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OWNERSHIP OF MINERALS AND NATURAL RESOURCES

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1.1 Introduction

1.1.1 The nature and scope of energy resources in Australia

Energy resources in Australia encompass a multitudinous range of different forms of renewable and non-renewable resources. These resources are largely utilised to generate energy for domestic and international customers. Australia has an abundance of non-energy mineral resources, which are utilised for other purposes, such as building and construction (iron ore for steel) or technology (copper for copper wiring). Western Australia has one of the world's largest economic reserves of iron ore. In 2011, the output for iron ore was 474 million tonnes and constituted 97 per cent of Australian production. The bulk of Western Australian iron ore was exported to China, which imported 70 per cent of production in 2010, followed by Japan with 19 per cent and South Korea with 10 per cent. Extraction and commercialisation of iron ore generates vast amounts of money for the government. In the financial year from 2011–2012, the Western Australian government received over A\$3.9 billion in royalties from the iron ore mining industry.

The current energy market in Australia focuses extensively upon the commercialisation of fossil fuels, such as coal and gas. Coal is particularly abundant in the eastern states of New South Wales and Victoria. Both states have large reserves of black and brown coal, with the reserves constituting 10 per cent of the world's total resources. Australia also has more than one-third of the world's known uranium resources.¹ Australia's identified conventional gas resources have increased threefold over the past 20 years, with approximately 90 per cent of estimated recoverable reserves of conventional gas located off the west and north-west coast. Additionally, the commercial utilisation of Australia's resources of coal seam gas, located in the black coal deposits of Queensland and New South Wales, has expanded rapidly.²

In Western Australia, for example, the Gorgan natural gas project, which is located on Barrow Island off the Pilbara coast, is one of the largest natural gas projects in the world. By the time production of liquefied natural gas (LNG) commences at the end of 2015, it will represent one of Australia's most significant fossil fuel projects and one of the most effective for emission reduction, given its

¹ See Australian Government, Department of Agriculture, *Energy in Australia 2011* (2011), 3 http://www.daff.gov.au/ABARES/pages/publications/display.asp?url=http://143.188.17.20/anrd/DAFFService/display.php?fid=pe_abares99001789_13f.xml. The report notes at p. 9 that Australia's energy consumption is primarily composed of fossil fuels (coal, oil, and gas), which represent 95 per cent of total energy consumption.

² Ibid 8.

incorporation of the latest carbon capture sequestration (CCS) technology. In contrast, transport fuels such as crude oil and liquefied petroleum are more limited in stock. This has meant that Australia has become increasingly dependant upon oil imports.

Renewable energy is essentially energy derived from natural processes that are replenished constantly. In its various forms, it derives directly or indirectly from the sun or from heat generated deep within the earth. Included within the definition of renewable energy is energy generated from solar, wind, biomass, geothermal, hydropower and ocean resources, and biofuels and hydrogen derived from renewable resources.³

Historically, renewable energy has been the only viable energy option. Wind and water were utilised to power ships and turn windmills and water wheels for mechanical needs. However, with the advent of the industrial revolution, expanding energy requirements led to the discovery and use of the first hydrocarbon-based fuel: coal. When the use of this and other fossil fuels became possible on a large scale, few renewable energy techniques were capable of competing.⁴ More recently, however, with the increasing importance of climate change mitigation, energy security, the provision of inexpensive and uninterrupted energy supply to consumers, and the vast improvements in the performance and affordability of solar cells, wind turbines and biofuels, the large-scale commercialisation of renewable technologies have been reconsidered.⁵

Solar energy production in Australia is slowly gaining market presence. Additionally, wind, solar, geothermal, hydro, wave, tidal, and bio-energy are all readily available and are developing a stronger market presence, particularly given the impetus to commercialise energy resources with low greenhouse gas emissions.⁶ To date, the difficulty with the renewable energy market in Australia has been the underdevelopment of technology to support the implementation of a strong and consistent production and this has impeded the capacity of the renewable sector to gain market share. This situation is rapidly changing as technology advances. It is predicted that by 2030 the energy mix in Australia is likely to incorporate a substantial range of different renewable energy resources given the climate change imperatives involved.⁷

3 Ibid 2.

4 See B Sorenson, 'A History of Renewable Energy Technology' (1991) (January/February) *Energy Policy* 8, 10–12. See also B Sorenson, *A History of Energy: Northern Europe from the Stone Age to the Present Day* (Routledge, 2012).

