

WESTERN AUSTRALIA

Highlights from a world class mining and exploration state

EXPLORATION INCENTIVE SCHEME

MINEDEX
www.dmir.wa.gov.au/minedex

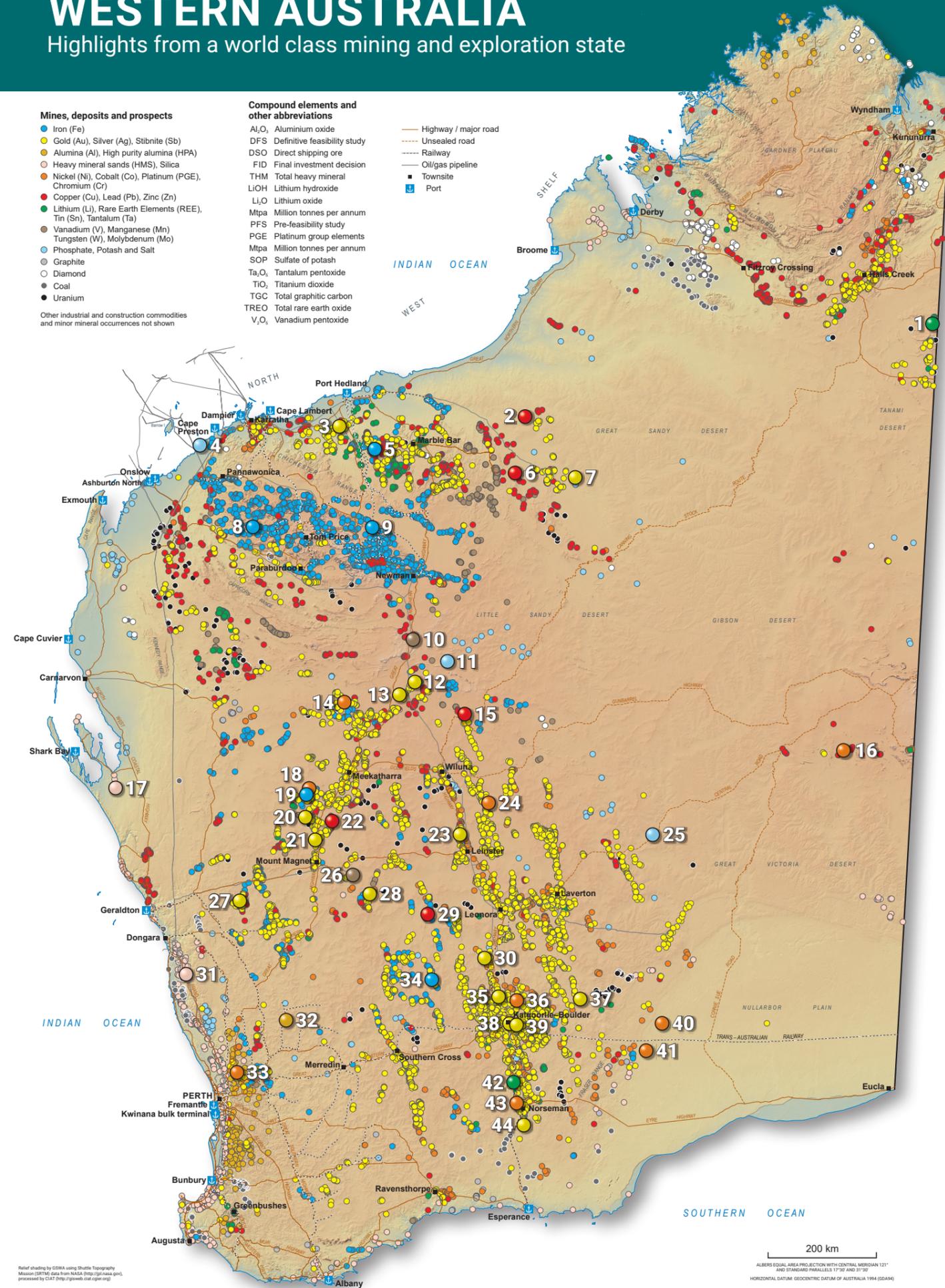
Geological Survey of Western Australia



- Mines, deposits and prospects**
- Iron (Fe)
 - Gold (Au), Silver (Ag), Stibnite (Sb)
 - Alumina (Al), High purity alumina (HPA)
 - Heavy mineral sands (HMS), Silica
 - Nickel (Ni), Cobalt (Co), Platinum (PGE), Chromium (Cr)
 - Copper (Cu), Lead (Pb), Zinc (Zn)
 - Lithium (Li), Rare Earth Elements (REE), Tin (Sn), Tantalum (Ta)
 - Vanadium (V), Manganese (Mn), Tungsten (W), Molybdenum (Mo)
 - Phosphate, Potash and Salt
 - Graphite
 - Diamond
 - Coal
 - Uranium
- Other industrial and construction commodities and minor mineral occurrences not shown

- Compound elements and other abbreviations**
- Al₂O₃ Aluminium oxide
 - DFS Definitive feasibility study
 - DSO Direct shipping ore
 - FID Final investment decision
 - THM Total heavy mineral
 - LiOH Lithium hydroxide
 - Li₂O Lithium oxide
 - Mtpa Million tonnes per annum
 - PFS Pre-feasibility study
 - PGE Platinum group elements
 - Mtpa Million tonnes per annum
 - SOP Sulfate of potash
 - Ta₂O₅ Tantalum pentoxide
 - TiO₂ Titanium dioxide
 - TGC Total graphitic carbon
 - TREO Total rare earth oxide
 - V₂O₅ Vanadium pentoxide

- Highway / major road
- - - Unsealed road
- Railway
- Oil/gas pipeline
- Townsite
- Port



