

Theta Gold, hydrogen, and what is happening with graphite stocks?

All of the thematics that drove the gold price to record highs in 2020 are still relevant, but the punters have decided to chase other stories for the time being. We have all read about how money has been diverted to chasing bitcoin, but that is a wave that has a limited life span. It is merely a distraction from the big picture.

The next \$1.9 trillion stimulation package from the US government will exacerbate the \$16 trillion worth of negative-yielding debt floating around the world. While the potential to make money trading bitcoin has been demonstrated, so has the ability to lose money when the market goes into reverse. Gold is a time-proven and much more conservative way to hedge against inflation. You want to be able to sleep at nights.

We should be looking at the gold sector again as we try and pick the turning point of this downward leg in a longer term bull market.

Revisiting Theta Gold, an emerging producer

We last mentioned Theta Gold mines (TGM) in July 2020, it was just before the gold price peaked. Since then we have seen gold and the gold sector giving up ground, but there are not many people out there that think gold is dead and buried. Interestingly, the Theta share price is still higher than it was last July. Perhaps this is because it was never the target of hot traders with the share register being populated by longer term supporters, which is good. However, the flip side is that market liquidity is tight and this has precluded institutional participation. I suppose you can't have it both ways.

In the lead up to financing and development of its gold project, Theta will have to undertake more promotion in order to increase volumes, thereby making it easier for institutions to participate in the raising of the equity capital mid-year, to develop its gold mines. Increasing market awareness may lead to a re-rating of the share price along the way as the fundamental value becomes more apparent. In the meantime there is plenty of opportunity for smaller players to buy value.

Theta's vision - 160,000 oz p.a of gold, four mines

In summary, Theta aims to build a gold production platform to recover 160,000 oz pa from the Pilgrims Rest Project, 370 km east of Johannesburg. This is based primarily around shallow, open-cut or adit-entry underground mining sources. Theta Gold Mines has access to over 43 historical mines and prospect areas that can be accessed and explored, with over 6.7 Moz of historical production recorded.

Starting with oxide open pits

There is still plenty of gold left in the field; 6 Moz in 44.8 Mt at 4.18 gpt (equity share is 74%). Since the current team moved into the chair in late 2018, work has focused on the

oxides near surface ore that had been previously overlooked. The open pittable Mineral Resource is now 13.08 Mt at 3.12 gpt, for 1.3 Moz of gold.

While Theta has to spend in the order of US\$31m to build a new processing plant, it does have the benefit of a fully permitted site that still has a number of buildings, administration offices and ponds in good order. Construction of the new facility would take 9-10 months to complete, giving capacity to treat 500-600,000 tpa of oxide ore (though the mill could process 1.2 mtpa). On current plans this could lead to commissioning in Q1 2022.

Open pit mining will start on the MR83 licence which has an ore reserve of 2.3 Mt at 2.76 gpt, for 205,000 oz. It will then progress to the MR341 licence that hosts about 500,000 oz. These are being upgraded to reserve status. AISC are estimated at US\$855/oz in the first instance on gold production of about 40-45,000 oz p.a.

Underground mines provide extended mine life

Underground mining will provide the long term future for Theta. Studies using shrink stoping mining methods have included parameters such as minimum mining widths of 90 cm, 15% pillar losses, dilution of 3-10% and a mine call factor of 90%. All these lead to recovery of 80-86% of the geological grade.

The Beta mine currently has a resource of 1.1 Moz at a grade of 6 gpt. The scoping study examined a 40,000 oz p.a. scale of production. The Reitfontein mine, 40 km from the plant, has 780,000 oz at 8.5 gpt. This could also supply 40,000 oz p.a.

Adding to the experienced technical team

Theta is run by Bill Guy, who was instrumental in the building of Jupiter Mines from a market capitalisation of \$28m to > \$1bn, with a very success exploration program at CYIP now forming the core of new Juno IPO in WA. Bill also brought in Finn Behnken from Jupiter who built the Tshipi Manganese Mine in South Africa. Four ex-Harmony Gold specialises onsite now with the recent addition to the team; Freddy Mokelta (mine manager) and Jan Bronkhorst (project manager).

The Bottom Line - in a golden sweet spot

We can observe that investors have had an aversion to South African gold mining projects in recent years, but this is not really logical given the amount of money that companies have spent in other, higher risk African countries. South Africa has the best infrastructure in Africa and its geological credibility is unparalleled. What we need to see is companies like Theta and West Wits developing their orebodies and generating cash flow and profits that correspond with their spreadsheets. Success from these companies could lead to a revival of the gold sector in South Africa and a re-rating of all companies involved.

