### HANCOCK PROSPECTING PTY LTD

Alpha Coal Project Supplementary Environmental Impact Statement

AH Railway Corridor – Resource Sterilisation Review of the IFS Rail Corridor





Hancock Coal Pty Limited Resource Sterilisation Review of the IFS Rail Corridor

25.10.10

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### Disclaimer

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### Scope of Work

Hancock Coal has requested Salva Resources to undertake a comprehensive study of the mineral. petroleum, and extractive resource potential which are known along the proposed Hancock Coal railway line (IFS Corridor). This has included a study of the various existing tenements that are held by various companies. These resource types include for the purpose of this study; are coal, minerals, petroleum, extractive and geothermal. These different resource types fall under separate State Government Legislation and therefore have differing tenement titles and conditions of tenure. This results in overlapping tenures of different types in many parts of Queensland.

The main purpose of the study is to demonstrate that the proposed route of the Hancock Coal rail corridor will not sterilise known or potential resources of coal, minerals or petroleum.

A study of this nature will rely entirely on the publically available datasets which detail previous exploration work that has been completed by coal, mineral and petroleum explorers. Other available data includes drilling programmes undertaken by the Geological Survey of Queensland. This data is readily available from DEEDI's IRTM and QDEX websites.

A particular focus will be the compilation of the available drilling data which is available along the rail corridor route. The identification of the geological formations intersected in these drill holes which are indicative of the absence of coal bearing Permian sediments will be a key focus of this compilation. Confirmation of the shallow penetration by the drill hole of geological units older than the Permian will be definitive proof of the absence of coal or coal seam gas potential.

### **Executive Summary**

Salva Resources has undertaken a high level review of the potential or otherwise for significant coal and mineral resources in the IFS rail corridor.

The main risk is for the sterilization of coal resources where the rail corridor passes through the northern Bowen Basin between the 262000 meter chainage mark and the 364000 meter chainage mark. Within this section of the corridor, the Hancock IFS corridor traverses alongside the existing Newlands-Abbot QR rail line between 297000 and the 339000 meter chainage marks.

A review of the available drilling data along this section indicates only limited potential for the sterilization of coal resources. In addition the existence of the parallel QR line already places constraints on the development of coal resources if any were found to exist.

On the southern section of this Bowen Basin traverse, the Hancock IFS corridor follows the proposed Northern Missing Link (NML) between the 276000 and the 297000 meter chainage marks. This section of the IFS corridor has been the subject of an independent coal sterilization review by the QR feasibility study of this project (Queensland Rail Northern Missing Link-Coordinator-General's Report, October 2006).

A review by Salva Resources of the available data on previous drilling shows that the section of the line that crosses the sub-crop of the Moranbah Coal Measures in this area indicates that the coal measures are overlain by mostly thick cover of Tertiary basalt and sediment to depths of 50 to 90

metres and the depth to workable coal seams is between 67 and 196 metres. In addition significant igneous activity has resulted in the coking and replacement of many of the major coal seams by intrusive sills rendering the coal un-mineable.

On the northern section of the Bowen Basin traverse, the Hancock IFS corridor separates from the QR Newlands-Abbot Point rail line and heads north-west to cross the Collinsville Coal Measures between 358000 and the 364000 meter chainage marks. This section of the Collinsville Coal Measures has been heavily intruded by Cretaceous intrusive bodies and dykes thus rendering the coal cindered and un-mineable.

North along the IFS corridor from the 364000 meter chainage mark to the 435000 meter chainage mark, the IFS corridor passes over the basal Bowen Basin unit; Lizzie Creek Volcanics which contains the coal bearing Crush Creek Coal Measures. Exploration drilling by CAIL in the 1990's has shown little potential for significant coal in this formation.

To the south-west of the Bowen Basin margin, the Hancock IFS corridor passes over a section of the Blenheim Formation which underlies the Moranbah Coal Measures between the 262000 and the 276000 meter chainage marks. Limited available drilling data from this area indicates low potential for significant coal resources.

Further to the south-west between the 202000 and the 262000 meter chainage marks, the IFS corridor passes over an area marked by variable thicknesses of Tertiary sediment overlying mostly deeply weathered Carboniferous acid volcanic litholigies. This area has been subjected to gold exploration by a number of companies without success. Similarly coal explorers in an attempt to locate coal resources outside the known western limit of the Bowen Basin have shown through their drilling the geological geometry described above.

Between the 182000 and the 202000 meter marks the IFS corridor passes over a deeply buried Permian coal basin beneath Tertiary sediments up to 165 metres thick. This area has been secured by Hancock Coal through subsidiary, Queensland Coal Investments under EPC applications; 2162, 2163 and 2169.

Between the 144000 and the 182000 meter chainage marks, the IFS corridor passes over the lower Palaeozoic Anakie Metamorphics which are variably overlain by Tertiary sediment and alluvium. The potential for coal resources in this section is considered very low. However the section has attracted the attention of numerous gold explorers over the past few decades but with no success so far. The area is currently held by a number companies exploring for gold.

Between the 54000 meter and the 144000 meter chainage marks the IFS corridor passes over the pre-Permian Carboniferous Formations; Silver Hills Volcanics, Raymond Sandstone and the Ducabrook Formation. The available data indicates very low potential for coal resources. Although gold of the epithermal style has been targeted by numerous mineral explorers over the past few decades, no significant gold mineralization has been located so far.

### Introduction

Linear infrastructure such as the IFS rail corridor, although relatively narrow has the potential to sterilise mineral resources, particularly open cut coal and metallic mineral deposits. Although the

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zone of sterilisation may be narrow, there may still be significant resources of flat lying minerals such as coal which are unable to be mined in several seams. For discrete metallic mineral deposits which are more localised, the risk of sterilisation by linear infrastructure is relatively low but should still be considered in the analysis of a preferred route.

