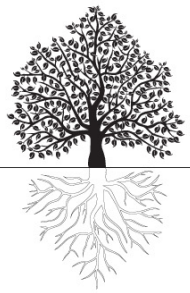

Rights of the landholder for protection of groundwater in the Project areas constituting AGL Camden Gas Project Stages 1 and 2

"Water water everywhere not a drop to drink"

by Marylou Potts Pty Ltd
8 June 2011

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Executive Summary

"Along with air, water is one of the most fundamental requirements for the survival of living things."[1] Groundwater once polluted or contaminated cannot easily be rehabilitated, and once lost, not quickly recharged[2]. As a public good[3], water needs to be protected by responsible governments in their allocation of resources to commercial entities whose interests are clearly in conflict.

Groundwater aquifers surrounding coal seam gas aquifers are susceptible to both pollution[4] and contamination[5] from coal seam gas mining[6]. As a consequence, protection of those aquifers must be a fundamental priority in any coal seam gas exploration and production activities.

The Camden Gas Project (**CGP**) has been in operation since 2002. Stages 1 and 2 include 130 coal seam gas wells and associated gas gathering infrastructure and hydrofraccing is authorised. On 23 September 2010, AGL Upstream Investments Pty Ltd (**AGLUI**) applied for the northern expansion of the CGP referred to as Stage 3. The Department of Planning (**DoP**) is currently considering that application.

The petroleum production leases for Stages 1 and 2 together with applicable NSW legislation contain clear obligations not to pollute or contaminate groundwater and to implement and conduct operations to ensure that such pollution or contamination does not occur. AGLUI has not implemented or conducted operations so as to ensure there is no pollution or contamination of groundwater in the Petroleum Production Leases (**PPL**). AGLUI has done nothing in relation to groundwater[7]. As a consequence, whether there has been pollution or contamination of groundwater over the last 9 years is yet to be determined.

This paper investigates the rights of the landholder in light of these facts under the Petroleum (Onshore) Act 1991 (NSW), the Protection of Environment Act 1997 (NSW, the Water Act 1912 (NSW), the Water Management Act 2000 (NSW) and the Contaminated Land Management Act 1997 (NSW) and under an access arrangement had with the miner. It concludes that judicial review actions under the reviewed legislation place a significant burden on the landholder to monitor and regulate the actions of the miner, who is often

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[1] Pigram JJ, 2006 *Australia's Water Resources* CSIRO Publishing p.1
2 NSW State Groundwater Policy Framework Document 1997 Forward
3 Baye M. 2009 p524 "Public good is a good that is non rival and non exclusionary in consumption." Water, as rain is a public good, no one can be excluded from receiving it or precluded from consuming it. However, when it comes under the control of man, it loses it's public good qualities and becomes owned by the State like minerals. It falls into a complicated category of partly public good and partly state good.
4 Pollution from the very salty coal seam gas aquifer. "Pollution " as defined in the PEOA.
5 Contamination from the hydrofraccing and BTEX chemicals released from the coal seam. "Contamination" as defined in the CLMA.
6 Hillier J 2010, Mudd G 2010, Helmuth 2008, Osborn 2011
7 AGLUI has admitted that it has carried out no hydrology or hydrogeology study and done no groundwater monitoring for the CGP7.

significantly better resourced, informed and experienced in ensuring it's operations continue. The legislation does not allow for a responsible landholder to take on a monitoring role and the facts indicate that the responsible government bodies have been asleep at the wheel, leaving the groundwater, surrounded by the Sydney water catchment area, vulnerable to pollution and possibly contamination from AGLUI's CGP coal seam gas activities.

1 Introduction

1.1 This paper

This paper solely concerns groundwater protection.