1 Browns Range REE PFS complete	The pilot plant has partially restarted and test work recommenced in August 2020. The mineral resource estimate for Dazzler increased by 50% to 214 kt at 2.33% TREO, taking the project total to 9.26 Mt at 0.67% TREO for over 62 189 000 kg. <i>Northern Minerals Ltd</i>	
2 Paterson Copper + Gold Exploration	A maiden Inferred Mineral Resource has been announced for Winu at 503 Mt at 0.45% Cu equivalent (0.35% Cu), 0.27 g/t Au and 2.15 g/t Ag. Discovery of gold-dominant mineralization at the Ngapakarra prospect, located ~2 km east of Winu was also made with 25 m at 4.87 g/t Au including 1 m at 83.5 g/t Au. <i>Rio Tinto Group</i>	
3 Mallina Gold Exploration	The Hemi deposit is currently 2.5 km long, 2 km wide, and has three zones of mineralization — Broiga , Aquila and Crow , with results from Crow hitting 42 g/t over 19.2 m including 8 m at 85 g/t. Another discovery at Falcon with 21 m at 3.4 g/t Au further extends mineralization at Hemi , associated with a north-south trending intrusion. <i>De Grey Mining Ltd</i>	
4 Mardie Salt + Potash DFS complete	A DFS based on producing 4.4 Mtpa of high purity salt and 120 000 tonnes per annum of premium SOP fertiliser over a 60-year project life has been completed. A FID is planned for early 2021 with construction to commence by mid-2021. <i>BCI Minerals Ltd</i>	
5 Iron Bridge Iron Under development	Development is underway to produce 20 Mtpa over a >20-year mine life by 2022. The 5450 Mt at 30.4% Fe mineral resource includes ore reserves of 716 Mt at 67% Fe. Ore is to be processed on-site and the high-grade magnetite concentrate will be pumped to port via a new slurry pipeline. <i>FMG Ltd, Formosa Steel IB, Baosteel Group</i>	
6 Nifty Copper Scoping study complete	An updated mineral resource estimate for Nifty takes the total mineral resource up to 47.29 Mt at 1.39% Cu for 658 kt of Cu. A scoping study suggests an expansion of the existing open-pit mine over 10 years could also be viable. <i>Metals X Ltd</i>	
7 Haverion Gold + Copper Exploration	Drilling highlights at Haverion include 109 m at 6.3 g/t Au and 0.71% Cu, confirming continuity over the upper 600 m. A maiden mineral resource estimate is anticipated in late 2020. <i>Newcrest Mining Ltd, Greatland Gold Plc</i>	
8 Eliwana Iron Under development	The Eliwana mine is set to start production in late 2020, with 30 Mtpa to be produced through a new ore processing facility and railway, underpinning the new Western Hub . <i>FMG Ltd</i>	
9 Koodaideri Iron Under development	The Koodaideri project is on track for first ore in early 2022. The \$2.6 billion hub will produce 43 Mtpa from a reserve of 598 Mt at 61.9% Fe. Construction of a 34 megawatt solar photovoltaic plant is expected to begin in 2020, pending approvals, to supply up to 65% of the average energy demands. <i>Rio Tinto Group</i>	
10 Butcherbird Manganese PFS complete	Maiden ore reserves of 50.6 Mt at 10.3% Mn, containing 5.22 Mt Mn were announced for the Yanneri Ridge deposit. The project mineral resource estimate is 263 Mt at 10% Mn. A PFS suggests the project could support open-pit operation over 42 years with ore exported from Port Hedland. <i>Element 25 Ltd</i>	
