

Resource projects in the Fitzroy Region 2011 – 2016 (July 2011)



Photo courtesy of WestSide Corp Ltd



Curragh, June 2011

Photo courtesy of WesFarmers Resources Ltd

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Rockhampton

[illegible]

2011

200 kilometres

Bowen Basin

Prodn (ROM): 220 Mt

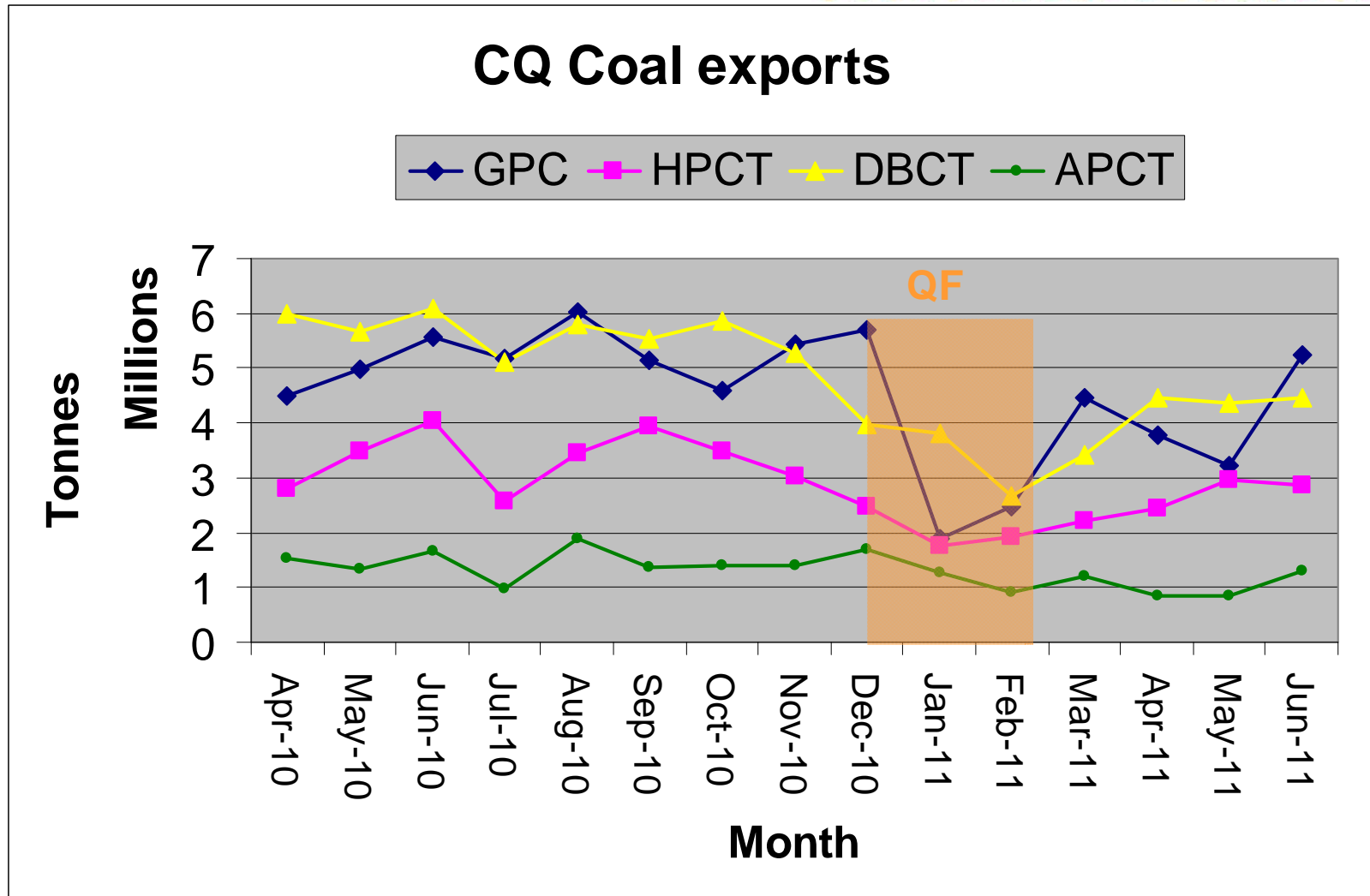
M+I Res: 20,500 Mt

Sustain: 93 years

Inferred: 19,600 Mt

100 km

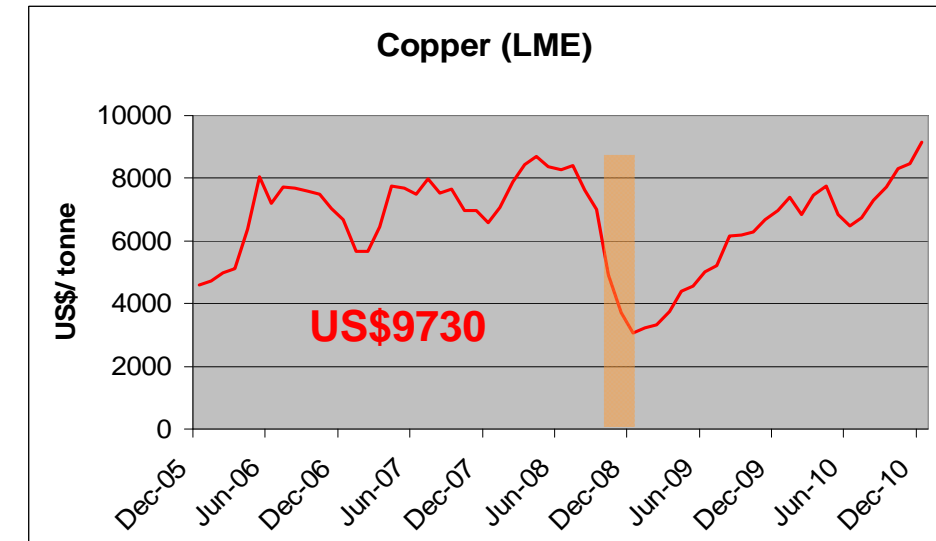
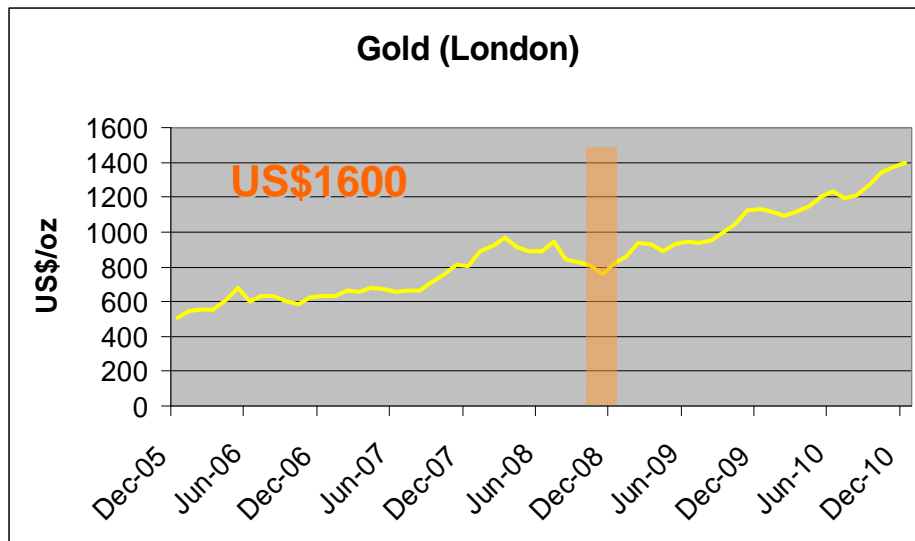
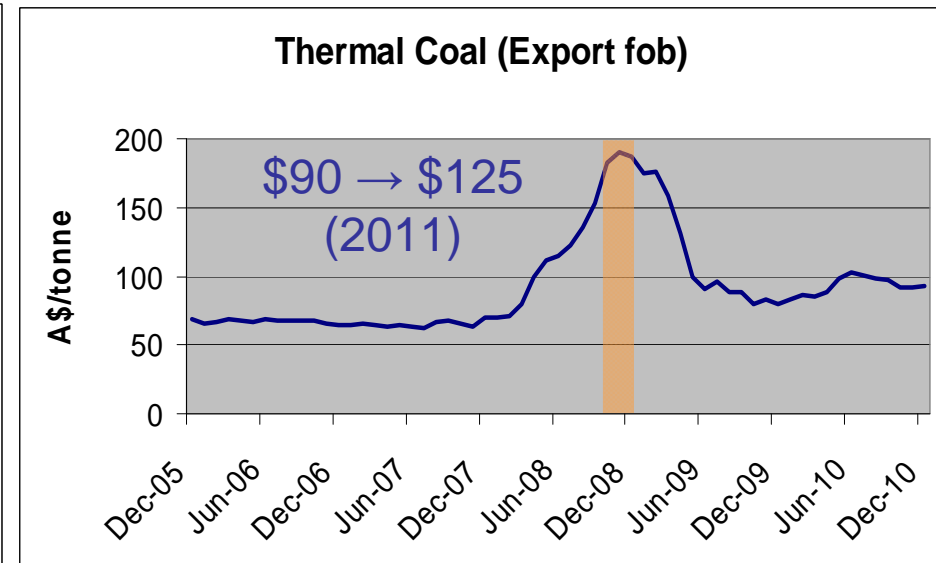
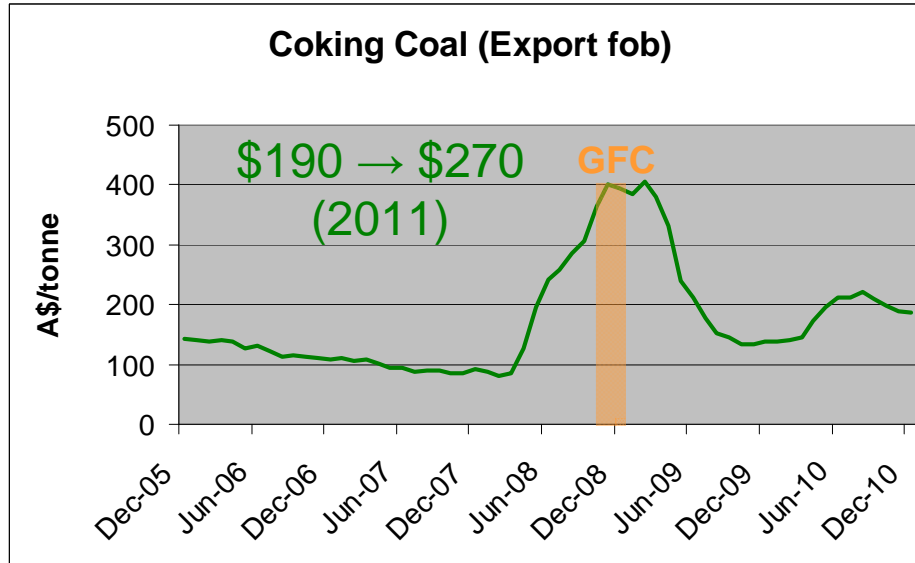
Fitzroy region