The paper reviews AGL Upstream Investment Pty Ltd's (**AGLUI**) groundwater obligations in its Camden Gas Project, south west of Sydney on an area of land which is surrounded by Sydney's water catchment. The material reviewed includes:

(a) that submitted by or on behalf of AGL which is located on its website and on the website of the NSW Department of Planning[8](DoP);

(b) AGLUI's 5 Petroleum Production Leases (**PPL's**) and petroleum exploration licence (**PEL**) obligations relating to groundwater;

(c) the remedies available under the Petroleum (Onshore) Act 1991 (NSW) (**POA**) to the landholder to protect groundwater under its land;

(d) the utility of the access arrangement to protect the rights of the landholder;

(e) the legislative regime applicable to AGLUI and the CGP which concerns protection of groundwater:

(i) Protection of Environment Operations Act 1997 (NSW)

(ii) Water Act 1912 (NSW);

(ii) Water Management Act 2000 (NSW); and

(iii) Contaminated Land Management Act 1997 (NSW),

and the remedies available under these legislative instruments to the landholder against the NSW Government to cure current apparent administrative failings; and

(f) if damage were found, whether AGLUI's failure could found an action in negligence, nuisance and or recklessness.

[8] http://majorprojects.planning.nsw.gov.au/index.pl?action=search&page_id=&search=camden+gas+project&authority_id=&x=0&y=0

1.2 Coal seam gas mining impacts on groundwater

The potential impacts of coal seam gas mining on the surrounding groundwater include:

(a) pollution of groundwater from the heavily salinated coal seam gas water[9];

(b) pollution and potential contamination of groundwater from BTEX chemicals found in the coal seam[10];

(c) pollution and potential contamination of groundwater from hydrofraccing chemicals[11];

(d) pollution and potential contamination of groundwater with methane[12]; and

(e) dewatering of the coal seam aquifers resulting in a lowering of the water table and dewatering of overlying aquifers[13].

This pollution and potential contamination occurs when a coal seam is depressurised by drilling into it.[14] The reduction of hydrostatic pressure within the coal seam can result in subsidence, faulting and consequent hydraulic connectivity between aquifers that overlie or underlie the coal seam aquifer.[15]

It is worth noting there may be little difference between petroleum exploration drilling of boreholes and petroleum production in the effect on surrounding aquifers.[16] Both activities will

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9 Atkinson C 2002 "Environmental Hazards of Oil Exploration" Prepared for National Parks Association of NSW Inc. Sydney p4 "In Australia, water produced with hydrocarbon resources is often unsuitable for domestic or agricultural purposes because of it's high salinity. The presence of toxic or radioactive compounds has been largely ignored and unlike most European countries and the USA, tests for these substances do not appear to be routinely carried out in Australia. Total salinities range from 1,000 mg/L to 400,000mg/L. For comparison, the salinity of sea water is 35,000mg/L and the US EPA's recommended safe drinking water limit is 500mg/L (USGS Fact Sheet FS-003-97)."

10 Lloyd-Smith Dr M., Senjen Dr R., 2011 Briefing paper Hydraulic Fracturing in Coal Seam Gas Mining: Risks to our health, Communities, Environment and Climate April 2011 , National Toxins Network, http://ntn.org.au/wp-content/uploads/2011/04/NTN-Fracking-Briefing-Paper-April-2011.pdf It is important to note that BTEX chemicals are part of the volatile chemicals found in coal seams. Even if BTEX do not form part of the hydraulic fraccing fluid, they may be released from the coal seam in the fraccing or drilling process. *"BTEX stands for benzene, toluene, ethylbenzene, xylene. BTEX compounds can contaminate soil and groundwater. BTEX are commonly found in the products used in the drilling stage of hydraulic fracturing. BTEX are also components of the volatile compounds found in the coal gas seams. The fracking process itself can release BTEX from the natural-gas reservoirs, which may allow them to penetrate into the groundwater aquifers or volatilise into air. As a consequence people may be exposed to BTEX by drinking contaminated water, breathing contaminated air or from spills on their skin.15*
BTEX chemicals are hazardous in the short term causing skin irritation, central nervous system problems (tiredness, dizziness, headache, loss of coordination) and effects on the respiratory system (eye and nose irritation). Prolonged exposure to these compounds can also negatively affect the functioning of the kidneys, liver and blood system. Long-term exposure to high levels of benzene in the air can lead to leukemia and cancers of the blood.16"

11 Atkinson 2002

12 Osborn 2011

13 Atkinson C. 2002 p5

14 Su x, Zhang L, Zhang R, 2003 The abnormal pressure regime of the Pennsylvania No 8 coal bed methane reservoir in Liulin – Wupu District, Eastern Ordos Basin China International Journal of Coal Geology 53 (2003) 227-239

15 Helmuth M 2008, p45 Hillier J., 2010, p21

16 Atkinson C. 2002 *Environmental Hazards of Oil and Gas Exploration* prepared for National Parks Association of NSW Inc.

result in depressurisation of the coal seam aquifer and the potential resultant faulting and hydraulic interconnectivity.