11 Beyondie Potash Under development	Updated resources for Lake Sunshine — 11.48 Mt SOP at 11 870 mg/L SOP and a recent maiden resource for Ten Mile West — 5.95 Mt SOP at 17 490 mg/L SOP has raised the total drainable resource for the project to 31.42 Mt SOP at 13 151 mg/L SOP. Construction has now passed 50% completion. <i>Kalium Lakes Ltd</i>	
12 Marymia Gold Exploration	High-grade gold intersections from the newly discovered PHB-1 prospect with 7 m at 103.6 g/t Au including 3 m at 240 g/t Au and 1 m at 691 g/t Au. <i>Vango Mining Ltd</i>	
13 Plutonic Gold Gold Operating	Drilling results include 15.10 m at 56.3 g/t Au from the Indian Zone and 6.5 m at 40.4 g/t Au from Baltic Deeps . <i>Superior Gold Inc</i>	
14 Bryah Basin Nickel + Copper + Cobalt Exploration	Ni-Cu-Co mineralization has been discovered at the Mt Labouchere prospect, within an area traditionally prospective for manganese. Results from shallow drilling include 5 m at 0.24% Cu, 0.20% Co and 0.12% Ni. A high-grade manganese zone was also confirmed at the Brumby Creek prospect with 30 m at 33.6% Mn. <i>Bryah Resources Ltd, OM Holdings Pty Ltd</i>	
15 Earahedy Zinc + Lead Exploration	Drilling has confirmed continuity of high-grade Zn-Pb mineralization within the Magazine and Chinook prospects. Results from Magazine include 12 m at 4.48% Zn+Pb, 2.91 g/t Ag. <i>Rumble Resources Ltd, Zenith Minerals Ltd</i>	
16 West Musgrave Nickel + Copper PFS complete	A maiden Probable Ore Reserve of 220 Mt at 0.33% Ni and 0.36% Cu for the Babel and Nebo deposits, underpins a completed PFS study. The PFS supports a 26-year operation at 10 Mtpa to produce 28 kt copper and 22 kt nickel in concentrates annually. <i>Oz Minerals Ltd, Cassini Resources Ltd</i>	
17 Coburn HMS DFS complete	An updated DFS was released in May 2020, based on an initial 22.5-year mine life from ore reserves of 523 Mt at 1.11% THM (zircon, leucoxene, rutile and ilmenite). Construction contracts have now been awarded. <i>Strandline Resources Ltd</i>	
18 Parks Reef PGE Exploration	Drilling has intersected PGE plus gold in between the West , Central and East deposits. Results up to 2.11 g/t PGM over 19 m include 4 m at 4.41 g/t PGM. An upgrade to the existing mineral resource estimate of 1.14 Moz of platinum, palladium and gold is planned for October 2020. <i>Podium Minerals Ltd</i>	
19 Iron Ridge Iron FID complete	Construction is set to begin in October following a positive FID. An operation of 25 Mtpa at 64.2% over six years was highlighted in last year's DFS. First shipment of DSO from the Port of Geraldton is anticipated in early 2021. <i>Fenix Resources Ltd</i>	
20 Cue Gold Operating	Drilling results at Paddys Flat underground includes 8.1 m at 49.61 g/t Au. Underground mining has recommenced at Big Bell . <i>Westgold Resources Ltd</i>	
21 Cue-Moyagee Gold Exploration	Bonanza gold grades intersected in the Starlight Lode at Break of Day including 14 m at 191.1 g/t Au, including 3 m at 884.7 g/t Au. <i>Evolution Mining Ltd, Musgrave Minerals Ltd</i>	