At the moment Theta is in a good position. While the gold price may have been softer, the Rand price is still very good. Funding the development is going to be much easier now than at any time in the last five years. The short lead time to production, from simple open pit mines, is another positive.

Theta will need to raise interim funds soon to carry it through to the larger project development equity funding round and to complete the various studies that add to project certainty. These studies are conditions precedent to raising the US\$20m debt package. The list of announcements expected this quarter include the PFS for the shallow underground mines and the maiden Mining Reserve. The environment permit for the open pits mines is also expected.

South Korea's big plans for offshore wind power

As we said last week, offshore wind farms need high quality magnets that operate at high temperatures. The two REEs most relevant are Terbium and Dysprosium, two products in which Ionic's (IXR) Makuutu project is well endowed. They are also subject to export restriction from China at present.

That brings the plans of South Korea into focus as it has announced a US\$43bn plan to build the world's largest offshore wind farm, at 8.3 GW capacity. This would be equivalent to six standard six nuclear power plants. Each 10 MW turbine would need 500,000 kg of NdPr, but also substantial amounts of Td and Dy.

A follow-up on Global Energy Ventures (GEV)

A couple of weeks ago we featured Global Energy Ventures (GEV) as a company working on the design of ships for bulk transport of hydrogen. In pursuit of this initiative GEV announced an MoU with Ballard Power Systems to design and develop a hydrogen fuel system for GEV's C-H2 Ship.

The main point of this MoU that investors should note is that GEV is dealing with a world leader in the hydrogen business. That lifts it beyond the status of an entrepreneurial Aussie junior with big plans. It adds to the company's credibility and likelihood of success.

More notes on hydrogen

As hydrogen increasingly moves into the spotlight we are starting to see news pieces on the internet that are promoting new "discoveries" in the technology. The making of hydrogen is a well-known science but the transportation - the safe transportation - is where we are seeing multiple new developments.

This week we saw;

- Electriq is an unlisted company based in Tel Aviv, that seems to be making good progress in the design and optimisation of a compound that offers a very safe method of storing and transporting hydrogenate the point where it can release it to feed into fuel cells to generate electricity. Interestingly, it claims the method is twice as efficient as transporting compressed hydrogen, with better density. It will be interesting to see how it stacks up on the economics for bulk transport. Maybe it will be better suited to the last mile delivery given the safety benefits it offers. Another year or two of research will give more answers. Electriq is believed to be going to the market for preIPO funding, in the near term.
- Fraunhofer Institute for Manufacturing Technology and Advanced Materials (IFAM) researchers have made a

magnesium-based paste that stores hydrogen energy at 10x the density of a lithium battery. Magnesium is combined with hydrogen at 350°C, at 5-6x atmospheric pressure, to make hydrogen hydride. The paste reacts with water to release hydrogen that feeds fuel cells to create electric power. Refueling a vehicle would involve replacing the cartridge of paste, or pumping it into a tank. IFAM plans to have the capacity to make 4 tpa of the paste, this year, for pilot testing. For those who want to know more, click on <https://newatlas.com/energy/powerpaste-hydrogen-fuel-paste/>

- Yet, not everyone wants hydrogen. Scania has announced that it prefers batteries rather than hydrogen. Having run a testing program on sources of power, it prefers batteries because they are less complex, there is less maintenance and because hydrogen requires three times as much renewable energy for the the same performance, owing to energy consumed in the production, distribution and conversion processes.
- Lavo Green Energy Storage Systems claims to have a hydrogen battery that can store 3x the energy of a Powerwall. Using solar power, you can use excess energy to electrolyse water and store energy in a metal hydride "sponge" at a pressure of 30 bar, or 435 psi. It can store 40 kWh. There is one hitch though - it costs \$34,750. Also, the efficiency is rated at 50%, meaning that effective usable power storage would be 20 kWh when you subtract the power usage to keep the system working. Further, continuous power usage is limited to 5 kWh. So, maybe it will have limited appeal.
- for those who want to now more, click on <https://newatlas.com/energy/powerpaste-hydrogen-fuel-paste/>