QLD coal exports 10/11: 163 Mt (↓11%)
Bowen Basin exports 10/11: 156 Mt (95%)

Source: Ports Corporation of Queensland (PCQ)
and Gladstone Ports Corporation

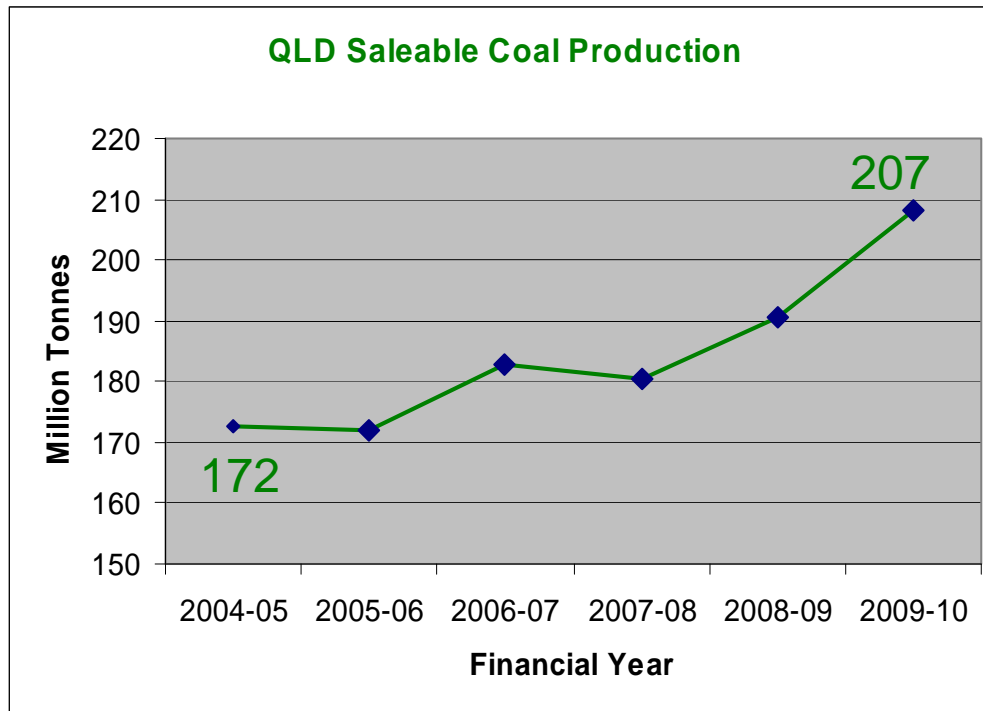
Commodity prices - past 5yrs



CQ Coal Mining 2009/10



- 50 operations (Bowen Basin + Callide-Boundary Hill)
- Open cut (38) and underground (12)
- Isaac (28), Central Highlands (15), Banana (3), Whitsunday (4)
- State saleable production: 207 Mt (up 9% - 190.5 Mt in 08/09)
- CQ shires: 190 Mt (91% of Qld); Fitzroy: 78 Mt (38% of State)



20% ↑ over 5 yrs
80% ↑ over next 20 yrs

(Source: *CoalPlan 2030*)

www.dip.qld.gov.au/coal-plan

New mines since Jan 2005 (22)

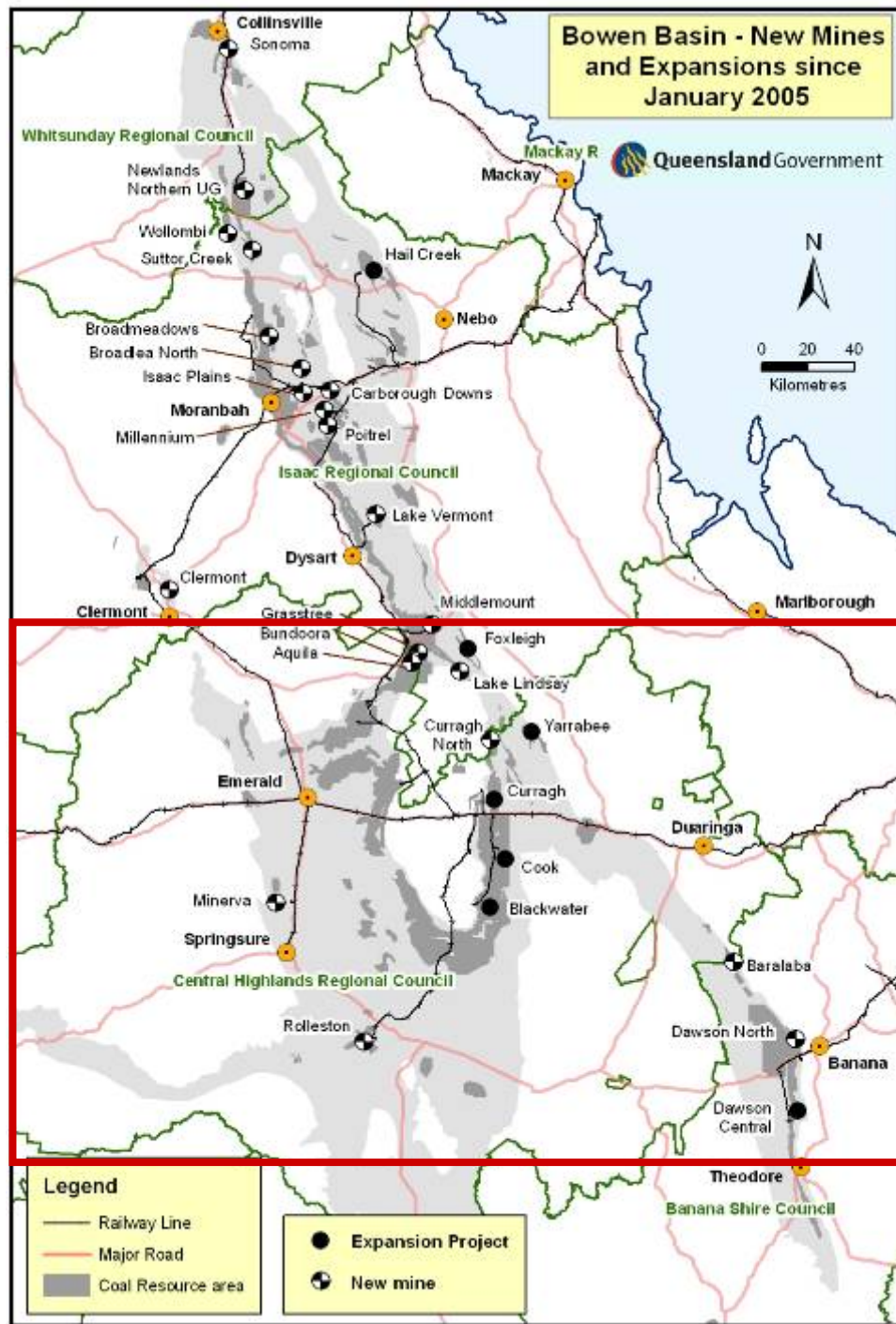
Fitzroy region (9)