5 See D Kammen, 'The Rise of Renewable Energy' (2006) (September) *Scientific AM* 82, 85.

6 See the Australian Government, Department of Industry Geoscience Australia, Bureau of Resources and Energy Economics, *Australian Energy Resource Assessment Second Edition* (2014) http://www.ga.gov.au/webtemp/image_cache/GA21797.pdf.

7 Ibid 8–9.

In any discussion of the ownership framework that underpins minerals and energy resources in Australia, the primary focus will be upon corporeal fossil fuels residing within the subsurface strata. These resources have a tangible presence and are therefore amenable to control and ownership. They are also subject to statutory vesting provisions. Legislation in most states deals with mineral resources in a separate legislative framework to the regulatory framework that governs petroleum and hydrocarbon resources. The rationale for this bifurcation lies in the location in which the resources are found and also the fundamental difference in their corporeal characteristics. A hydrocarbon is an organic compound that consists entirely of hydrogen and carbon. The predominant use of hydrocarbons is as a combustible fuel source, although as a solid, hydrocarbons form asphalt or bitumen. Hydrocarbons may be located on and offshore. A mineral is an inorganic compound, usually abiogenic and with an ordered atomic structure.⁸ There are over 4900 known mineral species; each is distinguished according to their chemical composition and crystal structure. Minerals tend to be located onshore, although there is a small sand and limestone offshore mineral industry in Brisbane and Western Australia.⁹

The Queensland framework provides a prime example of the separate regulation of minerals and hydrocarbons in Australia. The *Mineral Resources Act 1989* (Qld) defines minerals in s 6 to include a substance, normally occurring naturally as a part of the earth's crust, dissolved or suspended in water or within the earth's crust, or capable of being extracted from the earth's crust or water in the earth's crust. This includes clay, sand, coal seam gas, limestone, marble, peat, salt, oil shale, and rock mined in slabs for building purposes. Soil, sand, gravel, rock, living matter, steam or water is explicitly excluded from the definition of a mineral. Similar provisions exist in other states.¹⁰

By contrast, in the *Petroleum Gas (Production and Safety) Act 2004* (Qld), petroleum is defined in s 10 as a substance consisting of hydrocarbons (hydrocarbon can exist in a gaseous, liquid or solid state) which occurs naturally in the earth's crust, a substance that is extracted or produced as a by-product of hydrocarbon, or a fluid that is extracted from coal or oil shale and consists of hydrocarbons. Section 10(3) explicitly sets out, for the purposes of clarification, that petroleum does not include: alginate, coal, lignite, peat, oil shale, torbanite or water. Further, a substance will not cease to amount to petroleum merely because it is injected

⁸ The precise definition of a mineral is the subject of some debate. Minerals are mainly oxides and sulfides and, like most of the surface of the earth, organic in nature.

⁹ See the Australian Government, Geoscience Australia, *Offshore Minerals Fact Sheet* (2012) http://www.australianminesatlas.gov.au/education/fact_sheets/offshore_minerals.html.

¹⁰ *Mineral Resources (Sustainable Development) Act 1990* (Vic) s 4 and sch 4; *Mining Act 1992* (NSW) Dictionary; *Mining Act 1971* (SA) s 6; *Mineral Resources Development Act 1995* (Tas) s 3; *Mining Act 1978* (WA) s 8; *Mineral Titles Act 2010* (NT) s 9.

or reinjected into a natural underground reservoir. Similar provisions exist in other states.¹¹

1.2 Ownership of the subsurface strata at common law

In all Australian states and territories, the ownership of subsurface non-renewable minerals has either been reserved or vested in the state pursuant to specific statutory vesting provisions or reservations on title provisions enacted under mineral and petroleum state legislation.¹²