Hancock when selecting their preferred route incorporated measures into the IFS process to minimise the risk of resource sterilisation from the outset. Avoidance of advanced mining tenures such as mining leases and mineral development licences were key criteria of the rail alignment design. Hancock also notified in writing in February 2010 to all granted exploration permit holders of coal, minerals and petroleum tenements in order to identify any companies which held known resources in exploration tenures.

Known coal bearing deposits of the Bowen Basin lying between Newlands and Collinsville that are traversed by the rail corridor present the highest risk of sterilisation. Holders of EPC's over this area were previously contacted by Hancock to help identify known deposits and adjust the alignment accordingly.

It should be noted that the rail corridor, in crossing coal measures and potentially sterilising coal, also offers opportunities in terms of convenient transport of coals to market.

The total length of the IFS corridor is 508000 metres which includes the rail loops at the Alpha mine site and at Abbot Point. The location along the corridor is marked by meter chainage marks. These chainage marks have been used in this report to identify the various geological and drill hole locations referred to in this report (Figure 1 – regional location map, Table 7-drillhole summaries & Appendix 1-detailed maps).

### **Coal Resources**

### Mining Leases and Mineral Development Licenses

Other than the Mining Lease applications held by Hancock that form part of the Alpha Kevin's Corner Project, the IFS corridor as declared traverses one granted Mining Lease (ML 4748, Newlands Coal Mine) and six mining lease applications (ML 10351, ML 70435, ML70434, ML 70436, ML10356. ML10357, ML10355 - Byerwen Project) made subsequent to the IFS application.

	Table 1-Listing of Traversed MLs & MLAs						
TENURE NO	PRINC_HLDR	STATUS	NAME	DATE LODGED	DATE GRANTED	DATE EXPIRES	AREA
70434	BYERWEN COAL PTY LTD	APPLICATION	BYERWEN 3	30-Jun-10			7731.04
70435	BYERWEN COAL PTY LTD	APPLICATION	BYERWEN 4	30-Jun-10			2560
70436	BYERWEN COAL PTY LTD	APPLICATION	BYERWEN 6	30-Jun-10			2893.87
70426	HANCOCK COAL PTY LTD	APPLICATION	ALPHA	18-Dec-09			64360.68
4748	XSTRATA COAL QUEENSLAND PTY LTD	GRANTED	NEWLANDS	28-Jun-74	16-Dec-76	31-Dec-18	8578.59
10351	BYERWEN COAL PTY LTD	APPLICATION	DRAKE 3	21-Apr-10			447.317
10355	BYERWEN COAL PTY LTD	APPLICATION	BYERWEN 1	29-Jun-10			5356.63
10356	BYERWEN COAL PTY LTD	APPLICATION	BYERWEN 2	29-Jun-10			2202.6

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,	10357	BYERWEN COAL PTY LTD	APPLICATION	BYERWEN 5	29-Jun-10		

Table 2-Listing of Traversed MDLs								
TENURE NO.	PRINCIPAL_HOLDER	STATUS	NAME	DATE LODGED	DATE GRANTED	DATE EXPIRES	PRINCIPAL_HOLDER	AREA_HA
285	HANCOCK COAL PTY LTD	GRANTED		1-Apr-98	11-Mar-08	31-Mar-13	HANCOCK COAL PTY LTD	33706.09
443	BYERWEN COAL PTY LTD	APPLICATION	BYERWEN	3-Jun-10			BYERWEN COAL PTY LTD	19808

#### ML 4748, Newlands Mine of Xstrata

The encroachment into the Newlands Mining Lease ML 4748 is a minor one where it passes through the northwest corner of the lease. This alignment which was an amendment of the advertised alignment was chosen to abut the Northern Missing Link and the existing Newlands Line to avoid undue coal sterilisation and to minimise the footprint of linear infrastructure and buffers and severed intervening areas. It takes advantage of previous coal sterilisation studies located on the Newlands line and Northern Missing link (under construction) in their present locations.

The co-alignment of the IFS and the Newlands/ NML lines in this area has been initiated to minimise coal sterilisation. It is considered that no workable coal is sterilised within the Newland's ML 4748. Xstrata Coal has raised no objection to the realignment of the IFS through a portion of their mining lease and in fact commented that it was logical.

### MLA 10351 Drake Project OCoal

There is a minor encroachment onto the south western corner of the Drake Project mining lease application ML 10351 by Q Coal just after the alignment crosses the Bowen River. The alignment is west and beyond the sub-crop line of the coal and no sterilisation is believed to occur. Hancock advises that Q Coal raised no objection when the corridor was realigned to this location to avoid resources in the Rosella Creek deposit in the east and within EPC 768 held by Q Coal and the Sarum Mining Lease application (ML 10336) in the east held by Xstrata.

### MLA's 70435, 70434, 70436, 10356, 10357, ML10353, and MDL 443 Byerwen Coal Project, Q Coal Pty Ltd

The IFS alignment as originally advertised passed through EPCs 614, 739, 734, 586 and 768. However, by the time of final declaration on 1 October 2010, Q Coal had applied for the above mining leases and subsequently the above Mineral Development Licence. There is no resource information available for these applications. However, during and after the public consultation period for the IFS, Hancock responded to advice on potential coal resources underlying the IFS in the Q Coal EPC's by relocating the alignment to abut the Northern Missing Link, thereby taking advantage of the work done to minimise coal sterilisation in locating the NML. This also minimised sterilisation.