2 AGL Upstream Investments Pty Ltd Camden Gas Project

The Camden Gas Project began in 2002. The project is succinctly described in AGLUI's Environmental Assessment Vol 1 for the Northern Expansion at para 1.1

> *The Camden Gas Project (CGP) is a major coal seam methane (CSM) project involving the extraction of gas from the Illawarra Coal Measures, within the Southern Coalfields of the Sydney Basin, New South Wales (NSW). The current CGP operations consist of 130 existing CSM wells, access roads, a high pressure supply pipeline, underground gas gathering lines and the Rosalind Park Gas Plant (RPGP), forming Stages 1 and 2 of the CGP (see **Figure 1**). These stages of the CGP operate under a number of project approvals and development consents as summarised in **Table 1-1**.*

Initially PPL1 and PPL2 were held by Sydney Gas (Camden) Operations Pty Ltd. Stage 1 began in 2002 and covered PPL's 1 and 2. Stage 2 began in 2004 and covered PPL4. On 23 September 2011, AGL Gas Production (Camden) Pty Ltd (now known as AGL Upstream Investments Pty Ltd) submitted a Major Project Application under Part 3A of the Environmental Planning and Assessment Act 1979 (NSW) to apply to Stage 3 of the CGP. On 11 November 2010 AGLUI became the holder of PPL1, PPL2, PPL4, PPL5 & PPL6 and PEL2. The Stage 3[17] expansion is a continuation of AGL's CGP Stages 1 and 2 and covers an area greater than PPL5.

3 AGLUI's CGP petroleum tenements and Sydney's water catchment area

AGLUI has 5 petroleum production leases (PPL1[18], PPL2[19], PPL4[20], PPL5[21], PPL6)[22] and a petroleum exploration licence (PEL2[23]) which has expired and AGLUI's renewal is yet to be

17 Stage 3 is described in the application as including "construction and operation of twelve well surface locations, with up to six wells17 at each. Associated gas gathering and water lines, including interconnection with the existing Camden Gas Project network, along with central water storage points where required. Access roads including ancillary infrastructure, including storage yards where required, and subsurface drilling of lateral well paths within the boundaries of the sub-surface project area." The CGP area has a surface area and a subsurface area. The PPL's would necessarily need to cover the subsurface area. It is difficult to determine how the CGP areas correspond to the PPL areas as AGL does not overlay them. However in an attempt to do so, it was clear that the northern half of the Stage 3 expansion was not covered by PPL5.

18 On 2 September 2002, pursuant to s9 POA, the NSW Minister of Mineral Resources granted to Sydney Gas (Camden) Operations Pty Ltd, Petroleum Production Lease 1 for a period of 21 years over 48 square kilometres SW of Camden. On 11 November 2010 pursuant to s96A (3) POA the Director General registered AGLUI as the holder of PPL1. That transfer was subject to the conditions in Schedule A.

PPL 1 provides the holder holds the land subject to the POA, and such conditions as are contained in the Schedule of Conditions and the Schedule of Special conditions of approval. If the lease holder contravenes any conditions of the lease, the lease may be cancelled or suspended by the Minister.

19 On 10 October 2002, pursuant to s9 POA, the NSW Minister of Mineral Resources granted to Sydney Gas (Camden) Operations Pty Ltd, Petroleum Production Lease 2 for a period of 21 years over 93.92 hectares adjacent to PPL1 SW of Camden. On 11 November 2010 pursuant to s96A (3) POA, the Director General registered AGLUI as the holder of PPL2. That transfer was subject to the conditions in Schedule A.

The provisions of PPL2 are almost identical to those in PPL1.