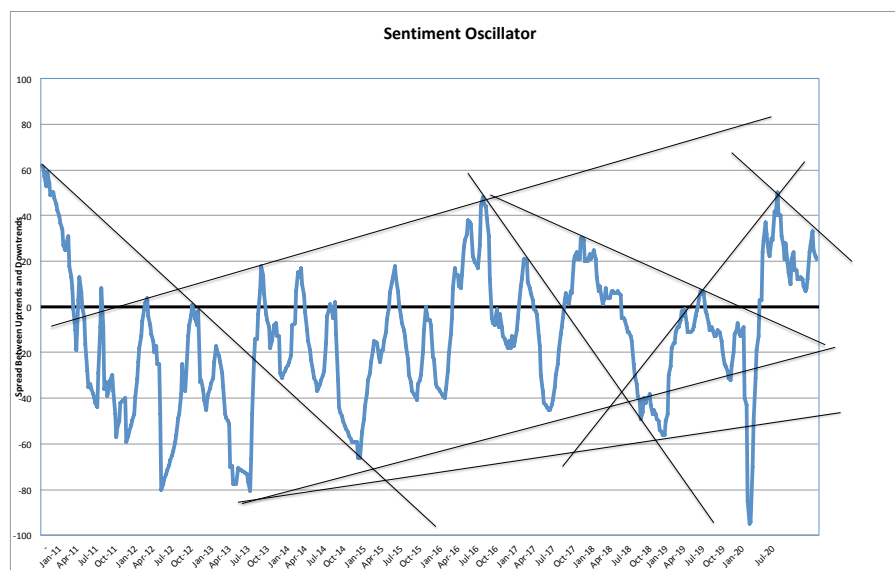
Please explain. What is happening with graphite and batteries with respect to the Aussie juniors.

We have seen enormous runs in the share prices of a number of ASX-listed graphite wannabe companies, leading to large capital raises. How come?

It seems that there is a number of juniors who promoted themselves five years ago on the back of graphite projects, many of them in Tanzania, that just could not make the grade. One company, Syrah, did develop a mine but has placed it on care and maintenance because the market wasn't there to take the production. The Tanzanian-based companies didn't even reach this milestone due to the government not granting mining licences.

So, what do they do? They reinvent themselves as battery anode companies, with or without their graphite mines. While it is great that they can tap into the enthusiasm for battery input materials and alternative energy, something just isn't right.

How is it that we can have so many new battery anode suppliers and manufacturers emanating from such a conservative place like Perth? What can they bring to the industry that wasn't already in play from the very large global battery industry that come complete with manufacturing and distribution facilities. They can't all have the best, new beautiful technology and materials to the exclusion of the thousands of scientists already with the global companies, can they? I don't understand how this works, but I do understand Perth companies.






Sentiment Oscillator: Sentiment weakened slightly. There were 48% (50%) of the charts in uptrend and 27% (28%) in downtrend on Friday's close.

Detailed Chart Comments

NB. Only the bold comments have been updated. Comments in grey type are from previous weeks and will be less relevant. Please note that this list is a cross section of the market. It IS NOT a list of recommendations.

Indices	Code	Trend Comment	
All Ordinaries	XAO	correcting lower	
Metals and Mining	XMM	correcting lower	
Energy	XEJ	pullback	
Stocks	Code	Trend Comment (updated comments in bold)	Main Interest
Alpha HPA	A4N	back above support line	HPA
Adriatic Resources	ADT	surge higher then pullback	zinc, polymetallic
Aeon Metals	AML	still in downtrend	copper + cobalt
Alkane Resources	ALK	breached uptrend, heading down	gold, zirconia
Alicanto Minerals	AQI	breached downtrend, then slump	base metals, silver, gold
Allegiance Coal	AHQ	surge through downtrend, then pullback	coking coal
Alliance Resources	AGS	surge out of downtrend	gold predevelopment
Alto Metals	AME	down	gold exploration
American Rare Earths (was BPL)	ARR	breached downtrend (COB holding)	rare earths
Apollo Consolidated	AOP	down	gold exploration
Arafura Resources	ARU	pullback	rare earths
Aurelia Metals	AMI	down	gold + base metals