#### Exploration Permits for Coal (EPC's)

Apart from the mining leases and lease applications and the mineral development licenses traversed by the corridor, the corridor traverses a number of EPCs as outlined in Table 3 and 4. Between the western margin of the Bowen Basin at the 262000 meter chainage mark on the IFS corridor and the 276000 meter mark where the IFS corridor joins the Northern Missing Link corridor the rail corridor passes through EPC 659 held by the Talbot Group Exploration PL for the majority of the section and then across the ML application 70436 and the north-west corner of ML application

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	Table 3-Listing of Traversed EPC Applications						
EPC No	PRINCIPAL HOLDER	STATUS	SUB STATUS	DATE LODGED	DATE	DATE	SUB
					GRANTED	EXPIRES	BLOCKS
2188	SPINIFEX RURAL MANAGEMENT PTY LTD	APPLICATION	EXPLORATION PERMIT PROPOSAL	4-Aug-10			122
2169	QUEENSLAND COAL INVESTMENTS PTY LTD	APPLICATION		21-Jul-10			175
2163	QUEENSLAND COAL INVESTMENTS PTY LTD	APPLICATION		7-Jul-10			281
2162	QUEENSLAND COAL INVESTMENTS PTY LTD	APPLICATION		7-Jul-10			259
1905	BOWEN BASIN COAL QLD AUST PTY LTD	APPLICATION	EXPLORATION PERMIT PROPOSAL	31-Aug-09			298
1902	BOWEN BASIN COAL QLD AUST PTY LTD	APPLICATION	EXPLORATION PERMIT PROPOSAL	31-Aug-09			300
1899	BOWEN BASIN COAL QLD AUST PTY LTD	APPLICATION	EXPLORATION PERMIT PROPOSAL	31-Aug-09			295
1898	BOWEN BASIN COAL QLD AUST PTY LTD	APPLICATION	EXPLORATION PERMIT PROPOSAL	31-Aug-09			300
1712	QLD COAL AUST NO. 1 PTY LTD	APPLICATION	EXPLORATION PERMIT PROPOSAL	23-Mar-09			32
1590	ENDOCOAL LIMITED	APPLICATION	EXPLORATION PERMIT PROPOSAL	30-Sep-08			52
1321	BROTHERS MINING PTY LTD	APPLICATION	SECONDARY APPLICATION	2-Jun-08			61
1320	NORTH COAL PTY LTD	APPLICATION	EXPLORATION PERMIT PROPOSAL	30-May-08			45
1228	LINC ENERGY LTD	APPLICATION	COMPETING APPLICATION	1-Feb-08			299

		Table 4	-Listing of Traversed Gra	nted EPCs			
EPC No	PRINCIPAL HOLDER	STATUS	SUB STATUS	DATE LODGED	DATE GRANTED	DATE EXPIRES	SUB BLOCKS
1518	ENDOCOAL LIMITED	GRANTED		18-Jul-08	3-May-10	2-May-14	300
1263	QUEENSLAND THERMAL COAL PTY LTD	GRANTED		31-Mar-08	24-Feb-10	23-Feb-15	300
1210	HANCOCK KEVIN'S CORNER PTY LTD	GRANTED		20-Dec-07	18-Sep-09	17-Sep-14	117
1069	CARABELLA RESOURCES LIMITED	GRANTED		2-Aug-06	4-Jun-10	3-Jun-15	291
1023	CONARCO MINERALS PTY LTD	GRANTED		7-Nov-05	30-Aug-07	29-Aug-12	185
1021	CONARCO MINERALS PTY LTD	GRANTED		7-Nov-05	29-Aug-07	28-Aug-12	300
977	XSTRATA COAL QUEENSLAND PTY LTD	GRANTED		28-Jun-05	6-Mar-07	5-Mar-12	14
968	ARGOS (QLD) PTY LTD	GRANTED		16-May-05	3-Aug-06	2-Aug-12	110
773	XSTRATA COAL QUEENSLAND PTY LTD	GRANTED		21-Jan-02	6-Mar-03	5-Mar-13	39
768	ROSELLA CREEK COAL PTY LTD	GRANTED		13-Dec-01	29-Mar-10	28-Mar-15	44
739	BYERWEN COAL PTY LTD	GRANTED		28-Mar-01	25-Nov-09	24-Nov-14	120
734	XSTRATA COAL QUEENSLAND PTY LTD	GRANTED		22-Jan-01	6-Apr-01	5-Apr-11	224
707	TALBOT GROUP EXPLORATION PTY LTD	GRANTED	EXPLORATION PERMIT PROPOSAL	30-Aug-99	8-Nov-04	7-Nov-08	42
660	TALBOT GROUP EXPLORATION PTY LTD	GRANTED	RENEWAL LODGED	11-Sep-97	27-Aug-99	26-Aug-10	59
659	TALBOT GROUP EXPLORATION PTY LTD	GRANTED	EXPLORATION PERMIT PROPOSAL	11-Sep-97	8-Nov-04	7-Nov-08	173
614	BYERWEN COAL PTY LTD	GRANTED		17-Jun-96	16-Aug-96	15-Aug-11	69
586	BOWEN RIVER COAL PTY LTD	GRANTED		28-Apr-95	28-Nov-95	27-Nov-14	92

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70435. Granted MDL 443 held by Byerwen Coal PL overlie the two ML applications; 70436 and 70435 also held by Byerwen Coal PL.

The GSQ drill hole Mount Coolon 12 (4km east of the IFS corridor) and the St Joseph Phelps Dodge drill hole P4/17 (4km east of the IFS corridor) although intersecting Permian sediments did not intersect any significant coal in either hole to a depths of 200 to 298m.