20 On 6 October 2004, pursuant to s9 POA the NSW Minister of Mineral Resources granted to Sydney Gas (Camden) Operations Pty Ltd Petroleum Production Lease 4 for a period of 21 years over 5530 hectares of land covering parts of Camden, Menangle, Campbelltown. On 11 November 2010 pursuant to s96A (3) POA, the Director General registered AGLUI as the holder of PPL4. That transfer was subject to the conditions in Schedule A.

The Conditions in PPL4 are similar but different from those in PPL1 and PPL2. Production began on PPL4 in 2004 under stage 2 of the CGP.

approved. Copies of PPL1 and its ancillary documents are set out in the Attachment to this paper. The transfer of the leases to AGLUI on 11 November 2010 was subject to compliance with Schedule A which is identical for each lease. PEL2 was also transferred to AGLUI subject to a Schedule A. PPL's 1,2,4,5 and 6 cover 21,389.73 hectares south west of Sydney sitting midway between the Woronora Dam and Warragamba Dam set out in the Sydney Catchment Area map in Schedule 3 to this paper. PEL2 is 97 blocks and surrounds the city of Sydney starting from 2 blocks south of Woollongong to 2 blocks north of Wyong and west 2 blocks east of Katoomba. PEL2 is clearly within the Sydney water catchment area[24].

4 AGLUI's breaches of CGP petroleum tenements

A summary of the breaches and queried breaches of the PEL and PPLs held by AGLUI for the CGP is set out in Schedule 1 to this paper. In brief, AGLUI has obligations to identify, implement, take steps and monitor groundwater under its PEL and PPL's yet it has done nothing to ensure protection of the groundwater in the lease and licence areas. The majority of the alleged breaches are founded on AGLUI's admission that it has carried out no hydrology or hydrogeology study and done no groundwater monitoring for the CGP[25]. The breaches alleged[26] are of:

(a) PPL1 Schedule of Conditions:

(i) clause 3(1) "Production Operations Plan (**POP**) must contain diagrams of areas proposed to be disturbed". The areas to be disturbed include the subsurface areas. The POP does not include diagrams of subsurface areas to be disturbed. These would necessarily include aquifers (even if only the coal seam aquifer).

(ii) clause 5 "Operations must be carried out so as not to cause pollution to the catchment area". Breach of this obligation would require baseline data and monitoring to show

21 On 28 February 2007, pursuant to s9 POA the NSW Minister of Mineral Resources granted to AGL Gas Production (Camden) Pty Ltd and Sydney Gas (Camden) Operations Pty Ltd Petroleum Production Lease 5 for a period of 21 years over 102.4 square kilometres of land covering parts of Narellan, Cook, Minto, Camden, Menangle, Campbelltown in the vicinity of the Sydney Catchment area. On 11 November 2010 pursuant to s96A (3) POA the Director General registered AGLUI as the holder of PPL5. That transfer was subject to the conditions in Schedule A. On 30 May 2009, pursuant to s9 POA the NSW Minister of Mineral Resources granted to AGL Gas Production (Camden) Pty Ltd and Sydney Gas (Camden) Operations Pty Ltd Petroleum Production Lease 6 for a period of 21 years over 725.8 hectares of land covering parts of Picton. On 11 November 2010 pursuant to s96A (3) POA the Director General registered AGLUI as the holder of PPL6. That transfer was subject to the conditions in Schedule A. Production has not yet commenced on PPL5 or PPL6.

22 At the time of writing, in NSW there had only been 6 PPL's issued, and around 70 PEL's. The other PPL granted to Eastern Star Gas Ltd in the Narrabri area. On 21 May 2011 the NSW Minister for Planning Brad Hazard put a 60 day freeze on the issuance of new exploration licences for coal and coal seam gas and petroleum. SMH 21 May 2011 p

23 On 24 February 2011, AGLUI submitted an application for renewal of PEL2. As at May 5, 2011 that application had not been approved. On 21 May, the NSW Minister for Mines put a freeze on the issuance of new PEL's. Query whether a renewal is a new PEL? Arguably it is not given section 20 of the POA which provides for the continuation of the title pending renewal or a decision not to renew.