22 Cue Copper Copper + Gold Exploration	Drilling results at Eelya South include 3 m at 3.78% Cu, 6.68 g/t Au and 81 g/t Ag. <i>Cyprum Metals Ltd, Musgrave Minerals Ltd</i>	
23 Bellevue Gold Under development	Drilling results for the Deacon Lode include 5.0 m at 23.5 g/t Au and 7.4 m at 15.4 g/t Au from the Viago Lode. The project mineral resources are now 7.03 Mt at 10.0 g/t Au, following a maiden Indicated Mineral Resource which includes a high-grade core of 0.48 Moz Au at 15.5 g/t Au (from the Viago and Deacon Lodes). Construction of a new port is underway as the existing decline undergoes refurbishment. <i>Bellevue Gold Ltd</i>	
24 Yandal Nickel Exploration	A nickel discovery was made at the Dusty prospect, with an average grade of 3.45% Ni over 2.6 m. This is the first discovery of massive nickel sulfides within the typically gold-enriched Yandal greenstone belt. <i>Toro Energy Ltd</i>	
25 Lake Throssell Potash Exploration	High-grade discovery confirmed at Lake Throssell by the return of assay results of up to 14 500 mg/L SOP. <i>Trigg Mining Pty Ltd</i>	
26 Windimurra Vanadium DFS complete	A DFS completed in April, supports an initial 31-year open-pit mining operation, based on a total mineral resource estimate of 209.7 Mt at 0.5% V ₂ O ₅ . <i>Atlantic Pty Ltd</i>	
27 Deflector Gold + Copper Operating	Multiple high-grade results at Deflector South West include 7.4 m at 98.7 g/t Au and 11.1% Cu. A maiden mineral resource estimate of 634 kt at 14.9% Au and 0.6% Cu was announced for Deflector South West . <i>Silver Lake Resources Ltd</i>	
28 Youanmi Gold Exploration	Discovery of Grace and Grace North , with drilling results of 13 m at 60.49 g/t Au from 177 m, including 4 m at 191.56 g/t Au. <i>Rox Resources Ltd, Venus Metals Corporation Ltd</i>	
29 Perrinvale Zinc + Copper + Lead Exploration	Drilling from the Schwabe Prospect has confirmed the presence of a high-grade VHMS system containing primary copper, zinc, gold and silver at shallow depth including 6 m at 8.39% Cu, 3.52% Zn, 30 g/t Ag, 0.14% Co, and 3.1 g/t Au. <i>Cobre Ltd</i>	
30 Menzies Gold Exploration	Drilling continues at First Hit with 3 m at 158.4 g/t Au intersected including 2 m at 237.5 g/t Au. <i>Kingwest Resources Ltd</i>	
31 Eneabba HMS Operating	The first shipment of concentrate from the historic monazite-rich stockpiles of the Eneabba Mineral Sands Recovery Project was exported in June 2020. The ore reserves stand at 0.96 Mt at 83.5% THM, comprising 26% zircon and 20% monazite. <i>Iluka Resources Ltd</i>	
32 Cadoux High Purity Alumina DFS complete	A DFS has outlined how an updated reserve of 3.2 Mt at 24.8% Al ₂ O ₃ could support a >25-year mine life. Studies at the Welshpool pilot plant were completed successfully, with HPA to be processed at the proposed Kwinana refining facility. Construction will follow the FID, planned for early 2021. <i>FYI Resources Ltd</i>	