It is concluded that there is a low chance of finding significant coal in this section of the IFS corridor between the 262000 meter and 276000 meter chainage marks.

Between the 276000 meter mark and the 297000 meter mark where the corridor joins the existing Newlands-Abbot Point rail line, the IFS corridor passes over a section of the Moranbah Coal Measures between the 288000 meter chainage mark and the 292000 meter chainage mark.

This section of the IFS corridor follows the proposed Northern Missing Link corridor through granted exploration permits EPC 739 and 614 (now covered by mining lease applications MLs 70435, 70434, 70436, 10356 and MDL application MDL 443, and granted ML 4748 as discussed above).. This section has, in part, been subjected to an independent coal sterilisation review by QR. This has involved drill testing along this section of the corridor which resulted in the conclusion that no mineable coal was being sterilized by the proposed route.

EPCs 739 and 614 held by Q Coal and comprising the Byerwen project, were granted in late 2009 and early 2010 respectively, As such there has only been limited time for exploration drilling and the reports on this exploration are as yet unavailable and cannot inform this report.

However a study of previous coal exploration by MIM in EPC 232 (CR25871) and by Griffin Exploration in EPC 61 (CR4169) and GSQ drillholes Drake 23/24R has indicated that this section where it passes over the sub-crop of Moranbah Coal Measures is characterized by Permian strata containing heavily intruded and coked coal seams to depths of 53 to 139 metres depth underlying thick Tertiary basalt and clays from 50 to 91 metres thick.

Further to the south between 288000 metres and the 276000 meter chainage mark and west of within MLA 70436, MIM drilling in EPC232 (CR15326) shows the IFS corridor and the NML follows an alignment which is located 1 to 2km west of the sub-crop limit of the lowest Moranbah Coal seams. The alignment passes over the Blenheim Formation which is a dominantly shallow water marine unit devoid of coal. This is demonstrated in GSQ drill hole Mt Coolon 2 which was drilled 10km north of this section of the IFS corridor. This hole intersected Tertiary clays and sands of the Suttor Formation to 77m then Permian sands and siltstone of the Blenheim Formation to TD of 150.4m. No coal was intersected in the Permian section.

From the 297000 metre chainage mark and the 339000 metre chainage mark where the Hancock IFS corridor follows the existing Newlands-Abbot Point rail line, it is reasonable to conclude that on the basis of the QR studies and the limited available exploration drilling in this area, the Hancock IFS corridor will have limited sterilisation effect on mineable coal resources along this stretch of the corridor. The publically available drilling data certainly does not point to the presence of coal along this section. This is shown by the petroleum well Rosella Creek 1 and the GSQ Drake drill holes 1, 2 and 3. No significant coal was intersected in any of these holes to depths of 300 to 600 metres. It

appears that the rail corridor as it follows along the strike of the strata is passing over the poorly coal bearing unit (Fairhill Formation) between the Moranbah Coal Measures beneath and the Rangal Coal Measures stratigraphically above.

It is concluded that the existing QR rail line which the Hancock IFS corridor will follow, is well positioned and is unlikely to sterilise any coal resources over this section.

From the 339000 meter chainage mark the Hancock IFS corridor separates from the QR rail line and heads in a north-west direction across the Moranbah Coal Measures to the 347000 meter mark. Drilling by MIM in EPC 253 has shown that the Moranbah coal seams in this area are heavily intruded by igneous intrusions. Economically extractable coal resources are therefore unlikely to be present.

Further along this section the Collinsville Coal Measures are crossed between the 358000 meter chainage mark and the 364000 meter chainage mark. At this point the coal measures are intruded by a Cretaceous aged felsic intrusive body and associated dykes and sills.

This geological feature would effectively destroy or render un-mineable any coal resources in this area. This has been demonstrated by several companies over the past 4 decades, in particular Griffin Queensland Exploration (CR5329) in EPC61 and MIM (10795) in EPC 253. Q Coal has also recently partially relinquished 4 sub-blocks (EPC 639) over the area because of the lack of coal potential caused by the igneous felsic intrusions (CR44679).

Because of the extensive igneous intrusions along this section, the Hancock IFS corridor is well positioned to avoid sterilisation of coal resources.

From the 364000 meter chainage mark and the 413500 meter chainage mark, the Hancock IFS corridor passes over the Permian Lizzie Creek Volcanics. This unit is basal to the main Bowen Basin coal bearing formations and is not known for hosting coal resources. The exception is the contained sub-unit; the Crush Creek Coal Measures which have been explored by CAIL (CR 30439) in EPC 521.

Three coal exploration holes (CAIL S1C, S2AC and S3C) were drilled to depths of between 242 and 390 metres without intersecting any significant coal. The Hancock IFS corridor passes over this coal formation between the 391000 meter chainage mark and the 409000 meter chainage mark.

On the basis of these results it is concluded that the likelihood of finding significant coal resources in this section of the Hancock rail corridor is considered very low.

### **Mineral Resource**

Known mineral occurrences, metalliferous exploration and potential

The IFS corridor crosses the Devonian-Carboniferous Palaeozoic Formations of the Silver Hills Volcanics, Raymond Sandstone and Ducabrook Formations between the 54000 meter chainage and the 144000 meter chainage marks and the Lower Palaeozoic Anakie Metamorphics between 144000 meter chainage mark and approximately the 182000 meter chainage.

In this section of railway numerous mineral explorers including Poseidon and Western Mining Corporation have over the past 30 years targeted the volcanic units of the Carboniferous Silver Hills Volcanics for epithermal style gold mineralisation. The only significant discovery has been at the

Twin Hills Prospect which lies 22km distant from the IFS corridor to the north. The gold deposit is held under ML70316 and owned by North Queensland Mines Ltd. The deposit is relatively small by world standards containing a resource of 427,300 ounces of gold.