24 See map of the Sydney Water Catchment Area in Schedule 3

25 Scenic Hills Association Submission to the DOP dated 24 January 2011 p.9

26 PEL2 alleged breaches are of clause 2 "Operations must be carried out so as not to cause of aggravate water pollution." and 8 Operations must be carried out so as to avoid pollution of any catchment area.."

pollution. Without which it is difficult to say whether the operations have or have not caused pollution to the catchment area. [27]

(iii) clause 6(b) "Operations must be carried out in such a way as to avoid pollution or siltation of any .. waterbody". This is a positive obligation to avoid pollution of siltation which would require baseline data and consistent monitoring as evidence of compliance.

(iv) clause 6(c) "Leaseholder must not interfere with the flow of water in any watercourse" of the Schedule of Conditions. The potential for coal seam gas mining to cause aquifer connectivity is very real.[28] If such interconnectivity is caused there is an interruption of the flow of water in the watercourse[29]. Without baseline data on inter aquifer connectivity and monitoring during production, it is difficult to know if such interference has occurred[30].

(b) PPL1 Schedule A

(i) clause 1 "The leaseholder must implement all practicable measures to prevent and or minimise any harm to the environment that may result from the construction, operation or rehabilitation of the development". With respect to groundwater it would appear that no measures have been implemented.

(ii) clause 2(b)(iv) "identify how operations can be carried out so as to prevent or minimise harm to groundwater". No identification of how operations can be carried out so as to prevent or minimise harm to groundwater.

(iii) clause 6 "the leaseholder must take all reasonable steps during operation on a well to prevent pollution of aquifers". No reasonable steps taken as no baseline data and no monitoring done.

(iv) clause 7 "Gas gathering system must be maintained free of leaks … and a program implemented to ensure this" of Schedule A. Leakage of methane from the well into the surrounding aquifers is a real possibility.[31]

Similar breaches can be alleged under PPL 2, 4, 5 and 6 and PEL2.[32] Worley Parsons[33], engaged by the Campbelltown Council, undertook a review of whether AGLUI had satisfied the Director General's groundwater obligations in its Stage 3 application. Worley Parsons

27 Query does a negatively cast obligation require positive activity by AGLUI? Certainly negligence can be made out on inaction as much as action, and due diligence would require such positive action.
28 Osborn 2011, Mudd 2010, Helmuth 2008, Hillier 2010
29 See Gartner v Kidman (1962) 108 CLR 12 Windeyer J on the definition of watercourse.
30 There is technology which can show the interconnectivity of aquifers. See Attachment 2 for GEO9's pilot study which outlines that technology.
31 A study conducted in South East Queensland in the vicinity of the Tara residential estate on QGC's site found that 48% of the wells were leaking in some way: Queensland Government Department of Employment, Economic Development and Innovation 2010 Investigation Report Leakage testing of Coal Seam gas wells in the Tara "rural residential estates" vicinity 1 June 2010. A more recent study June 2011 had quite different results.[31]
32 All these provisions have some impact on groundwater, some directly others indirectly. Essentially, AGLUI has apparently ignored any serious consideration of the groundwater in the PPL and PEL areas yet is it the groundwater which is the most vulnerable to coal seam gas mining. On Friday 27 May on 702 am ABC National Radio, AGLUI General Manager was heard to say that AGLUI is very concerned with the groundwater and is happy to do whatever is considered necessary. The government simply needs to tell it what to do.
33 Worley Parsons "Camden Gas Project Stage 3 Peer Review of Groundwater Component of EA 19 November 2010 engaged by Cambelltown City Council. Found at http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=2921 in public submissions.

concluded in Table 1 of its report "Level of compliance with DG Requirements"[34], "Low level" compliance and "Insufficient information to assess compliance". The DG's requirements are similar to those set out in the PPL's.[35]

5 What can a landholder do about AGLUI's breaches?

5.1 Landholder's rights under POA in relation to breaches by miners

(a) Landholder's rights under the POA

A "landholder" is defined in s3 of the POA and includes the owner of the estate in fee simple, a leaseholder with exclusive rights identified in a register and a native title holder.[36] Parts 4A (Access arrangements for prospecting titles), 5 (Restrictions on titles), 6 (Protection of the environment), 11 (Compensation) and 12 (Jurisdiction of the LEC) provide rights, often express some implied, to a landholder.