Aquila Colliery (B&P UG) AAMC (A)	Lake Lindsay (OC) AAMC (A)
Baralaba (OC) Cockatoo Coal (B)	Rolleston (OC) Xstrata Coal (C)
Bundoora Colliery (LW UG) AAMC (A)	Dawson North (OC) AAMC (A)
Curragh North (OC) WesFarmers (A)	Minerva (OC) Yancoal Australia (C)
Grasstree (LW UG) AAMC (A)	Millennium (OC) Peabody Energy (A)
Carborough Dns (LW UG) Vale Aus (A)	Poitrel (OC) BHP-Mitsui (A)
Clermont (OC) Rio Tinto Coal (C)	Newlands Nthn (LW UG) Xstrata Coal (C)
Broadmeadow (LW UG) BMA (A)	Lake Vermont (OC) L Vermont Res (A)
Middlemount (OC) Macarthur Coal (A)	Sonoma (OC) QCoal (A)
Broadlea North (OC) Vale Aus (A)	Suttor Creek (OC) Xstrata Coal (A)
Isaac Plains (OC) Aquila / Vale Aus (A)	Wollombi (OC) Xstrata Coal (A)

(OC) Open-cut: (UG) Underground (LW) Longwall

Main coal product: (A) Coking: (B) PCI: (C) Thermal



Mine Expansions (7)

Blackwater, Curragh, Dawson, Cook, Hail Creek, Yarrabee and Foxleigh



Mine Closures (8)

Broadlea North (OC), Dawson North (OC), Oaky Creek (OC), Riverside (OC), Newlands Southern (UG), German Creek Central (UG), Southern (UG) and Aquila (UG)



Fitzroy Region



Mining operations 2011 (51)

- 18 Coal mines (mainly large multi-seam open cut / draglines)
- 17 Mineral mines (Limestone, Gold, Magnesite and Silica sand)
- 10 medium to large size Quarries (aggregate for construction industry)
- 6 Gas production sites (Natural + CSG)

Advanced Mining projects (23)

- 10 Expansions (coal)
- 13 New (9 coal + 3 mineral + 1 shale oil)

Undeveloped resources (next 20 years)

- Shale Oil (10 deposits containing 15 billion barrels of oil)
- Mineral resources (Nickel, Gold, Copper, Zinc, Limestone)
 - > 10 billion tonnes of coal in Southern and Central Bowen Basin with large amounts of CSG

Fitzroy Region

Direct employment Dec 2010 – app. 10,150



Mine	Mine life	Employment	Mine	Mine life	Employment
Oaky Creek (E)	30	960	Cook (E)	15	210
Gregory	3	360	Baralaba (E)	5	80
Crinum	30	520	Dawson (E)	40	1450
Kestrel (E)	30	530	Callide - Boundary Hill (E)	30	570
Ensham	20	475	Blackwater (E)	35	1930
Curragh (E)	30	1395	Rolleston (E)	30	435
Jellinbah East (E)	20	400	Meridan CSG	10+	15
Yarrabee (E)	20+	380	Mungi CSG	10+	10
Minerva (E)	15	240	Denison Gas	10+	40
			Fairview CSG	20+	150

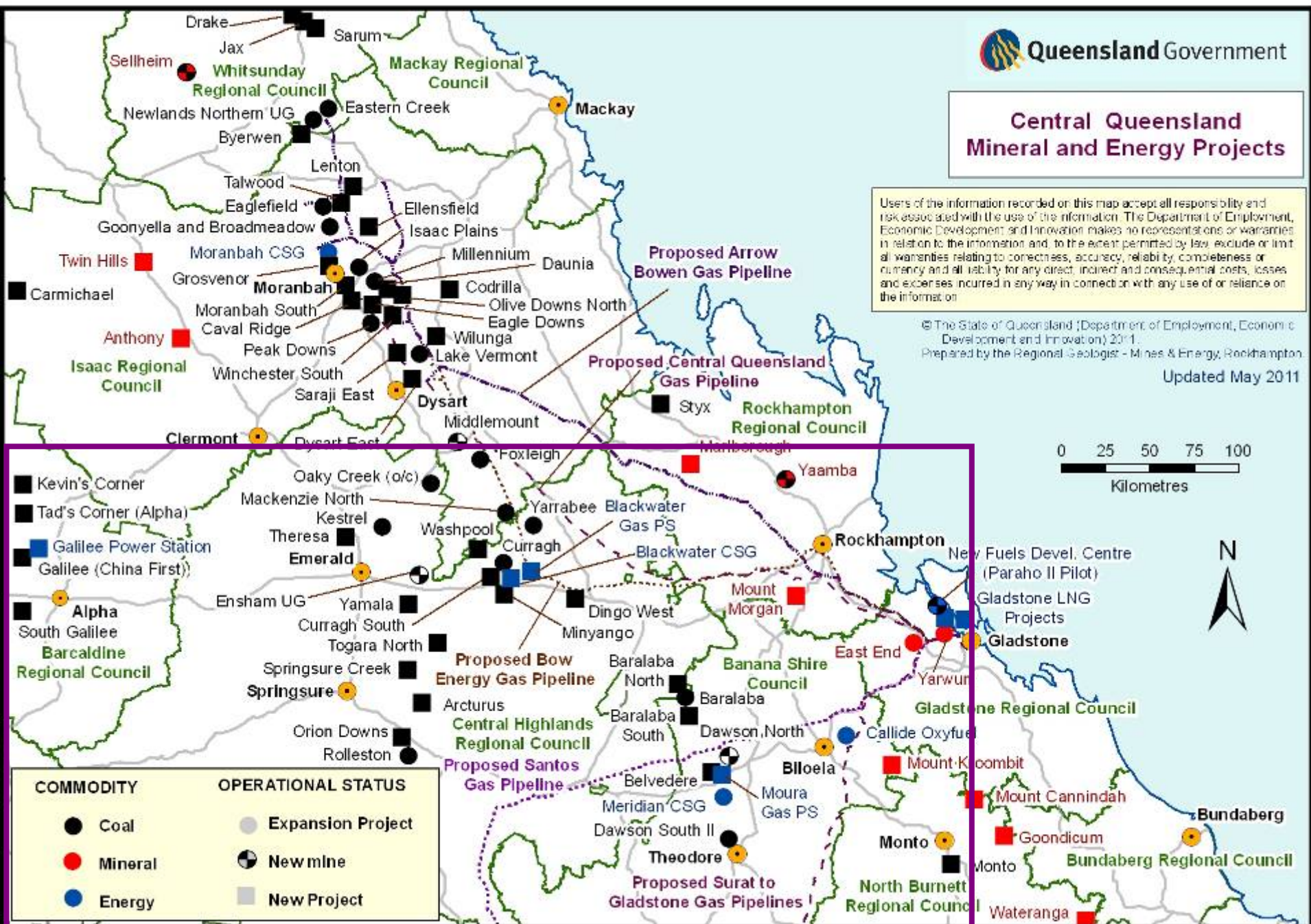
Central Queensland Mineral and Energy Projects

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Prepared by the Regional Geologist - Mines & Energy, Rockhampton.

Updated May 2011

0 25 50 75 100
Kilometres



Fitzroy Region Coal Mining projects



Expansions / Extensions (10)

Advanced

Curragh (WesFarmers) new CHPP under construction

- **Kestrel** (Rio Tinto) under construction
- **Yarrabee** (Yancoal Aust. Ltd) new CHPP completed May 2009
- **Dawson North** (Anglo Amer.) open cut redevelopment in progress
- **Oaky Creek** (Xstrata Coal) open cut redevelopment in FS
- **Jellinbah East** (Mackenzie North) (Jellinbah Grp) ML application
- **Boundary Hill** (Anglo Amer.) EIS process, ML application
- **Rolleston** (Xstrata Coal) ML application, Pre-FS, EIS commence
- **Baralaba** (Cockatoo Coal) ML application,
- **Cook** (Caledon Resources) introduce short face longwall (on-hold)