The introduction of these provisions has significantly diminished the rights of the surface estate owner that existed at common law and which were essentially encapsulated within the maxim *cujus est solum, ejus est usque ad coelum et ad inferos*. Literally translated, the maxim states that the person who owns land owns it from the heavens above to the centre of the earth below.¹³ This maxim is a fundamental component of the common law framework for land and mineral ownership. It presumes that ownership of the subsurface strata, which includes minerals and natural resources residing in that strata, belong to the surface estate owner.¹⁴ The principle was recognised in English law in 1586 in the decision of *Bury v Pope* and was therefore a component of the common law inherited by Australia upon colonisation.¹⁵

In operation, the maxim prescribes to a surface estate owner an infinite stretch of ownership in the airspace above the land and in the subsurface strata below the land. Taken literally, this ownership assumption is unfeasible; hence, it has been interpreted as authorisation for the common law assertion of ownership over

11 *Petroleum (Onshore) Act 1991* (NSW) s 6; *Petroleum and Geothermal Energy Resources Act 1967* (WA) s 10; *Petroleum Act 1998* (Vic) s 6; *Petroleum (Submerged Lands) Act 1982* (Tas) s 3; *Petroleum and Geothermal Energy Act 2000* (SA) s 4.

12 See, eg, *Petroleum and Gas (Production and Safety) Act 2004* (Qld) s 26; *Petroleum (Onshore) Act 1991* (NSW) s 6; *Petroleum and Geothermal Energy Resources Act 1967* (WA) s 10; *Mineral Resources (Sustainable Development) Act 1990* (Vic) s 9.

13 See the discussion on the nature of the maxim by P Butt, *Land Law* (Thomson Reuters, 6th ed, 2010) [2.05]–[2.07]. See also J G Sprankling, 'Owning the Center of the Earth' (2008) 55 *University of California and Los Angeles Law Review* 979, 988–92. The author argues that the maxim is simply a shorthand approach confirming that a landowner owns the subsurface to the extent necessary to support normal and reasonable uses of the surface.

14 See A J Bradbrook, 'Relevance of the Cujus Est Solum Doctrine to the Surface Landowner's Claims to Natural Resources Located Above and Beneath the Land' (1987–1988) 11 *Adelaide Law Review* 462, 462–3.

15 *Bury v Pope* (1586) Cro Eliz 118; 78 ER 375. See also J R S Forbes and A G Lang, *Australian Mining and Petroleum Laws* (Butterworths, 2nd ed, 1987) ch 2.

the subsurface strata down to a reasonable level.¹⁶ In this respect, the maxim has functioned as a general guide for common law principles rather than an exact measure.¹⁷ In *Commissioner for Railways v Valuer General*, the Court noted that use of the Latin phrase, ‘whether with reference to mineral rights, or trespass in the air space by projections, animals or wires, is imprecise and it is mainly serviceable as dispensing with analysis’.¹⁸

Similarly, the English Court of Appeal in *Star Energy Onshore Ltd v Bocardo Ltd* described the Latin ‘brocard’ as having relevance purely as ‘an imperfect guide’.¹⁹ In that case, Aikens LJ went on to conclude that the ‘correct’ common law position is that ‘the registered freehold proprietor of the surface will also be the owner of strata beneath the surface including minerals unless there has been an express or implied alienation to another’.²⁰

The facts of the *Bocardo* decision are interesting and provide a relevant outline of issues pertinent to sub-strata ownership. The landowner plaintiff sued Star Energy Onshore Ltd in trespass because it had been drilling for petroleum under the plaintiff’s land. The well-head, which is the facility at the surface of an oil or gas well providing the structural and pressure-containing interface for drilling and production equipment, was located on neighbouring land. However, the drilling pipelines descended to a depth of 2800 feet and extended into the plaintiff’s land. The company had obtained a licence to extract petroleum but the licence did not allow the company to lay pipelines on the neighbouring land and in not seeking the plaintiff’s permission to do that, the company had breached the common law ownership rights of the plaintiff.

16 See Sprankling, above n 13, 1039 where the author concludes that ‘productive human activity is only possible within the shallowest portion of the earth’s crust’ and that consequently, subsurface ownership should only extend down to a specified depth of 1000 feet. Cf J Howell, ‘Subterranean Land Law: Rights Below the Surface of the Land’ (2002) 53 *North Ireland Law Quarterly* 268, 270 where the author rejects the concept of ownership to a specific depth arguing that ‘any intrusion in land which is not sanctioned by some counter-veiling property right will constitute a trespass and that, although the surface owner will not usually wish to or be able to utilise the ground below the surface, he has rights in the land which could be valuable’.