(b) Landholder's rights to protect the groundwater

Historically, a landholder is said to hold estates or interests in land. "*Cuis est solum eius est usque as coelum et ad inferos*" translated as "He who possesses land possesses also that which is above it as far as the heavens and that which is below it to the centre of the earth.[37]

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34 The Director General's requirements can be found at
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=2921

35 It is factually unknown to the author whether Sydney Gas (Camden) Pty Ltd, the initial tenement holder, also did nothing with respect to groundwater from 2002 until AGLUI came on the scene in or around 2007. However, one would assume that given the 2 entities were in a joint venture together from 2007 until recently 2010, that that AGL is now simply continuing what Sydney Gas started. This is a big assumption, the consequences of which are that fraccing and release of BTEX chemicals and the possibility of inter aquifer connectivity has been going on in the CGP since 2002 with no groundwater monitoring. The CGP is surrounded by the Sydney water catchment area.

36 Section 3 POA "**landholder"** means, in relation to any land:

(a) the owner of an estate in fee simple in the land, or
(b) a native title holder of the land, or
(c) the holder of a lease or licence granted under the Crown Lands Act 1989 over the land, or
(d) the holder of a tenure referred to in Part 1 or 2 of Schedule 1 to the Crown Lands (Continued Tenures) Act 1989 in the land, or
(e) the holder of a permissive occupancy granted over the land, or
(f) the holder of a lease granted under the Western Lands Act 1901 over the land, or
(g) a person identified in any register or record kept by the Registrar-General as a person having an interest in the land, being:
  (i) a mortgagee in possession of the land, or
  (ii) a lessee of the land or other person entitled to an exclusive right of occupation of the land, or
  (iii) a Minister or public authority having the benefit of a covenant affecting the land that is imposed by a Minister on behalf of the Crown under the Crown Lands Act 1989, or
  (iv) a Minister or public authority having an interest in the land under a conservation, natural heritage or biobanking agreement, or
  (v) a person prescribed by the regulations for the purposes of this paragraph, or
(g1) a person identified in any register or record kept by the Registrar-General as a person having an interest in the land, other than a person to whom paragraph (g) applies, but only in a provision of this Act in which a reference to a landholder is expressed to include a secondary landholder, or
(h) a person of a class prescribed by or determined in accordance with the regulations to be landholders for the purposes of this definition,

but does not include a person of a class prescribed as outside the scope of this definition.

37 Butt P., 1980 pp6-10

Over time this common law maxim has received substantial carve outs for such things as minerals[38], petroleum[39] and relevantly, water,[40] now largely controlled by the State under legislation[41]. Dr Juliet Lucy aptly states:

> *"Although the use of water is a usufructuary[42] right rather than a right of property, the exercise of the right, whatever its source, is inextricably related to the ownership, occupation or control of land."[43]*

Water law in Australia is complex and involves "common law liabilities of riparian landowners, statutory modification of these common law liabilities, statutory protection afforded to rights created by or under legislation; and common law and statutory liabilities arising from the exercise of statutory powers."[44] As stated by Windeyer in *Gartner v Kidman[45]:*

> *" In considering whether there is an actionable interference with the beneficial enjoyment of land, it is necessary, in every case, to know whether some particular right in or in relation to the land has been invaded, and if so to ascertain the limits of that right."*

Common law rights exercisable by the landholder in relation to water on its land exist to the extent that they have not been overridden by legislation.[46] The common law distinguishes between ownership and control with respect to land and water[47] conferring a right of access to water and the conversion of this right to a right of use and control with the taking of possession of the water[48]. An infringement of the common law riparian rights creates liability on the part of the person responsible for the infringement. The rule adopted in Australia[49] was formulated in *John Young & Co v Bankier Distillery Co*[50] by Macnaghten LJ of the House of Lords as follows:

> *"Every riparian proprietor is thus entitled to the water in his stream, in its natural flow, without sensible diminution or increase and without sensible alteration in its character or quality. Any invasion of this right causing actual damage or calculated to found a claim which may ripen into an adverse right entitles the party injured to the intervention of the Court."*