The gold exploration work has involved bedrock drilling which provides useful information on the underlying geological units. In most cases this has confirmed the presence of shallow Formations of Lower Palaeozoic to Carboniferous age therefore providing conclusive proof that coal resources are unlikely to be present across this section of the IFS corridor.

At the 118,000 meter chainage mark there is a gold prospect known at the Belyando Hill 266 gold prospect. It is a vein type occurrence. Poseidon explored the area (Mistake Creek) in the 1990s in EPM 7514. Extensive drilling to bedrock failed to locate any significant gold mineralisation and the EPM was relinquished. The IFS corridor crosses the area tested by the Poseidon grid drilling. The area is currently held under EPM17488 held by Zamia Resources Pty Ltd.

Between the 182000 meter mark and the 202000 meter chainage mark, the IFS corridor is underlain by a thick section of Tertiary sediment of the Suttor Formation. BHP-Billiton has in the recent past (2003 to 2005) drilled for coal in this area and located a relatively deep section of Permian coal seams lying beneath the Tertiary sediment at depths of over 165 metres. This section of the IFS corridor has been secured under EPC application by Queensland Coal Investments Pty Ltd, a 100% owned entity of Hancock Coal Pty Ltd. Three EPC Applications over the area are 2162, 2163 and 2168.

From the 202000 meter chainage mark and the western edge of the Bowen Basin at approximately the 262000 meter chainage mark there is unlikely to be any Permian coal measures. The western margin of the Bowen Basin has been defined by the GSQ in their report (Record 1987/31) on the Mt Coolon (Sullivan Creek and Eaglefield Areas) stratigraphic drilling programme. The report is registered as CR41718 in the DEEDI QDEX system.

Along this 60km long stretch of the IFS corridor several gold explorers have targeted the area for epithermal gold mineralisation in the Carboniferous Bulgonunna Volcanic Group. These include Battle Mountain of Australia and BHP Minerals. No significant gold mineralisation has been located in the area. Bedrock drilling has confirmed the presence of strongly weathered lithological units of the Carboniferous volcanic formations at depths of up to 50 metres without any evidence of coal seams being intersected in their drilling in the area.

In the same area coal explorers have attempted to locate Permian coal measures west of the recognised western margin of the Bowen Basin without success. The GSQ drilled Mt Coolon 11 (1300 metres east of the IFS corridor) and intersected the Carboniferous Bulgonunna Volcanics at a depth of 40 metres. Mt Coolon 12 drilled 3.8km to the east of this drill hole intersected Permian sandstone and mudstone. This drill hole drilled to a depth of 220.1 meters, intersected five thin coal seams (<1metre) interbanded with intrusive igneous sills between 115.9 and 119.9 meters and penetrated the Carboniferous Bulgonunna Volcanics at 173 metres to the total depth of 200.09 metres.

EndoCoal Limited currently holds granted EPC 1518 and EPC Application 1590 in this section of the IFS rail corridor and are exploring for southerly extension of the Collinsville Coal Measures. Salva

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Resources consider on the available drilling data that the chances of locating significant coal in this area are low.

Further to the south-west along the IFS corridor the Talbot Group in EPC 659 and 660 drilled three stratigraphic drill holes (CH100C, CH102C and CH103C) in pursuit of Permian coal measures in isolated sub-basins. No coal was intersected in any of the holes and it was concluded that the highly weathered material encountered in CH100C is weathered volcanic lithologies of the Carboniferous Bulgonunna Volcanic Group. Drill Hole CH103C drilled 8.5km east of the IFS corridor did possibly intersect Permian strata but was devoid of coal. The position of the hole places it just inside the western limit of the Bowen Basin as defined by the 1987 GSQ drilling.

Coal exploration drilling in this area also shows the presence of a thick surface layer of Tertiary sediments overlying weathered volcanic lithologies of the Bulgonunna Volcanic Units. This is demonstrated in the BHPB drill holes WYP04004 and WYP04005 which were drilled 9.7km and 7.5km east of the IFS corridor respectively. Similarly Phelps Dodge drill holes P4/11 and P4/12 which intersected Carboniferous volcanic lithologies at 99 and 59.4 metres beneath thick sections of Tertiary sediments.

In summary it can be concluded that this stretch of the IFS corridor (202000m to 262000m) is underlain by variable thickness's of Tertiary sediments overlying deeply weathered Carboniferous volcanic lithologies. There is no evidence from the available data that Permian coal measures are present in this section of the IFS corridor. The potential for locating Permian coal of any significance is therefore considered extremely low.

### Mining Leases and Mineral Development Licences – Minerals other than Coal

The IFS does not pass through any mining leases or mineral development licence areas for minerals (other than coal).

The IFS alignment does pass approximately 1.6km from the Conquest Minerals ML Application 10343 Mount Carlton Mine North West of Collinsville traversing the access route and transmission line but not traversing the mining lease area or any resources. Conquest Minerals have been consulted on the route and gave no objection to the proposed IFS route.

#### Exploration Permits for Minerals – Minerals other than coal

The proposed route unavoidably passes through a large number of exploration permits for minerals, both granted and applications. These are listed below in Table 4.

The QDEX data base has been searched for any identified mineral resources to ensure that the route as proposed does not traverse these areas. In addition, although not required to do so, Hancock notified all granted exploration permit holders for minerals in writing (5<sup>th</sup> February 2010) of the proposed route prior to advertising in February. This was in addition to the formal advertising of the IFS route and call for submissions in February 2010. There were no responses to the letters of notification in February and no submissions to the IFS process from holders of exploration permits for minerals.