33 Julimar Nickel + Copper + PGE Exploration	Discovery of high-grade Ni-Cu-Pd mineralization at Julimar with drilling intercepts of 75.1 m at 6.2 g/t Pd, 1.7 g/t Pt, 1.7% Ni, 0.7% Cu and 0.10% Co from 34.9 m. Drilling continues as more massive sulfide mineralization has been intersected in the G1 , G2 , G3 and G4 zones. <i>Chalice Gold Mines Ltd</i>	
34 Lake Giles Iron Exploration	The Moonshine magnetite resources were upgraded to Measured — 53.9 Mt at 30.8% Fe (head grade) and Indicated — 218.7 Mt at 27.5% Fe (head grade). The Ularring hematite deposit has been approved for development, and a feasibility study for Moonshine is progressing. <i>Macarthur Minerals Ltd</i>	
35 Bardoc Gold PFS complete	A PFS has confirmed potential for average production of 135 000 ounces per annum from four main deposits — Aphrodite , Zoroastrian , Excelsior and Bulletin . An upgraded mineral resource estimate for the project now stands at 49.4 Mt at 1.9% Au for 3.02 Moz contained Au. <i>Bardoc Gold Ltd</i>	
36 Black Swan Nickel FS complete	Discovery of the Golden Swan lode with 7.6 m at 8.8% Ni and 0.68% Cu from 740 m including 2.1 m at 15.9% Ni. <i>Poseidon Nickel Ltd</i>	
37 Lake Rebecca Gold Exploration	A maiden resource mineral estimate of 27.1 Mt at 1.2 g/t Au for 1.035 Moz Au has been announced, comprising the Rebecca , Duchess and Duke deposits. Drilling results for lodes at Rebecca include 12 m at 3.39 g/t Au at Jennifer Lode, 1 m at 79.8 g/t Au at Laura Lode, and 22 m at 3.44 g/t Au at Maddy Lode. <i>Apollo Consolidated Ltd</i>	
38 KCGM Super Pit Gold Operating	Mineral resources of 380 Mt at 1.6 g/t Au for 19 Moz Au have been estimated for the Super Pit . The current ore reserves support a 15-year mine life, with the potential for significant growth. <i>Saracen Mineral Holdings Ltd, Northern Star Resources Ltd</i>	
39 Boorara Gold Operating	First gold pour from the Regal mine on the 23 July. <i>Horizon Minerals Ltd</i>	
40 Rockford Nickel Exploration	Drilling continues at Rockford with recent results of 19.2 m at 1.69% Ni, 0.23% Cu, 0.09% Co from 97.9 m. <i>Legend Mining Ltd, Creasy Group Ltd</i>	
41 Fraser Range Nickel + Copper Exploration	Discovery of nickel sulfides at the Lantern prospect, with 12 m at 0.38% Ni, 0.33% Cu from 124 m. <i>Galileo Mining Ltd, Creasy Group Ltd</i>	
42 Dome North Lithium Exploration	Significant drilling intersections from the Cade deposit include 22.2 m at 1.79% Li ₂ O and from the adjacent Davy prospect of 22 m at 1.44% Li ₂ O. An updated JORC resource has just been released. <i>Essential Metals Ltd</i>	
43 Mt Thirsty Cobalt + Nickel PFS complete	A positive PFS for Mt Thirsty was released, based on production of 19.1 kt of Co and 24.8 kt of Ni, from a mixed sulfide product over a 12-year mine life. The maiden Probable Ore Reserve is 18.8 Mt at 0.13% Co and 0.54% Ni. <i>Barra Resources Ltd, Conico Ltd</i>	
44 Central Norseman Gold Exploration	Discovery of Panda and Green Lantern at the Scotia mining centre with drilling results including 5 m at 24.84 g/t and 16 m and 2.61 g/t Au respectively. <i>Pantoro Ltd, Central Norseman Gold Corporation</i>	