Curragh Mine expansion

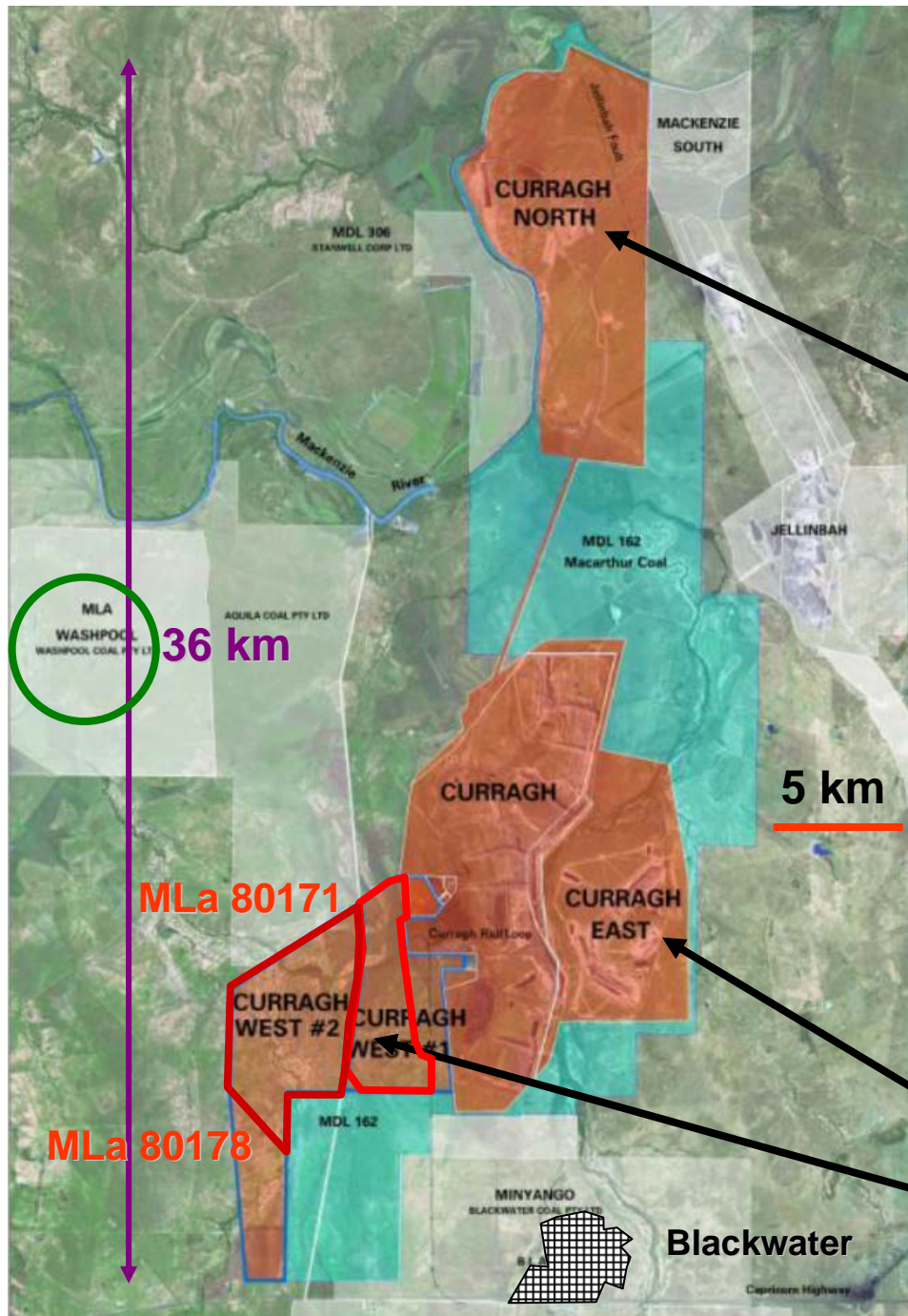
WesFarmers Ltd- **WES**

↑ Coking coal exports 6.5 → 8.5 Mtpa
Additional 46 Mt of reserves within Curragh North Mining Lease

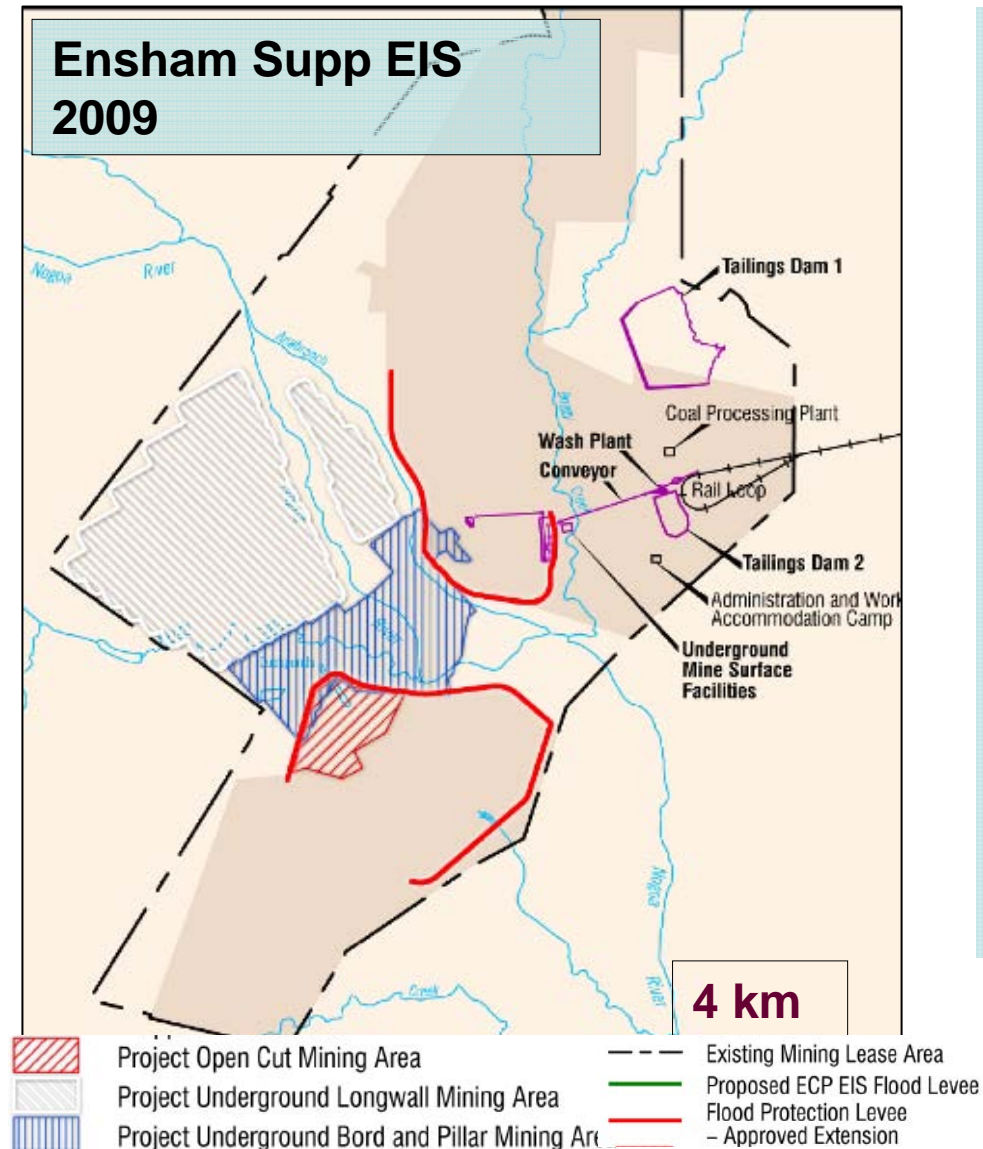
- **Capital Cost:** \$286 M
- Completion due early 2012
- 300 (constn) and 90 (op) workers
- New CHPP (1200tph) located next to existing plant

- Further expansion to 10 Mtpa (coking) from mid-2014 under feasibility study (Aug 10) due for completion quarter 4, 2011

- Additional rail capacity required
- Target remaining coal reserves at Curragh and Curragh East and Curragh West coal resources



Ensham Underground Coal Project (Ensham Resources Ltd)



Bord and Pillar underground

- 1.7 Mtpa thermal (saleable)
- Under construction
- Capital cost: \$166M
- Construction workforce: 80
- First Coal: 2012
- Op workforce: 160

LW underground

- Up to 8 Mtpa thermal (sale)
- Under study
- Capital cost: \$800M
- Start up: 2017?



Yarrabee mine Expansion

Yancoal Australia Ltd

- ◆ ↑ PCI coal exports 1.8 → 2.8 Mtpa
- ◆ new open cut Coal Reserves in **Yarrabee East** (MLa 80172)
- ◆ **Capital Cost:** >\$150 M
- ◆ New CHPP (completed May09)
- ◆ Expand number and size of excavators and haulage trucks
- ◆ **Start up:** 2013 when additional rail and port capacity ready
- ◆ Op **workforce:** 100