17 In *Commissioner for Railways v Valuer General* [1974] 1 AC 382 the Court concluded that the maxim was imprecise. In *Bocardo SA v Star Energy UK Onshore Ltd* [2010] 3 WLR 354, Lord Hope suggested that the latin maxim, whilst flawed, nevertheless retained some utility as a general guide to subsurface ownership under common law. See also P Butt, ‘How Far Down Do You Own? The Final Word’ (2010) 84 *Australian Law Journal* 746.

18 *Commissioner for Railways v Valuer General* [1974] 1 AC 382, 351.

19 *Star Energy Onshore Ltd v Bocardo Ltd* [2010] 1 Ch 100, [26] (‘*Bocardo*’). See also *Hinkley v Star City Pty Ltd* [2010] NSWSC 1389, [226] (Ward J) who, in upholding *Bocardo*, notes that the paper title-holder of the surface estate is ‘deemed’ to have possession of the subsurface strata.

20 *Bocardo* [2010] 1 Ch 100, [59]. See also Butt, above n 17, 748.

The Court of Appeal concluded that a literal application of the maxim would lead to absurdities: if property rights continued down as far as the core of the earth, landowners would all have a 'lot of neighbours'.²¹ Hence, in order to apply a sensible principle, their Lordships concluded that: 'the owner of the surface is the owner of the strata beneath it, including the minerals that are to be found there, unless there has been an alienation of them by a conveyance, at common law or by statute to someone else', and that this extended down as far as 'the point at which physical features such as pressure and temperature render the concept of the strata belonging to anybody so absurd as to be not worth arguing about'.²²

On the facts, the entitlements of the licences included a right to use reasonable (ordinary and proper) means to extract the resource and this incorporated boring into the ground and laying down drilling pipelines. However, laying drilling pipelines in the subsurface strata of neighbouring property was beyond the scope of the licence and therefore went beyond what could be regarded as reasonable. The Court of Appeal concluded that Star Energy Onshore Ltd did commit a technical trespass, although on the facts the plaintiff had suffered no loss of enjoyment. Damages were assessed in the same manner as cases of compulsory land purchase and were therefore assessed strictly with the Court awarding only £1000.

The Supreme Court subsequently affirmed the decision of the Court of Appeal. Lord Hope agreed that the maxim, whilst not a literal tool, nevertheless retained some utility as a general guide for common law subsurface ownership and therefore remained 'good law'. His Lordship stated:

The better view, as the Court of Appeal recognised, is to hold that the owner of the surface is the owner of the strata beneath it, including the minerals that are to be found there, unless there has been an alienation of it by a conveyance, at common law, or by statute to someone else. That was the view which the Court of Appeal took in *Mitchell v Mosely* [1914] 1 Ch 438. Much has happened since then, as the use of technology has penetrated deeper and deeper into the earth's surface. But I see no reason why its view should not still be regarded as good law. There must obviously be some stopping point, as one reaches the point at which physical features such as pressure and temperature render the concept of the strata belonging to anybody so absurd as to be not worth arguing about. But the wells that are at issue in this case, extending from about 800 feet to 2,800 feet below the surface, are far from being so deep as to reach the point of absurdity. Indeed the fact that the strata can be worked upon at those depths points to the opposite conclusion.

²¹ *Bocado* [2010] 1 Ch 100, [60].

²² *Bocado* [2010] 1 Ch 100, [13]–[14].