For more information, contact:
minedex@dmirs.wa.gov.au

WESTERN AUSTRALIA THE WORLD'S PREMIER MINING STATE

Fees, securities and minimum expenditures

July 2020	Maximum area	Term	Application fee	Rent	Security	Minimum annual expenditure*
Prospecting Licence	200 ha	4 years (then 4-year extension)	\$374	\$3.00 per ha Min: \$29.50	\$5k each	\$40 per ha Min: \$2k
Special Prospecting Licence for Gold	10 ha (maximum)	Min 3 months (then 3-month extension up to 4 years)	\$374	\$29.50	\$5k each	\$2k
Exploration Licence	70 blocks normally (200 blocks in greenfield areas)	5 years (then 2-year extension)	1 Block \$394 > 1 Block \$1580	# Per block Years 1-3 \$141 Years 4-5 \$238 Years 6-7 \$325 Years 8+ \$615	\$5k each	# Years 1-3 ≤ 20 blocks Min: \$10k-20k > 20 blocks \$1k per block
Mining Lease Minerals Dissolved in Brine	Not applicable	21 years renewable	N/A	# Years 1-5 \$2.40 per ha	\$5k each	\$100 per ha Min: \$5k if <5 ha otherwise \$10k
Mining Lease	Not applicable	21 years renewable	\$551	\$20 per ha	\$5k each	\$100 per ha Min: \$5k if <5 ha otherwise \$10k
General Purpose Lease	10 ha or larger with Minister's approval	21 years renewable	\$551	\$17.90 per ha	\$5k each	Covenant in lieu
Miscellaneous Licence	Not applicable	21 years renewable	\$551	\$17.90 per ha	\$5k each	Covenant in lieu

* www.dmp.wa.gov.au/Minerals/Mining-acts-fees-and-charges-16494.aspx

* includes rent payments

ha = hectare (100 x 100 m)
Block = 3 km² approx.

MINING TENEMENTS



as at October 2020

Geoscience and resource information

All free via www.dmirs.wa.gov.au

- Maps and reports
- Live databases of mineral deposits and mineral exploration reports
- Downloads of vector files for maps and databases
- Geophysical data and images
- Geochemical data
- Online GIS facility

Exploration and mining licence information

All free via www.dmirs.wa.gov.au

- Online map service (TENGRAPH Web) continuously updated showing location of all licences and applications
- Full ownership and other data for all licences available via online system, Mineral Titles Online (MTO)
- Transparent licence system where all licence information can be viewed by anyone

Comprehensive and well-known mining legislation

Free download of Mining Act and Regulations from www.slp.wa.gov.au

This site also has current copies of all other WA legislation

- Titles are for 'all' minerals*
- First in time application system
- Security of tenure when moving from exploration to mining title
- Mining title can be granted at pre-feasibility stage
- Annual exploration expenditure commitments
- Annual 'rental' fee for licence
- Annual reporting of activities

Exploration licences

- Graticular system used based on a 'block' that is 1 minute of latitude x 1 minute of longitude.
- Maximum number of blocks:
 - in greenfields areas: 200
 - in non-greenfields areas: 70
- If after five years the licence is extended, 40% of the area must be surrendered at end of 6th year

Mining lease applications

There are two ways to submit applications

- 'Mining proposal' involving environmental assessment before grant; or
- Mineralisation Report and Supporting Statement, or Resource Report and Supporting Statement. Mining proposal and environmental assessment submitted for approval at later date

Very large projects (e.g. iron ore, diamonds, alumina) may involve a Special Agreement with the State Government

* Legislation gives Ministerial discretion to restrict minerals or refuse in public interest. Rules of procedural fairness apply

Taxes and mining royalties

Mining tax

- Normal company tax rate ranges between 27.5% and 30% on profit
- Goods and services tax of 10%

Royalties on production

- The Mining Act and Regulations or the various State Agreement
- Acts set out royalty provisions and royalty rates
- The amount of royalty paid is a deduction for income tax assessment
- The amount of royalty paid can be reduced by allowable costs involved in transporting the mineral to the purchaser

Royalties are levied on the basis of:

- tonnage (rock, gravel, limestone)
- sales value (most metals, gems, diamonds)