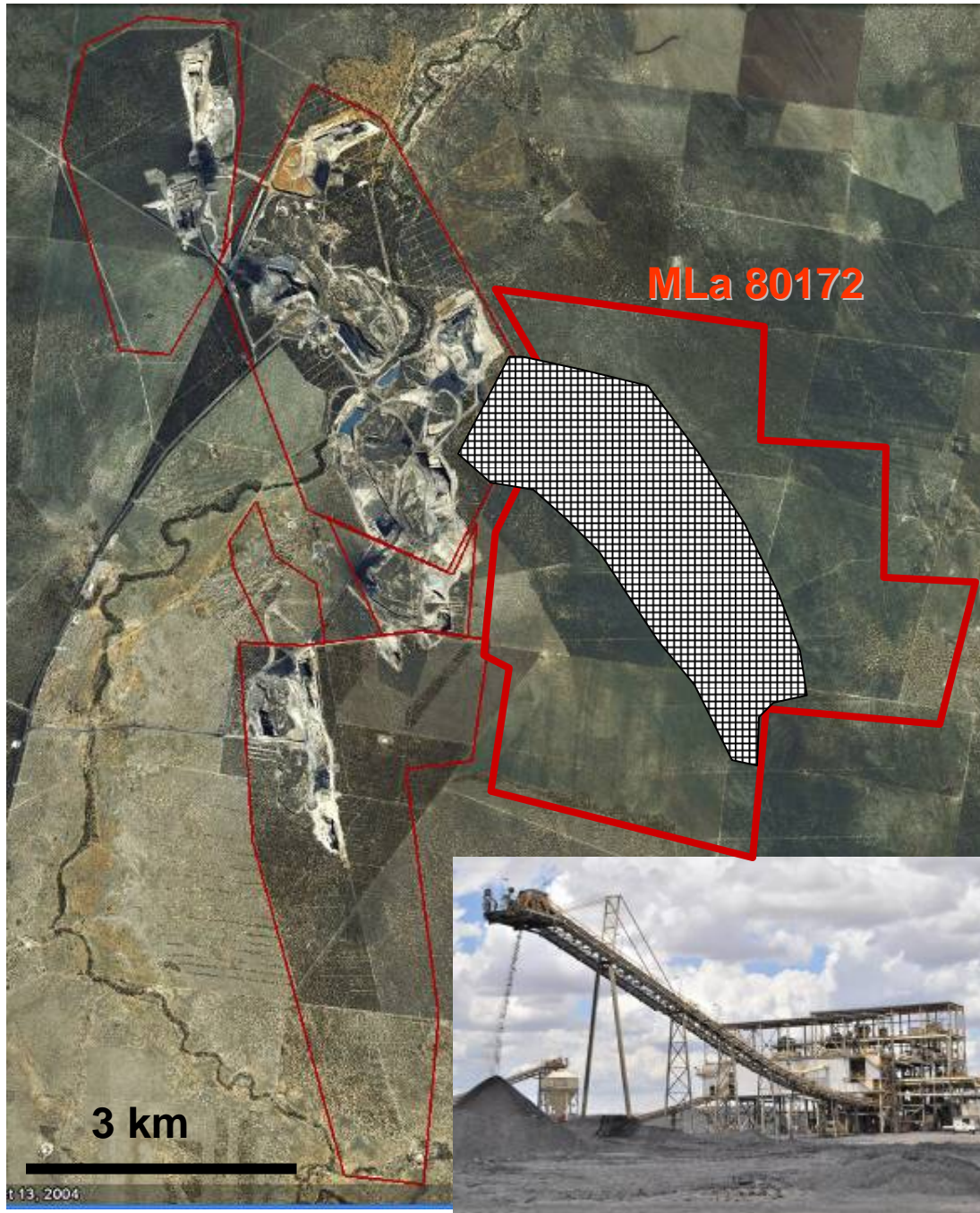


Image courtesy of Stuart Whyte, Yarrabee Coal

Fitzroy Region Mining projects



- **New Projects (20)**

*** = Galilee Basin**

Under construction: Ensham (B&P) (UG) (Ensham Resources)

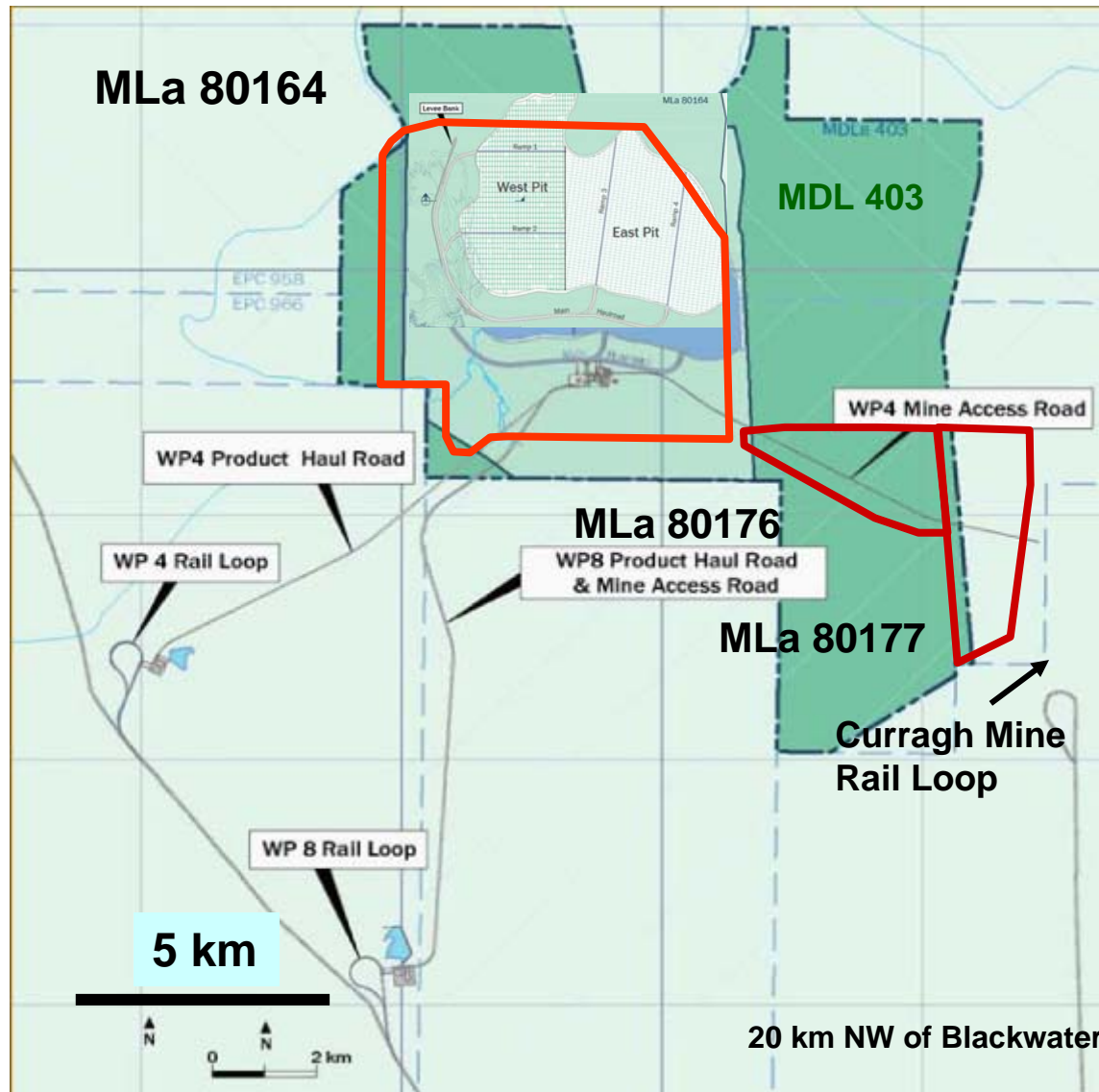
EIS or FS Stage: Washpool (OC) Aquila Resources, Tads' Corner (OC) Hancock Coal*, China First (OC) and (LW) (UG) Waratah Coal*, South Galilee (OC) and (LW) (UG) AMCI / Bandanna Energy*, Kevin's Corner (OC) and (LW) (UG) Hancock Galilee*, Belvedere (LW) (UG) Vale Aus./Aquila Resources, Arcturus (OC) and (UG) and Springsure Creek (LW) (UG) Bandanna Energy.

Pre-FS/scoping: Baralaba North (OC) and Wonbindi (OC) Cockatoo Coal, Minyango (SW) (UG) Caledon Resources, Yamala (OC) and (UG) New Hope Coal, Dingo West (OC) Bandanna Energy, Curragh South (OC) Macarthur Coal, Ensham (LW) (UG) Ensham Resources, Kennedy (OC) BMA, Theresa (LW) (UG) Linc Energy, Togara North (LW) (UG) Xstrata Coal and Orion Downs (OC) and (UG) Endocoal.

(OC) open cut: (UG) underground: (LW) longwall: (B&P) bord and pillar; (SW) shortwall

Washpool Coal Project

Aquila Resources Ltd – AQA)

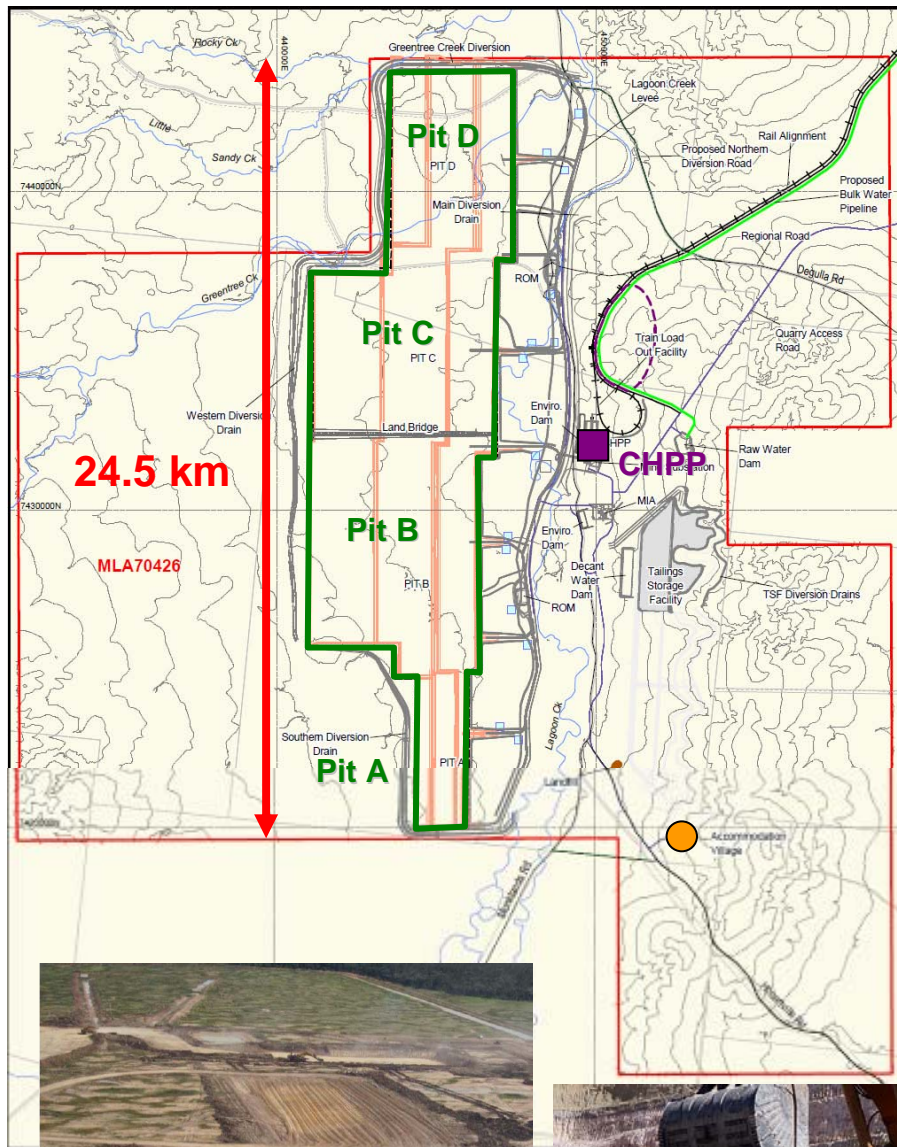


- Open cut mine targeting 2.6.Mtpa coking coal
- **Feasibility Study** completed (July 2010)
- Draft **EIS** released May 2011
- Definitive Feasibility Study in progress (expected Q3 2011)
- **Construction:** 310
- **First Coal:** Q1 2013
- **Mine life:** 15-20 years
- **Op workforce:** 390
- **Capital cost:** \$396 M