I would hold therefore that Bocardo's title extends down to the strata through which the three wells and their casing and tubing pass.²³

The Supreme Court also upheld the Court of Appeal's conclusion regarding the calculation of damages. Lord Brown (with whom Lords Walker and Collins agreed) accepted Star Energy's submission that, in effect, the *Mines (Working Facility and Supports) Act 1966* provided for a compulsory purchase from Bocardo of a right of access. This meant that damages should be based on case law relating to compulsory land purchases. The core principle underpinning compulsory purchase valuations is that 'compensation for the compulsory acquisition of land cannot include an increase of value which is entirely due to the scheme underlying the acquisition'.²⁴ This effectively meant that the value is not what the grantee is gaining, but what the grantor is losing. As Bocardo had no right to the oil beneath its land, it had not actually lost or diminished any specific value. Lord Brown summarised the position:

The correct analysis seems to me to be this: that by these provisions [i.e the 1934 and 1966 Acts] Parliament was at one and the same time extinguishing whatever pre-existing key value Bocardo's land may be thought to have had in the open market and creating a new world in which only the Crown and its licencees had any interest in accessing the oilfield and in which they had been empowered to do so (to turn the key if one wants to persist in the metaphor) compulsorily and thus on terms subject to the *Pointe Gourde* approach to compensation.²⁵

Accordingly, Bocardo's appeal on quantum was dismissed and the Court of Appeal's determination that the compulsory purchase value of an access right through the substrata was £1000 was upheld.²⁶

23 *Star Energy Weald Basin Ltd v Bocardo SA* [2011] AC 380, [26]–[28]. See also *Finlay Stonemasonry Pty Ltd v JD & Sons Nominees Pty Ltd* [2011] NTSC 37, [45] where Blokland J stated: 'Lord Hope takes a generous view of the legitimacy of the maxim for ownership ... below the surface, it is suggested this must yield to contrary intention, and to relevant rules of construction, including here, the purpose of the lease and the objectively determined intention of the parties. In my view the maxim must be applied with some caution ... must yield to the reasonable construction of the lease'. See also the general discussion by A Bradbrook, 'Relevance Of The *Cujus Est Solum* Doctrine To The Surface Land Owners Claims To Natural Resources Located Above And Beneath The Land' (1988) 11 *Adelaide Law Review* 462.

24 See *Pointe Gourde Quarrying & Transport Co Ltd v Sub-Intendent of Crown Lands* [1947] AC 565, 572 (Lord McDermott). This was also discussed in *Waters v Welsh Development Agency* [2004] 1 WLR 1304, [40] (Lord Nicholls) and [124] (Lord Brown); and in *Transport for London v Spirerose Ltd* [2009] 1 WLR 1797, [19] (Lord Walker).

25 *Star Energy Weald Basin Ltd v Bocardo SA* [2011] AC 380, [90].

26 Lord Brown concluded that this calculation of damages was 'positively generous' in the circumstances: [2011] AC 380, [92].

Common law ownership of subsurface strata has been subject to a range of different qualifications. It has no application to surface estate grants that are subject to express height or depth limitations or to any express reservation contained in a Crown grant that concerns minerals.²⁷ It has also been substantially qualified by the introduction of a range of judicial and statutory modifications. The application of the maxim to airspace is severely limited because of its potential to interfere with air travel and satellite navigation.²⁸ Further, the introduction of a public ownership framework for subsurface minerals and petroleum has made the maxim virtually redundant in the sphere of mining and energy law in Australia and removed its core functionality.²⁹

In a public ownership framework, the notion of land as a three-dimensional concept, with surface, subsurface and airspace domains, has facilitated the legal acceptance of what has been described as 'horizontal and vertical subdivisions'.³⁰ Surface land is vertically subdivided but subsurface strata may be horizontally divided so that it is possible for particular levels to be the subject of different mineral and petroleum ownership rights. Any common law rights of the landowner must therefore interact with the statutory entitlements of the Crown to minerals and petroleum and the statutory entitlements of resource title-holders to extract the minerals and petroleum. Interaction may also occur with the entitlements of third parties regarding pipeline access and carbon capture sequestration licences for the injection into subsurface reservoirs.³¹

27 Some Acts specifically incorporate this right. The *Western Lands Act 1901* (NSW) sch 4, cl 5 specifically sets out that the Minister may 'limit a grant to the surface of the land or to the surface and a state depth below the surface'. Clause 5(2) then sets out that land 'excluded by such a limitation is surrendered to the Crown'.

28 In *Bernstein v Skyviews & General Ltd* [1978] QB 479, 481 Griffiths J concluded that the rights of a surface owner to airspace should be restricted to 'such height as is necessary for the ordinary use and enjoyment of his land and the structures upon it'.