EPM	PRINCIPAL HOLDER	STATUS	DATE	DATE	DATE	SUB
NO			LODGED	GRANTED	EXPIRES	BLOCKS
18495	ORION METALS LTD	APPLICATION	15-Jan-10			100
18336	NAVAHO MINING PTY LTD	APPLICATION	12-Oct-09			100
18297	NAVAHO MINING PTY LTD	APPLICATION	24-Sep-09			100
18292	GOLD FIELDS AUSTRALASIA PTY LTD	APPLICATION	18-Sep-09			17
18271	LIONTOWN RESOURCES LIMITED	APPLICATION	4-Sep-09			76
18269	LIONTOWN RESOURCES LIMITED	APPLICATION	4-Sep-09			80
17745	CLONCURRY METALS LIMITED	APPLICATION	31-Jul-08			51
16440	DRUMMOND WEST PTY LTD	APPLICATION	9-May-07			64

### **Table 5-Listing of Traversed EPM Applications**

#### **Petroleum and Gas Resources**

The proposed IFS corridor passes through a large number of exploration permits for petroleum and gas and a number of Petroleum Lease applications. These are associated with the coal resources of the Bowen and Galilee Basins. The practice of gas extraction allows significant flexibility when considering the location of well heads. When considering methods such as directional drilling, the width of the rail corridor is unlikely to interfere with future operations.

Consequently it is not considered necessary to examine the gas resources passed over by the IFS as they would not be considered sterilised.

	Table 6-Listing of Traversed Granted EPMs						
EPM NO	PRINCIPAL HOLDER	STATUS	DATE LODGED	DATE GRANTED	DATE EXPIRES	SUB BLOCKS	
17488	ZAMIA RESOURCES PTY LTD	GRANTED	18-Mar-08	5-Nov-09	4-Nov-14	36	
16997	BASIN GOLD PTY LTD	GRANTED	2-Nov-07	21-Feb-08	20-Feb-11	4	
16480	CONQUEST MINING LTD	GRANTED	23-May-07	20-Oct-08	19-Oct-10	41	
15952	CLONCURRY METALS LIMITED	GRANTED	26-Oct-06	14-Dec-07	13-Dec-12	10	
15805	CONQUEST MINING LIMITED	GRANTED	3-Aug-06	20-Feb-08	19-Feb-10	26	
15485	ENERGY MINERALS PTY LTD	GRANTED	14-Mar-06	6-Sep-06	5-Sep-11	50	
14929	DRUMMOND WEST PTY LTD	GRANTED	4-Jan-05	21-Jun-06	20-Jun-08	281	
14928	DRUMMOND WEST PTY LTD	GRANTED	4-Jan-05	16-Jun-06	15-Jun-10	174	
14793	ZAMIA RESOURCES PTY LTD	GRANTED	16-Sep-04	23-Aug-05	22-Aug-10	24	
14790	ZAMIA RESOURCES PTY LTD	GRANTED	16-Sep-04	12-Jan-06	11-Jan-11	49	

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14783	CONQUEST MINING LIMITED	GRANTED	13-Sep-04	3-Aug-06	2-Aug-11	194
14171	ENERGY MINERALS PTY LTD	GRANTED	24-Jul-03	31-Jan-05	30-Jan-10	24
13867	CONQUEST MINING LIMITED	GRANTED	11-Sep-02	10-Apr-03	9-Apr-08	19
12829	CONQUEST MINING LIMITED	GRANTED	27-Oct-99	24-Mar-00	23-Mar-10	2
12527	CONQUEST MINING LIMITED	GRANTED	4-Jan-99	23-Nov-04	22-Nov-09	49
11971	CONQUEST MINING LIMITED	GRANTED	1-Sep-97	31-Aug-04	30-Aug-07	25
11147	CONQUEST MINING LIMITED	GRANTED	15-Apr-96	3-Jul-96	31-Dec-09	18
10164	CONQUEST MINING LIMITED	GRANTED	25-May-94	28-Jun-94	31-Dec-09	33

### Geothermal Resources and Greenhouse Gas Reservoir Areas

The IFS corridor does not traverse any current 'Geothermal Energy' or 'Greenhouse Gas Storage' tenures. If in future any areas beneath the corridor show potential, then as with Petroleum leases and the similar drilling methods employed, the linear infrastructure is unlikely to pose a sterilisation threat.



Table 7-Listing of Exploration Drill Holes in proximity to the Hancock IFS Corridor