Tad's Corner (Alpha) Hancock Coal Ltd

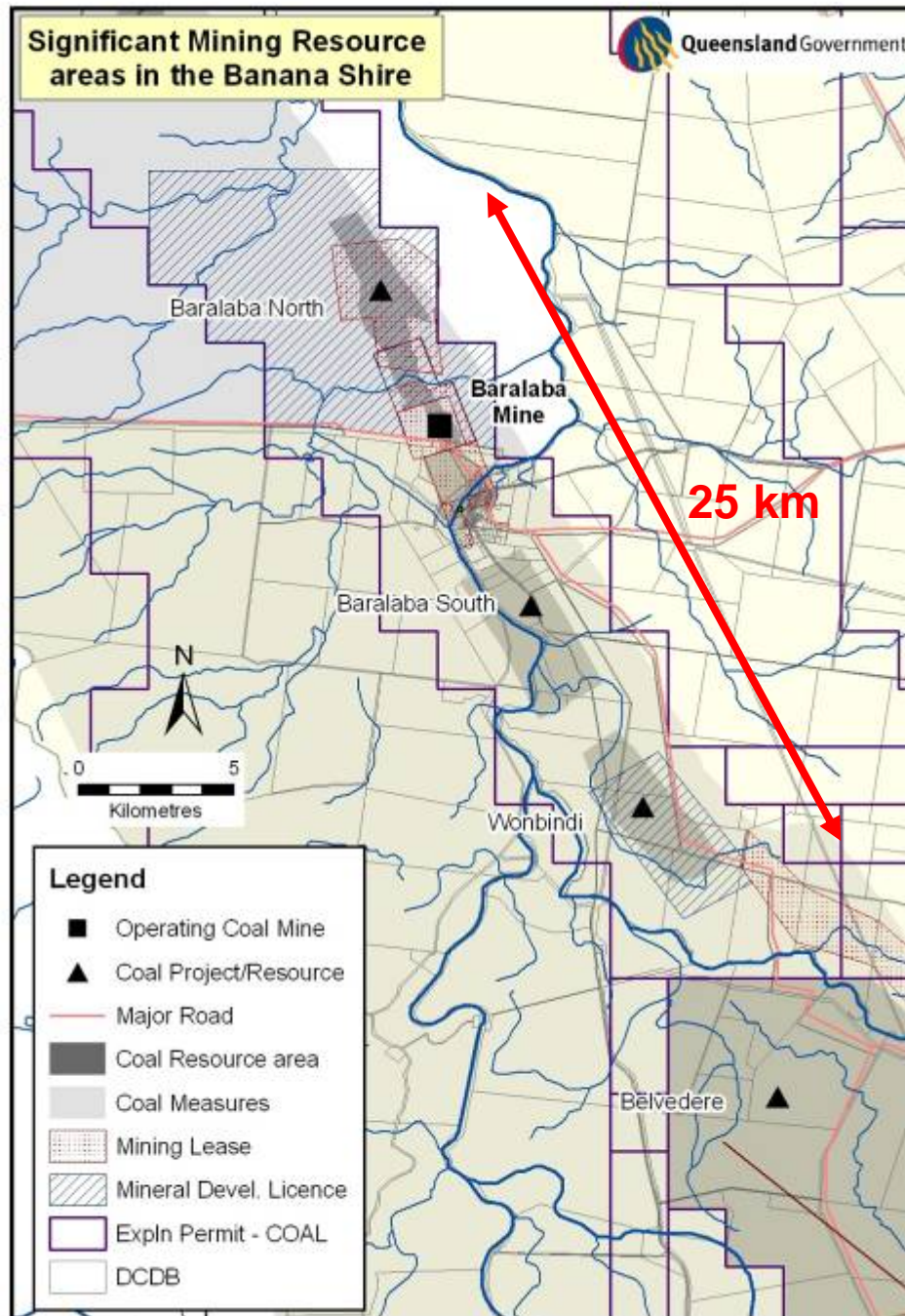
- Open cut 30 Mtpa (saleable)
- Draft **EIS** released (Nov2010)
- Bankable Feasibility Study (Q2 2011)
- **CapEx**: \$3.4 Bn (mine); \$2.8 Bn (rail) and \$1.7 Bn (port)....total: \$7.9 Bn
- Mine **Workforce**: 1060 (con) 2300 (op)
- Mine life: 40 years + (3.6 Bt resource)
- 6x Draglines, 112 rear-dump trucks
- Bulk sampling (150,000t) commenced
- **Construction**: mid 2012?
- **First Coal**: mid 2014?





Baralaba coal projects

Cockatoo Coal Ltd - COK



- Extensive drilling over the past 2 years has ↑ open cut coal resources by 200% to 160 Mt.
- **Baralaba mine:** ↑ prodn from 0.55 Mt (09/10) to 0.75 Mtpa (2011/12)
Mining Lease applns lodged
- Develop **Baralaba North** (2012) and **Baralaba South** (2014)
- Targeting 3.5 Mtpa (saleable) PCI by 2014 (WICT- stage 1; 3 Mtpa)
- Mining Concept Study in progress
- **Feasibility Study** (due Dec2011)
- **Construction of CHPP:** 2013
- **CapEx:** \$280 M ?



Fitzroy Region

Potential new mines over next 6 years

~9900

Mine	Mine life	Employment	Mine	Mine life	Employment
Ensham UG A	8	160	China First A	40+	1500
Dawson North A	10+	150	Tad's Corner A	40+	2300
Washpool A	15+	390	Kevin's Corner A	40+	1600
Minyango	25	310	South Galilee A	35+	1280
Baralaba North	20+	80e	Arcturus A	25	200
Wonbindi	20	150e	Springsure Ck A	25	330
Curragh South	20+	400e	Monto A	30+	200
Dingo West	20	110	Yamala	25	200e
Belvedere A	30+	500	Stuart Shale Oil e	40+	50

e = unofficial estimate

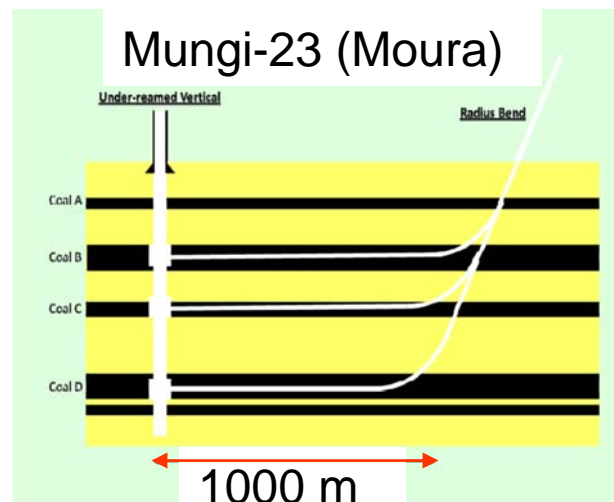
Gas (natural and CSG) Operations (6)



Dension (Origin Energy- **ORG**)
Fairview (Santos Ltd- **STO**)
Meridian (WestSide / Mitsui)
Mungi (Molopo / Mitsui)
Oaky Creek (Xstrata Coal)
German Creek (Anglo Am Met Coal)

Prodn 2009/10	Reserves
258 Mm ³	2640 Mm ³
1260 Mm ³	72500 Mm ³
36 Mm ³	5020 Mm ³
13 Mm ³	2503 Mm ³
13 MW	CMM#
32 MW	CMM

#Coal Mine Methane



Source: Molopo Energy Ltd (April 2010)



German Creek CMM (16x 2 MW
power generation modules)

Gas (natural and CSG) Projects (14)



Expansions / Extensions (3)