29 See T Hunter and M Weir, 'Property Rights and Coal Seam Gas Extraction: The Modern Property Law Conundrum' (2012) 2 *Property Law Review* 71, 77.

30 See *Walker Superannuation Fund v Clough Property Fairmont Pty Ltd* [2010] WASCA 232, [22] where Martin CJ quotes from Windeyer J in *Bursill Enterprises Pty Ltd v Berger Bros Trading Pty Ltd* (1971) 124 CLR 73 at 91: 'Therefore, at common law he [the freeholder] could dispose of a part of his holding by horizontal subdivision, just as by vertical subdivision. There were objections to this in medieval times: see Challis's *Real Property* 3rd Ed (1911), p. 54. But by Coke's time these had disappeared. He said: 'A man may have an inheritance in an upper chamber though the lower buildings and soil be in another, and seeing it is an inheritance corporeal it shall pass by livery'.

31 See, eg, *Greenhouse Gas Geological Sequestration Act 2008* (Vic) s 14(1) which sets out that the 'The Crown owns all underground geological storage formations below the surface of any land in Victoria'; and in s 14(4) that 'The Crown is not liable to pay any compensation in respect of a loss' that this might cause.

1.3 Public ownership for minerals and petroleum

Towards the end of the nineteenth century the private ownership of minerals and petroleum was rejected in Australia in favour of state ownership. Commencing in New South Wales, all states and territories passed legislation reserving all minerals in land for future Crown grants.³² This legislation operated prospectively, although some jurisdictions introduced retrospective vesting legislation.³³ Retrospective legislation, vesting minerals in the state, exists in South Australia, the Northern Territory, and Victoria.³⁴ The effect of the retrospective legislation is that the relevant minerals (with the exception of exempted minerals) are regarded as having always belonged to the Crown, rather than ownership being transferred to the Crown at the date when the legislation was introduced. In the states where prospective legislation has been introduced, some minerals continue to be owned privately, as a consequence of Crown grants issued in the nineteenth century.

The shift from private ownership of subsurface minerals and petroleum to public ownership reflects a shifting awareness of the open nature of natural resource interests. According to this perspective, benefits accruing from the exploitation and commercialisation of subsurface resources are best treated as belonging to the community as a whole rather than being treated as a fortuitous gift to the surface estate-holder that happens to own the land above them.³⁵ The core justification for implementing a public or state-based ownership framework was the perceived need to ensure that in a country of abundance, minerals and petroleum

³² *Crown Lands Act 1884* (NSW) s 7; *Land Act 1891* (Vic) s 12; *Mines Act 1891 (No 2)* (Vic) s 3; *The Mining on Private Land Act 1909* (Qld) ss 6, 21; *Crown Lands Act 1888* (SA) s 9; *Mining Act 1904* (WA) s 117; *The Crown Lands Act 1905* (Tas) s 27. See also the discussion in Forbes and Lang, above n 15, 17–26. The effect of a reservation is that the Crown retains all rights to something specifically excluded by the terms of the grant: *Doe d Douglas v Lock* (1835) 2 Ad & E 705; 111 ER 271.

³³ See the discussion by S Christensen, P O'Connor, W Duncan and R Ashcroft, 'Early Australian Land Grants and Reservations: Any Lessons to the Sustainability Challenge to Land Ownership' (2008) 1 *James Cook University Law Review* 15 at 26 discussing the gradual changes to the regulatory framework that dealt with mineral reservations. See also N J Campbell Jr, 'Principles of Mineral Ownership in Civil Law and Common Law Systems' (1957) 3 *Tulane Law Review* 303.

³⁴ *Mining Act 1971* (SA) s 16; *Mineral Resources (Sustainable Development) Act 1990* (Vic) s 9; *Minerals (Acquisition) Act* (NT) s 3; *Northern Territory (Self-Government) Act 1978* (Cth) s 69(4).

³⁵ See especially A Cox, 'Land Access for Mineral Development in Australia' in R G Eggert (ed), *Mining and the Environment: International Perspectives on Public Policy* (Resources for the Future, Washington DC, 1994) 21. See also the discussion by P Babie, 'Sovereignty as Governance' (2013) 36 *University of New South Wales Law Journal* 1075, 1103.