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Australian Potash	APC		holding shallower uptrend	potash
Auteco Minerals	AUT		new uptrend being tested	gold exploration
BHP	BHP		breached trend line	diversified, iron ore
Base Resources	BSE		testing uptrend	mineral sands
Beach Energy	BPT		breached uptrend	oil and gas
Beacon Mining	BCN		sideways	gold production
Bellevue Gold	BGL		down	gold exploration
Blackstone Minerals	BSX		rising	nickel
Blue Star Helium	BNL		spike through downtrend	gas, helium
Boab Metals	BML		named change from Pacifico Minerals	silver/lead
Breaker Resources	BRB		testing downtrend	gold exploration
Buru Energy	BRU		uptrend	oil
Calidus Resources	CAI		down	gold
Capricorn Metals	CMM		holding shallower uptrend	gold
Caravel Minerals	CVV		steeply higher	copper
Celsius Resources	CLA		rising	uptrend
Central Petroleum	CTP		rising gently	oil/gas
Chalice Gold	CHN		back to support line	nickel, copper, PGMs, gold exploration
Chase Mining	CML		rising from lows	nickel/copper/PGE
Chesser Resources	CHZ		down now	gold exploration
Cobalt Blue	COB		pullback	cobalt
Cyprium Metals	CYM		pullback	copper
Dacian Gold	DCN		strongly higher	gold
Danakali	DNK		steeply higher	potash
Davenport Resources	DAV		rising again	potash
De Grey	DEG		shallower downtrend	gold
E2 Metals	E2M		correcting lower, ST downtrend	gold exploration
Ecograp (was Kibaran)	EGR		steeply higher	graphite
Element 25	E25		new high	manganese
Emerald Resources	EMR		new high again	gold
Euro Manganese	EMN		pullback	manganese
Evolution Mining	EVN		down	gold
Firefinch	FFX		strongly higher	gold
First Graphene	FGR		on support line	graphene
Fortescue Metals	FMG		pullback - uptrend breached	iron ore
Galaxy Resources	GXY		pullback	lithium
Galena Mining	G1A		pullback	lead
Galilee Energy	GLL		breached downtrend	oil and gas, CBM
Genesis Minerals	GMD		down	gold
Gold Road	GOR		down	gold
Hazer Group	HZR		new high	hydrogen
Highfield Resources	HFR		rising	potash
Hillgrove Resources	HGO		breached support line	copper
Iluka Resources	ILU		strong rise	mineral sands

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Image Resources	IMA	■	testing support	mineral sands
Independence Group	IGO	■	pullback	gold
ioneer (was Global Geoscience)	INR	■	new high	lithium
Ionic Rare Earths (Oro Verde)	IXR	■	new high	rare earths
Jervois Mining	JVR	■	rising again	nickel/cobalt
Jindalee Resources	JRL	■	surge to new high	lithium
Kin Mining	KIN	■	testing downtrend	gold
Kingston Resources	KSN	■	testing support	gold
Kingwest Resources	KWR	■	back to support line	gold
Legend Mining	LEG	■	turned down at resistance line	nickel exploration
Lepidico	LPD	■	pullback	lithium
Lindian Resources	LIN	■	trying to recapture uptrend	bauxite
Lithium Australia	LIT	■	pullback	lithium
Los Cerros	LCL	■	surge higher on drill result	gold exploration
Lotus Resources	LOT	■	new high	uranium
Lucapa Diamond	LOM	■	breaking downtrend	diamonds
Lynas Corp.	LYC	■	pullback	rare earths
Mako Gold	MKG	■	down again	gold exploration
Manhattan Corp	MHC	■	testing downtrend	gold exploration
Marmota	MEU	■	testing downtrend	gold exploration
Marvel Gold (was Graphex)	MVL	■	down	gold exploration
MetalTech	MTC	■	testing downtrend	gold
Meteoric Resources	MEI	■	testing uptrend	gold exploration
MetalsX	MLX	■	new high	tin, nickel
Metro Mining	MMI	■	breaching downtrend	bauxite
Mincor Resources	MCR	■	testing uptrend	gold/nickel
Musgrave Minerals	MGV	■	down	gold exploration
Myanmar Minerals	MYL	■	breaching downtrend	lead, zinc, silver
Nelson Resources	NES	■	new high	gold exploration
Neometals	NMT	■	pullback	lithium
Northern Minerals	NTU	■	pullback	REE
Northern Star Res.	NST	■	down	gold
NTM Gold	NTM	■	new high	gold exploration
Oceana Gold	OGC	■	down	gold
Oklo Resources	OKU	■	down	gold expl.
OreCorp	ORR	■	breached uptrend	gold development
Orocobre	ORE	■	pullback	lithium
Oz Minerals	OZL	■	pullback	copper
Pacific American Holdings	PAK	■	breaching ST downtrend	coal
Pantoro	PNR	■	commenced secondary uptrend	gold
Panoramic Res	PAN	■	holding shallower uptrend	nickel
Peak Minerals	PUA	■	forming a flag	copper exploration
Peak Resources	PEK	■	new high	rare earths
Peel Mining	PEX	■	breached new uptrend	copper