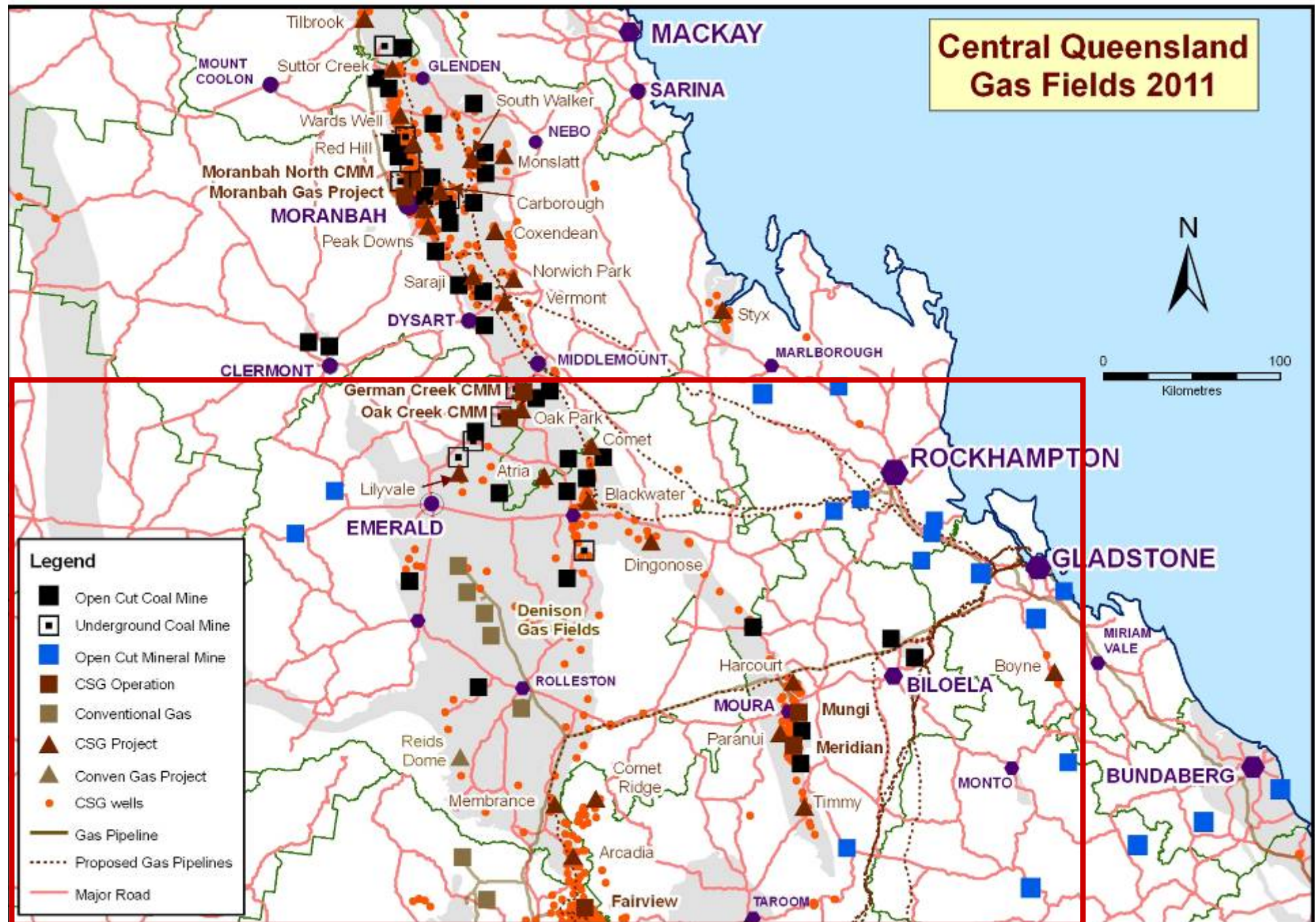
Fairview, Meridian and Mungi

Potential New Gas Fields (11)

Arcadia and Comet Ridge (Santos / Origin Energy),
Atria and Dingonose (QGC),
Blackwater, Comet and Norwich Park (Bow Energy- BOW),
Harcourt and Timmy (Molopo Energy- MPO)
Oak Park and Paranui, (WestSide- WCL / Mitsui / QGC),

Blackwater (BOW)	30 MW (under construction)
Moura (MPO)	30 MW (Stage 1) (FS in progress)
Lilyvale (MPO)	30 MW (Stage 1) (appraisal wells 2011)

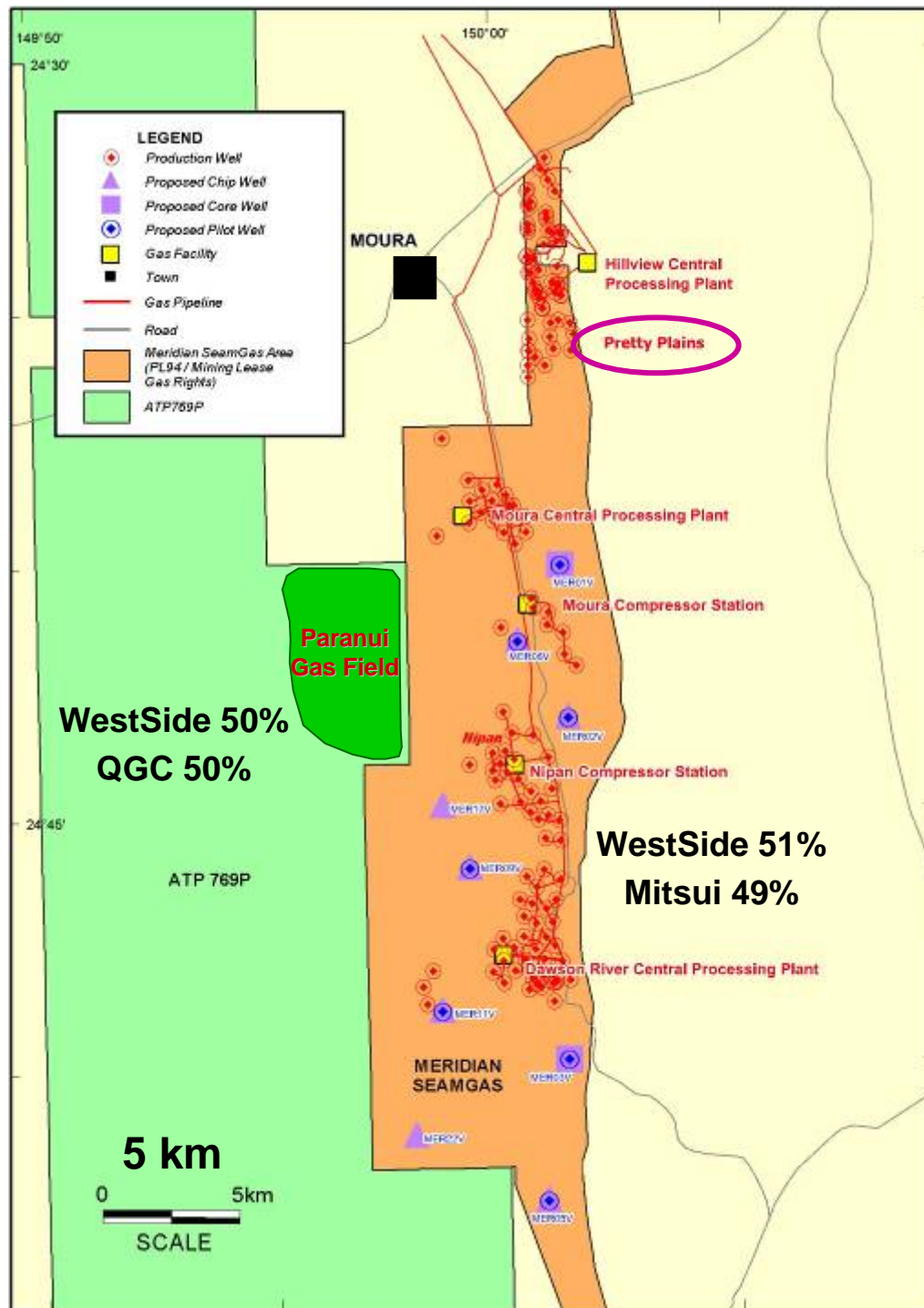
Central Queensland Gas Fields 2011





Meridian Seam Gas Fields

(WestSide Corp/Mitsui E&P Aus)



- WestSide Corp acquired 51% interest for \$26.8m from Anglo in July 2010
- 188 PJ (2P Reserves)
- \$17M drilling and work-over program has commenced
- 5 dual-lateral production wells Pretty Plains field and 6 vertical production wells to south
- ↑ gas production from 10 TJ/day to 25 TJ/day by 2013
- 16 appraisal exploration wells to ↑ 2P Reserves to 400 PJ in quarter 3, 2011

Paranui Production Pilot

- 270 PJ (3P Reserves)
- 3 new appraisal wells (Paranui -11, 12 and 13) completed

Blackwater Power Project – Field Development



4 spot FRAC Pilot

TT Lateral Pilot Wells

Bow's 14 well CSG pilot and feedstock for Blackwater Power station

Curragh Coal Mine Substation

66kV transmission line connection point

ATP1025 Boundary

Blackwater Substation

Blackwater

Bow's 100% Comet CSG Field

Bow Freehold Land
30MW Blackwater Power Station & future hub for field development

Proposed gas pipeline to Gladstone

257 km (100 PJpa)