	<u> </u>			<u> </u>						
BoreHole ID	Easting	Northing	CR	Tenement	Current	Tenement Holder	Depth	Surface Geology	Coal	Geological Comments
	GDA	GDA	Number	History	Tenement		m (TD)		Y/N	
P4/17	587288	7636464	2790	EPC49	EPC 659	Talbot Group Exploration	298	Blenheim Formation	Ν	Dominantly siltstone and sandstone (marine)
NW025	588892.5	7645658.6	9932	EPC232	EPC 614	Byerwen Coal Ltd	269	Basalt	Y	Tertiary basalt and claystone to 51m then Permian with Goonyella
										Middle @ 208.48 (15.99m and heavily intruded), Goonyella Lower @
										264.57 (8.06m)
NW026	588987.5	7643628.6	9932	EPC232	EPC 615	Byerwen Coal Ltd	103	Basalt	N	Tertiary basalt and claystone to 103metres. No Permian or coal seams.
NW027	588222.5	7646678.6	9932	EPC232	EPC 616	Byerwen Coal Ltd	235	Siltstone	Y	P-Rider seam 57-61.5m, Middle Goonyella Seam ( cindered) 144.4m to
										148.9m and Lower Goonvella (cindered) (230.2 m to 231.3m)
Mount Coolon	581454	7663065	41718	GSQ	EPC 659	Talbot Group Exploration	150.44	Blenheim Formation	Ν	Tertiary clays & sands to 77m then Permian Blenheim Fm
2				Drilling						(sandstone/siltstone) devoid of coal seams to TD. Two porphyry sills.
Mount Coolon	579157.2	7629167.1	41718	GSQ	EPC 1590	Endocoal Ltd	53.8	Colluvium	N	Tertiary clays to 28m then Permian sandstone and claystone to 39.8m
11				Drilling						then acid volcanic of Bulgonunna Volcanics to TD.
Mount Coolon	582971.1	7629167.1	41718	GSQ	EPC 1590	Endocoal Ltd	200.1	Blenheim	Y	Permian sediments from surface to 172m. Interbedded coal (0.03 to
12				Drilling				Formation/Collinsville		0.63m thick) and mudstone from 115.9 - 126.06m (heat affected coal).
				0				Coal Measures		Numerous igneous sills, Bulgonunna Volcanics from 172m to TD.
Chesterfield	557866	7595340	34372	EPC660	EPC 1518	Endocoal Ltd	205	Sand	N	15 metres of Tertiary sand and clay over 117 metres of highly
1000										weathered sediments overlying Carboniferous interhedded claystone
Chesterfield	562413	7614560	34372	EPC660	EPC 1518	Endocoal Ltd	227	Colluvium	N	Tertiary clavs to 142m weathered Carboniferous acid volcanic
1020										(Bulgonunna Volcanics)
Chesterfield	575992	7610262	34372	EPC660	EPC 660	Talbot Group Exploration	174	Alluvium	Ν	Tertiary clays to 91m then Permian sediments intruded by sills to 130m
1030										then Carboniferous Mt Rankin Beds to TD
AV15	551312	7593679	24552	EPM7421	EPC2169	Qld Coal Investments PL	18	Alluvium	N	Weathered Carboniferous acid volcanic (Bulgonunna Volcanics) to 18
										metres
AV05	549111	7591578	23629	EPM7421	EPC2169	Qld Coal Investments PL	84	Alluvium	Ν	Weathered Tertiary clays overlying weathered volcanic (Bulgonunna
										Volcanics) from 60 to 84 metres.
P4/12	563483	7591914	2790	EPC49	EPC2188	Spinifex Rural	114	Alluvium	Ν	Sandstone & mudstone to 76m then tuffaceous mudstone/sandstone
						Management PL				to 114 metres
P4/11	568702	7602713	2790	EPC49	EPC1518	Endocoal Ltd	108	Mt Rankin Fm-	Ν	Claystone to 83metres then sandstone, shale and tuffaceous siltstone
								Carbonifreous		to TD
WYP04004	574678	7604414	39777	EPC878	EPC1518	Endocoal Ltd	195	Alluvium	Ν	Tertiary sediments to 119m then highly weathered volcanic clays to 183
										metres then Anakie Metamorphics.
WYP04005	566852	7591743	39777	EPC878	EPC2188	Spinifex Rural	149	Alluvium	Ν	Tertiary sediments to 80m then weathered and altered volcanic
						Management PL				lithologies.
AVP03014	544352	7578565	36729	EPC807	EPC2163	Qld Coal Investments PL	300	Alluvium	Y	Tertiary sediments to 160m then Permian sediments with coal seams to
										тр
AVE03009	540615	7573107	36729	EPC807	EPC2163	Qld Coal Investments PL	252	Alluvium	Y	Tertiary sediments to 163 metres then Permian sediments with coal
										seams to TD.