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Peninsula Energy	PEN		breaching uptrend	uranium
Poseidon Nickel	POS		breached uptrend	nickel
Pensana Metals	PM8		pullback	rare earths
Perseus Mining	PRU		holding shallower uptrend	gold
Pilbara Minerals	PLS		pullback	lithium
Polarex	PXX		breached downtrend	polymetallic exploration
Queensland Pacific Metals	QPM		pullback	nickel/cobalt/HPA
Ramelius Resources	RMS		continuing down	gold production
Red5	RED		down	gold
Red River Resources	RVR		breached uptrend	zinc
Regis Resources	RRL		down	gold
Regergen	RLT		heavy pullback	gas, helium
Resolution Minerals	RML		sideways at lows	gold exploration
Resolute Mining	RSG		down	gold
RIO	RIO		breached uptrend	diversified, iron ore
Rumble Resources	RTR		breached downtrend	gold exploration
Salt Lake Potash	SO4		risen to resistance line	potash
Saracen Minerals	SAR		down	gold
St Barbara	SBM		secondary downtrend	gold
Sandfire Resources	SFR		breached downtrend	copper
Santos	STO		strongly higher	oil/gas
Saturn Metals	STN		heavy fall	gold exploration
Sheffield Resources	SFX		rising	mineral sands
Sky Metals	SKY		back in downtrend	gold exploration
St George Mining	SGQ		down	nickel
Silex Systems	SLX		off its highs	uranium enrichment technology
Silver Mines	SVL		on support line	silver
Sipa Resources	SRI		down	general exploration - Ni,Cu, Co, Au
Stanmore Coal	SMR		breached steepest downtrend	coal
Strandline Resources	STA		still in downtrend	mineral sands
Sunstone Metals	STM		turning up	
Talga Resources	TLG		breached support line, down	graphite
Technology Metals	TMT		back to highs	vanadium
Tesoro Resources	TSO		down	gold exploration
Theta Gold Mines	TGM		new high	gold
Thor Mining	THR		testing downtrend	gold exploration
Tietto Minerals	TIE		recovering uptrend	gold
Titan Minerals	TTM		sideways	gold
Vango Mining	VAN		down	gold
Venturex	VXR		weaker	zinc
Vimy Resources	VMY		steeply higher	uranium
West African Resources	WAF		down	gold
Westgold Resources	WGX		down	gold
West Wits Mining	WWI		off its highs	gold

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Western Areas	WSA		heavy fall	nickel
Whitehaven Coal	WHC		on support line	coal
Wiluna Mining	WMX		down	gold
Yandal Resources	YRL		down	gold exploration
Zinc Mines of Ireland	ZMI		secondary downtrend	zinc
Totals	48%	72	Uptrend	
	27%	40	Downtrend	
		149	Total	

Guides to Chart Interpretations

- Charts usually go pass from one trend (up or down) into the other via a period of indecision and uncertainty during which the trend can either recover or change. This period is signified by the orange colour. The orange represent both the greatest risk and greatest reward possibilities.
- Once a chart is in confirmed up or downtrends it is not uncommon for 10-20% of that trend to have already transpired.
- There are trends within trends. The focus of this chart review is the immediate trend that affects the sentiment i.e. it can be a downtrend within a long-term uptrend.
- Not every chart warrants a new comment every week. The new comments are in bold type. Grey type comments may be dated.
- Individual charts provide a single view. It is valuable to look at charts of other companies in similar commodities, and the overall sentiment is also very valuable. Not many stocks can swim against the tide.
- We periodically add or delete charts, some times for obscure reasons. If a chart consistent gives poor signals or is very erratic, we may delete it. Sometimes we add a chart because we want to see what all the fuss is about. We do have a preference for charting stocks that we cover in our research as well.
- Errors and omissions may occur from time to time, especially in fast moving markets.

Amber Lights in Tables: Just a reminder if when the amber light is used in the table – it is when the charts are ambiguous or when there is a change of trend taking place. If a chart is breaching a downtrend it can either be a positive sign or a trap. Only once it has done more work can it be confirmed as a new uptrend. Maybe it is a new uptrend (or conversely a new downtrend); the risk takers can decide to jump on board early (or sell). They will maximise their profits (or minimise their losses if indeed it is the start of the new uptrend (downtrend). More risk-averse investors should wait a little longer, being prepared to give up some of the gains in return for greater certainty.

Weightings of Sectors Represented in the Company Charts			
Sector	No. of Companies	Weighting	
Gold	37	24.8%	
Gold Exploration	25	16.8%	
Nickel	12	8.1%	
Copper	10	6.7%	
Oil/Gas	7	4.7%	
Lithium	8	5.4%	
Zinc/Lead	7	4.7%	
Rare Earths	7	4.7%	
Mineral Sands	5	3.4%	
Iron Ore/Manganese	5	3.4%	
Potash/Phosphate	5	3.4%	
Coal	4	2.7%	
Uranium	4	2.7%	
Graphite	2	1.3%	
Bauxite	2	1.3%	
Silver	2	1.3%	
Cobalt	1	0.7%	
Tin	1	0.7%	
Diamonds	1	0.7%	
Other	4		
Total	149		

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