Examples of royalty rates

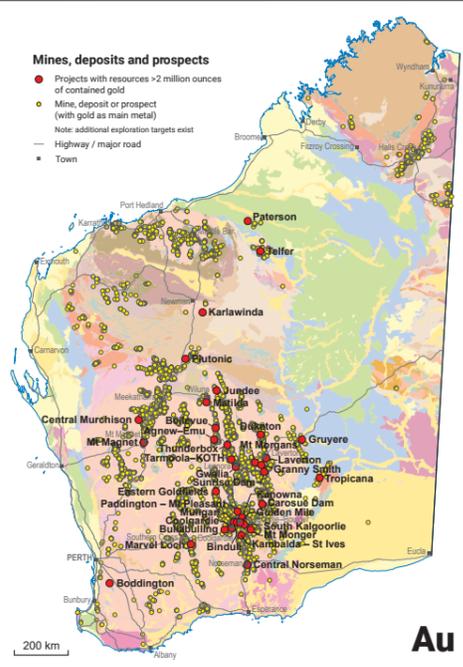
The full list of royalty rates is in Regulation 86 of the Mining Regulations, 1981 or the relevant State Agreement

Mineral	Rate
Limestone (construction/metallurgical)	\$0.73 – \$1.17 per tonne
Coal	7.5% if exported
Bauxite	7.5%
Copper	5% (concentrate); 2.5% (metal)
Nickel in concentrate	\$ royalty = 2.5 x D x f/100 D: % Ni in concentrate f: Ni metal price per tonne
Lithium minerals	5%
Iron ore (DSO) fines/lump	7.5%
Beneficiated iron ore and magnetite	5%
Gold (2500 oz exempt)	2.5% of metal value
Zircon concentrate	5% of sales value

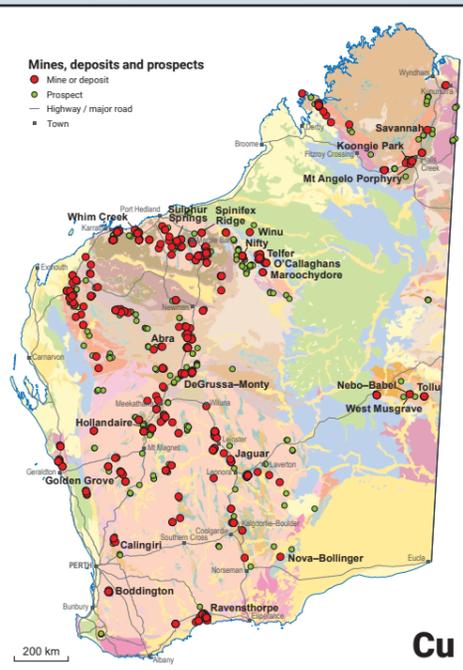
■ Tonnage-based rates ■ Sales value-based rates