Proposed transmission line and gas pipeline path

Bow's 100% Blackwater CSG Field

2480 PJ (3P)

5 km

9



Gladstone LNG Projects

Indicative only

LNG Project	Proponents	Status	Capacity	Start-up	Cost	Operational Workforce	Pipeline Constn WF
Fisherman's Landing	LNG Ltd	Constr On-hold	1.5 Mtpa (3 Mtpa)	2013?	US\$805M	32 (plant) 150 (field)	-
Queensland Curtis LNG	BG Group / QGC	Under Constr	8.5 Mtpa (12 Mtpa)	2014	US\$15 Bn	200 (plant) 800 (field)	880
GLNG	Santos / Petronas	Under Constr	7.8 Mtpa (10 Mtpa)	2015	\$16 Bn	200 (plant) 750 (field)	1000
APLNG	Origin Energy / Conoco-Phillips	EIS approved	9 Mtpa (18 Mtpa)	2015	\$13 Bn?	175 (plant) 800 (field)	800
Arrow LNG	Shell / PetroChina	EIS ToR stage	8 Mtpa (16 Mtpa)	2016	\$10 Bn?	240 (plant) 750 (field)	450 (ASP) 650 (ABP)
Southern Cross	LNG Impel	EIS IAS stage	1.4 Mtpa (5 Mtpa)	2014?	\$3 Bn	85 (plant) 150 (field)	-

IAS = Initial Advice Statement **ToR** = Terms of Reference



Vertical Retort



Shale Dryer

New Fuels Development Centre Queensland Energy Resources Ltd

- \$100 M Paraho II demonstration plant completed (March 2011)
- Workforce: 150 (construction), 50 (operational)
- Feed rate: 2.5 t/hr; 45 bbl/day
- Demonstrate safe operation of a shale to liquids plant
- Core Plant commissioning Q2 2011
- Testing of shale Q3 2011 to Q2 2013
- ~ 50,000 t of shale to be mined
- Yarwun resource: 5.6 Bt (containing 2.6 Bn barrels of oil)
- Commercial plant scale-up 2016?

Photos courtesy of Paul Garrad, QER Ltd



Resource-related projects

- **Ports**

Wiggins Island CT → 27 Mtpa (\$3.7 bn) 800 construction **EIS completed**

Balaclava Island CT → 35 Mtpa (\$1.5bn) 800 construction **EIS in progress**

Fitzroy CT → 22 Mtpa (\$1.2bn) 250 construction

- **Rail**

Blackwater rail power upgrade 86 → 95 Mtpa (\$140m) 1000 jobs **EIS in progress**

Moura Link and Aldoga Rail Yard expansion (\$500m) 350 construction commence 2011

Surat Basin Rail (210km) → 40Mtpa (\$1.2bn) 1000 construction commence 2011

- **Gas and water pipelines etc**

Moranbah-Gladstone Gas pipeline (440 km) \$475m; 250 construction **EIS completed**

Up to 4 Surat-Gladstone Gas pipelines (450 km) these will feed the LNG plants

Water storage and pipelines (Gladstone-Rockhampton; Connors River Dam; Eden Bann Weir and Rockwood Weir) **EIS in progress**

Callide Oxyfuel project (\$206m) 100 construction jobs **Construction in progress**

Mining Operations and Projects in the Northern Fitzroy Region

Legend:

- Operating Quarry
- Operating Mine
- Mineral Project/Resource
- Gas Prospect
- Shale Oil Resource
- Operating Coal Mine
- Coal Project/Resource
- Railway Line
- Proposed Gas Pipelines
- Major Road

Start up 2010-12

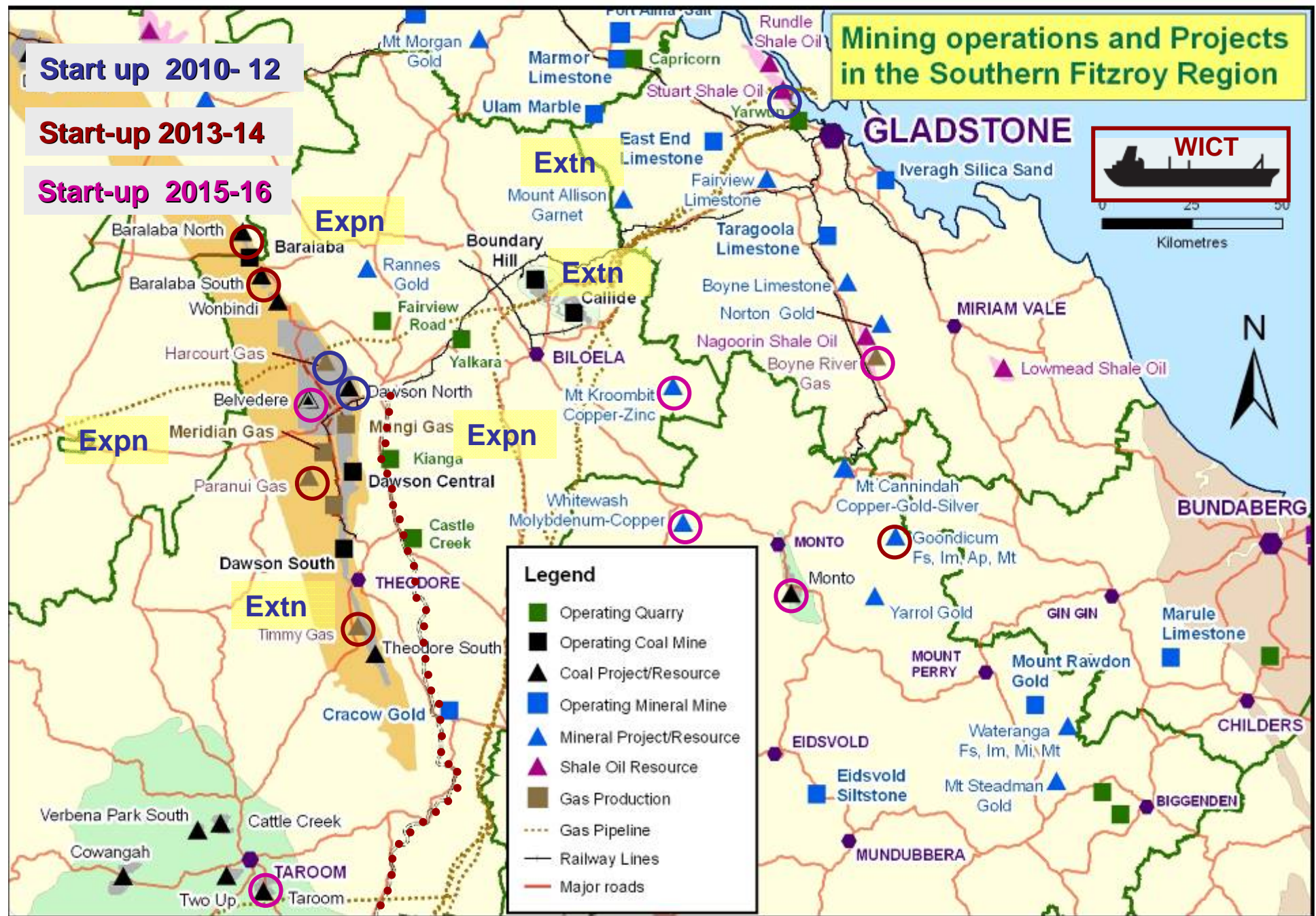
Start-up 2013-14

Start-up 2015-16

Expn

BICT

The map displays various mining operations and projects in the Northern Fitzroy Region. Key locations include Foxleigh, Mackenzie North, Comet, Yarrabee, Black River, Jellinbah East, Curragh, Blackwater, BLACKWATER, Minyango, Cook, Dingo West, Dingonose, Duaringa Central Shale Oil, Duaringa South Shale Oil, Duaringa Kaolin, Duaringa, Mount Hay Thunder Eggs, Mt Morgan Gold, Marmor Limestone, Ulam Marble, Capricorn, Nerimbra, Peak Hill, McEvoy Road, Stanwell Sandstone, Bow Energy Gas Pipeline, Central Queensland Gas Pipeline, Arrow Bowen Gas Pipeline, Yaamba Magnesite, Broilga Nickel-Cobalt, Moors Nickel-Cobalt, Marlborough Nickel-Cobalt, Marlborough Chrysoprase, Gumigil Chrysoprase, Develin Creek Copper-Zinc, Kunwarara Magnesite, Block Creek Shale Oil, Boundary Flat Lagoons, Styx CSG, Styx, Herbert Creek Magnesite, Yaamba Shale Oil, Tanby Silica Sand, and Yeppoon. The map also shows proposed gas pipelines and major roads.



**Central Queensland
Exploration and New Developments
March Quarter 2011**

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Kilometres



COMMODITY		OPERATIONAL STATUS	
	Coal		Mine site
	Mineral		New mine
	Gas		Advanced Project
			Exploration site

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More information

DEEDI (Mines)

CQ Exploration and new mining developments

<http://mines.industry.qld.gov.au/mining/central-qld-info-maps.htm>

DERM

(EIA) Current EIS

www.derm.qld.gov.au/environmental_management/impact_assessment/eis-processes/current.html

Department of Local Govt and Planning (Significant Projects)

<http://www.dlgp.qld.gov.au/coordinator-general-projects/index.php>

Company websites

ASX website www.asx.com.au/

ABARES (Australia-wide) (major development projects - May 2011)

www.abare-brs.gov.au/publications_remote_content/publication_topics/minerals