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BoreHole ID	Easting GDA	Northing GDA	CR Number	Tenement History	Current Tenement	Tenement Holder	Depth m (TD)	Surface Geology	Coal Y/N	Geological Comments	
AVE03004	534328	7562510	36697	EPC807	EPC2162	Qld Coal Investments PL	159	Alluvium	N	Anakie Metamorphics from 11m to TD.	
AVE03002	527263	7554128	36729	EPC809	EPC2162	Qld Coal Investments PL	180	Sand	N	Anakie Metamorphics from surface to TD	
CAIL S3C	556528	7737349	30439	EPC521	EPC968	Argos (QLD) Pty Ltd	390	Lizzie Creel Volcanics	Y	Only very thin coal seams intersected in the hole	
CAIL S1C	558012	7730858	30439	EPC521	EPC968	Argos (QLD) Pty Ltd	346	Lizzie Creel Volcanics	Y	Only very thin coal seams intersected in the hole	
CAIL S2AC	561644	7728480	30439	EPC521	EPC968	Argos (QLD) Pty Ltd	242	Lizzie Creel Volcanics	Ν	Only very thin coal seams intersected in the hole	
Rosella Creek 1	589400	7692540	3331	EPP167	EPC734	Xstrata Coal	602	Back Creek Group	Ν	Mostly sandstone and siltstone lithogies	
Drake 1	596318	7668995	41683		EPC734	Xstrata Coal	307	Blackwater Group	N	GSQ drilling Record 1976/07 -no coal seams intersected	
Drake 2	595566	7669069	41683		EPC734	Xstrata Coal	314	Blackwater Group	N	GSQ drilling Record 1976/07 -no coal seams intersected	
Drake 4	594730	7669197	41683		EPC739	Byerwen Coal Ltd	310	Blackwater Group	Y	GSQ drilling Record 1976/07 -Very thin coal seam at 150m	
NW007	586782	7655859	25871	EPC232	EPC739 MLA 70434	Byerwen Coal Ltd	74	Moranbah Coal Measures	N	Tertiary basalt to 70 metres then Tertiary sand stone to 74 metres	
NW008	586563	7657438	25871	EPC232	EPC739 MLA 10357	Byerwen Coal Ltd	197	Moranbah Coal Measures	Y	Tertiary basalt to 51 metres then Tertiary clays to 91 metres. Permian coal seams in 5 intervals cindered & intruded by igneous sills to TD	
NW017	584087	7647596	11199	EPC232	EPC659	Talbot Exploration Group	29	Blenheim Formation	N	Quaternary alluvium to 13m then Permian siltstone and carbonaceous	
NW018	584952	7646359	25871	EPC232	EPC739 MLA 70436	Byerwen Coal Ltd	30	Blenheim Formation	N	Tertiary sediment to 30 metre	
NW023	586763	7656199	25871	EPC232	EPC739 MLA70434	Byerwen Coal Ltd	222	Moranbah Coal Measures	Y	Tertiary basalt to 69 metres then Tertiary sediments to 91 metres then Permian sediments with minor coal and igneous sills. MIM concluded the intersected sequence was part of the marine Blenheim Formation.	
NW033	586622	7655329	25871	EPC232	EPC739 MLA 70434	Byerwen Coal Ltd	49	Moranbah Coal Measures	Y	Tertiary clays & silts, minor basalt to 30m then Permian sediments with several thin coal seams	
61/07	588298	7658492	4169	EPC61	EPC739	Byerwen Coal Ltd	144	Fairhill Formation	Y	Tertiary basalt to 26m then Permian sediments to 144m with two coal seams, 5m at 84 metres depth (cindered) and 1.99m at 139.6m (not cindered).	
61/11	587712	7658253	4169	EPC61	EPC739	Byerwen Coal Ltd	132	Moranbah Coal Measures	Y	Tertiary clays and minor basalt to 50m then Permian sediments with one coal seam; 3m at 67m	
61/13	587941	7658455	4169	EPC61	EPC739	Byerwen Coal Ltd	114	Moranbah Coal Measures	Y	Tertiary sediments to 10.7m then Permian sediments to TD with 3 coal seams; 1.2m at 22.9m, 1.4m at 53m& 0.6m at 88m	
61/14	587461	7658043	4169	EPC61	EPC739	Byerwen Coal Ltd	92	Moranbah Coal Measures	N	Tertiary clays & basalt to 50.3 metres then Permian sediments to TD with no coal intersected.	

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BoreHole ID	Easting	Northing	CR	Tenement	Current	Tenement Holder	Depth	Surface Geology	Coal	Geological Comments
	GDA	GDA	Number	History	Tenement		m (TD)		Y/N	
61/34	588351	7657869	4169	EPC61	EPC739	Byerwen Coal Ltd	186	Moranbah Coal Measures	Y	Tertiary clays and basalt to 71.9m then two coal seams; 2.4m at 99.7m & 1.2m at 131m.
61/35	588591	7658644	4169	EPC61	EPC739	Byerwen Coal Ltd	206	Moranbah Coal Measures	Y	Tertiary basalt and sediments to 61m then Permian sediments to TD with coal seam 4.6m thick at 199.6m. Two igneous sills taken out two
										coal seams.
Drake 23/24R	587003	7653704	41683		EPC739	Byerwen Coal Ltd	346.3	Moranbah Coal Measures	Y	Tertiary basalt to 67m then Permian to TD. 6.6 metre coal seam @ 188.7m. Igneous sills at 158 m and 298m.
H499	582993	7701608	26834	EPC 253	EPC 768	Rosella Creek Coal Pty Ltd	36.4	Moranbah Coal Measures	Y	Cindered coal @ 26-34m. Grey/green Triassic fine sandstone to 24m then Permian coal interbedded with mudstone to 36m with porphyrytic igneous intrusions.
H510	581513	7700638	26834	EPC 253	EPC 768	Rosella Creek Coal Pty Ltd	28.2	Moranbah Coal Measures	Y	Cindered coal @ 18-26m. Permian sandstone and coal to 28m with porphyrytic igneous intrusions.
H514	584443	7701219	26834	EPC 253	EPC 768	Rosella Creek Coal Pty Ltd	52.2	Moranbah Coal Measures	Y	Cindered coal @ 41-49m. Permian sandstone and coal from surface to depth with porphyrytic igneous intrusions from 37m.
H698	585653	7701238	26834	EPC 253	EPC 586	Bowen River Coal Pty Ltd	84	Moranbah Coal Measures	Y	Cindered coal @ 45-54m and 83m. Triassic grey/green fine sandstone to 39m. Permian sandstone, coal and mustone to depth with porphyrytic igneous intrusions.
H534	586523	7701558	26834	EPC 253	EPC 586	Bowen River Coal Pty Ltd	36.5	Moranbah Coal Measures	Y	Cindered coal @ 26-34m. Triassic grey/green fine sanstone to 25m. Permian sandstone, coal and mudstone to 35m with feldspathic igneous intrusions.
H346	585482	7706428	26834	EPC 253	EPC 586	Bowen River Coal Pty Ltd	71	Moranbah Coal Measures	Y	Cindered coal @ 32m and 59-69m. Permian sandstone, coal and mustone to depth with porphyrytic igneous intrusions.
H347	585662	7705928	26834	EPC 253	EPC 586	Bowen River Coal Pty Ltd	85.9	Moranbah Coal Measures	Y	Cindered coal @ 74-82m. Permian sandstone, coal and mustone to total depth with porphyrytic igneous intrusions.

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**Appendix I- Detailed IFS Corridor Maps** 

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