DSO = Direct Shipping Ore

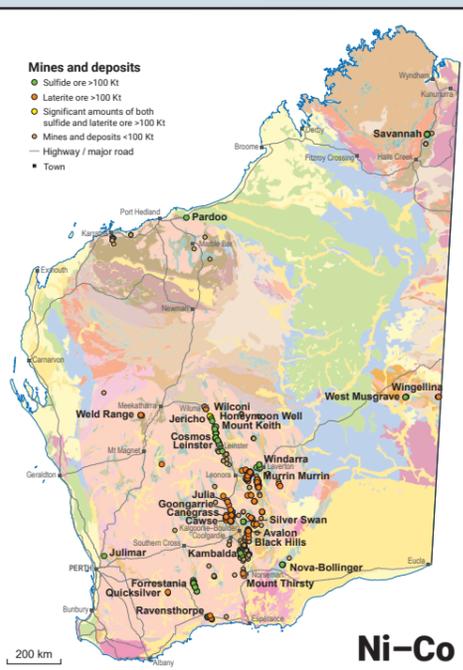
OCTOBER 2020



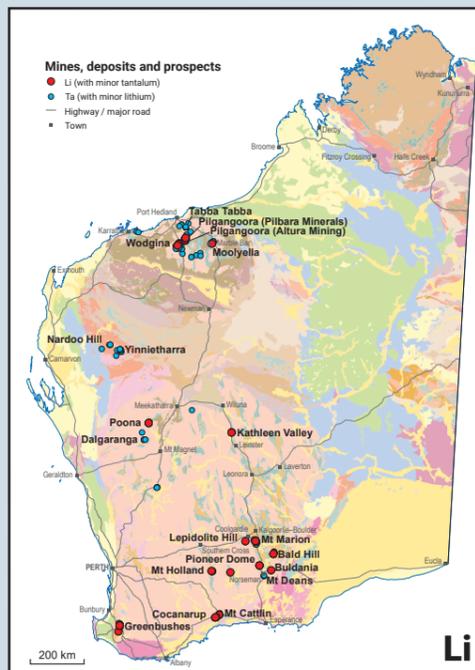
Au



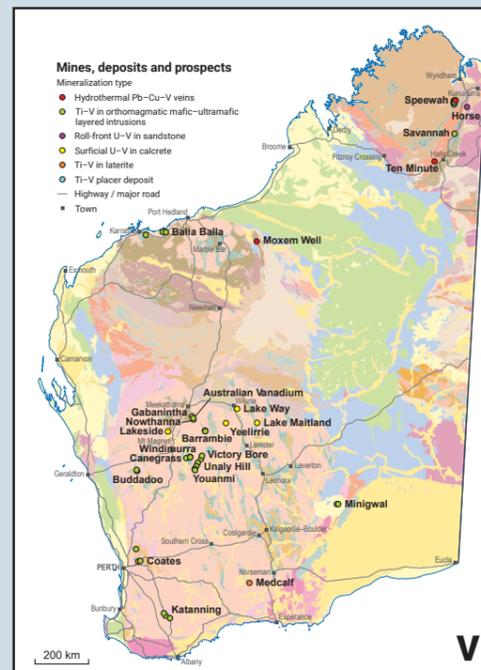
Cu



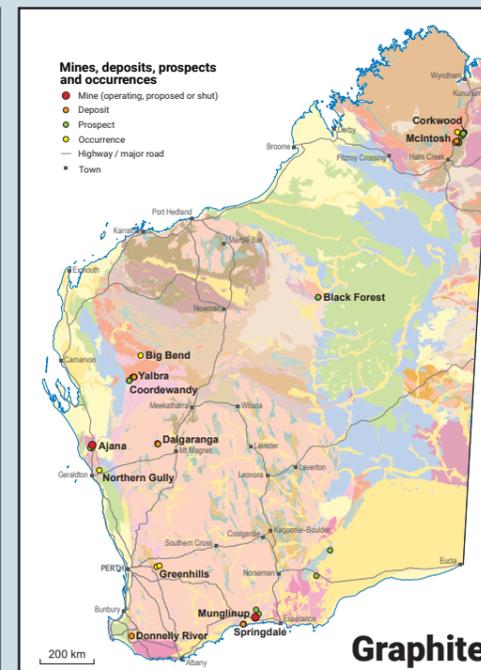
Ni-Co



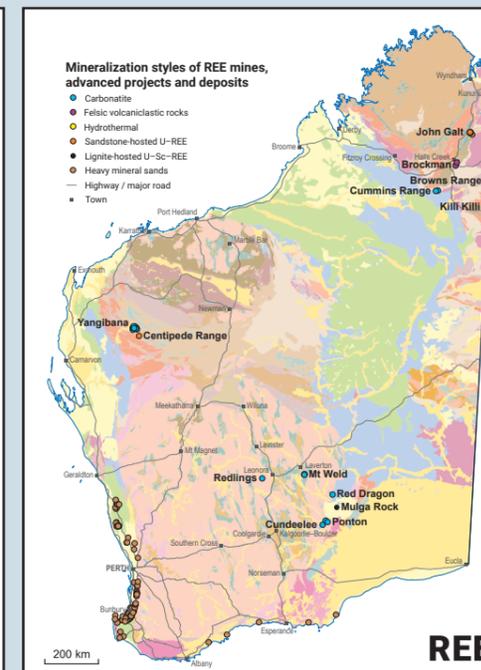
Li



V



Graphite



REE

WA Department of Mines, Industry Regulation and Safety (the principal mineral industry regulator) www.dmirs.wa.gov.au

Department of Jobs, Tourism, Science and Innovation (coordinates the development of major resource and infrastructure projects) www.jtsi.wa.gov.au

WA State Law Publisher (free download of WA legislation) www.slp.wa.gov.au

Department of Foreign Affairs and Trade www.dfat.gov.au

Australian Tax Office www.ato.gov.au

Austrade (Australian Trade Commission) www.austrade.gov.au