineral Resources 2009. Geoscience Australia, Canberra

<sup>6</sup> 2009/2010 Annual reports

<sup>7</sup> Geoscience Australia 2009. Australia's Identified Mineral Resources 2009. Geoscience Australia, Canberra

Notwithstanding the continued growth in output of DSO ores from the Pilbara, MagNet expects that high quality magnetite concentrate and pellets will comprise an increasing proportion of Australia's total iron ore exports partly in response to the declining quality of Pilbara DSO. This diversity will create a more sustainable iron ore industry with the large number of value-add jobs to be created.

The Australian magnetite industry is currently attracting significant interest from steel makers keen to secure long term, reliable, high quality feed stocks.

MagNet appreciates this opportunity and is very happy to provide any further information. Please do not hesitate to contact me for more information. We are also keen to participate in a general discussion if this is helpful.

Further information regarding the Atlas Iron Ltd Balla Balla project that has contained vanadium may be made on a confidential basis if required.

I especially appreciate the assistance that you have given us to date.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Megan Anwyl', with a stylized flourish at the end.

Megan Anwyl

Executive Director

Magnetite Network

17 December 2010