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38 Mining Act 1991 (NSW) "Publicly owned minerals"
39 Petroleum (Onshore) Act 1991 s6 "all petroleum … in the State is the property of the crown".
40 Water Act 1912 (NSW) s8 the ministerial council shall have sole and exclusive use of the said work and the water contained therein"; Water Management Act 2000 (NSW) s392 State's water rights "rights to control use and flow of … (c) all water naturally occurring on or below the surface of the ground, are the states water rights. (2) the states water rights are vested in the crown.."
41 Water Act 1912 and the Water Management Act 2000 where basic landholder rights are set out in the Chapter 3 Part 1.
42 **Usufructuary** the right of enjoying all the advantages to be derived from the use of something which belongs to another, so far as compatible with the substance of the thing not being destroyed or injured." Macquarie Dictionary p2069
43 Lucy J., 2008 para 14.9.2480
44 Lucy J., 2008 para 14.9.3700
45 (1962) 108 CLR 12 at 22 (CLR has no page numbers in it's print outs this is an estimated page number)
46 Lucy J., 2008 para 14.9.1530
47 Lucy J., 2008 para 14.9.1540
48 Lucy J., 2008 para 14.9.1540
49 Gartner v Kidman (1962) 108 CLR 12, Lucy 2008 14.9.3710
50 [1893] AC 691, Lord Macnaghten at 698

Alteration of the quality of water by pollution may amount to infringement[51]. Lucy goes on to provide "the remedy available for an infringement may be an award of damages, an injunction or a lawful abatement by the person whose rights have been infringed."[52]

The Water Act 1912 (NSW) which governs the CGP area recognises the concurrent common power of abating nuisance in s21A(3). Arguably[53], the landholder in the CGP area with its common law rights has standing to protect quality and character of the water from nuisance under s115(1) Jurisdiction of the Land and Environment Court (**LEC**), and may seek answers to questions put to AGLUI concerning protection of groundwater[54].

However, AGLUI may answer these questions by simply repeating what it has provided in its Environmental Assessment for the Northern Expansion[55], that is, it does not consider there to be any risk to the groundwater and has done all that a reasonable miner would do in the circumstances[56]. An unsatisfactory result for the landholder.

(d) Section 115(1)(p) of the POA: Action against the Minister for Mineral Resources NSW

The landholder may have more satisfaction if it brought an action against the Minister for Mineral Resources on behalf of the State of NSW, under paragraph s115(1)(p) of the POA, being "*a question or dispute as to operations on or the working or the management of the land comprised in a petroleum title*,". Here the landholder would be seeking the LEC undertake judicial review of the actions of the Minister for Mineral Resources on behalf of the State of NSW[57] to examine the inaction by the Minister in ensuring compliance of the PPL's by AGLUI. Assuming that the LEC has the powers under s22 of the Land and Environment Court Act 1979 (NSW), the landholder's rights would be limited to the prerogative writs of certiorari[58],

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51 Kempsey SC v Lawrence [1996] Aust Torts Reports 81-375 affirming Lawrence v Kempsey SC (1995) 87 LGERA 49

52 Lucy J., 2008 para 14.9.3710

53 There are difficulties here. The landholder has no property in the groundwater simply access rights. The obligations in the PEL and the PPL to protect the groundwater are not obligations owed by AGLUI to the landholder, but obligations owed to the Minister of Mineral Resources on behalf of the State of NSW. Further, at this point in time it is not known whether any damage by way of pollution or contamination has been caused, an essential element of nuisance.

54 Section 115(1)(o) provides LEC has jurisdiction over "all questions and disputes which arise: (ii) *between holders of petroleum titles and landholders".*

55 http://majorprojects.planning.nsw.gov.au/index.pl?action=search&page_id=&search=camden+gas+project&authority_id=&x=0&y=0

56 See footnotes to paragraph 7 of this paper for AGLUI's current response.

57 LEC is a superior court however I cannot locate express powers to issue these writs. Section 21C class 8 – mining matters of the Land and Environment Court Act 1979 (NSW) provides that "the court has the power to hear and dispose of proceedings under the … POA". And s22 of the LEC Act provides "The Court shall, in every matter before the Court, grant either absolutely or on such terms and conditions as the Court thinks just, **all remedies** to which any of the parties appears to be entitled in respect of a legal or equitable claim properly brought forward by that party in the matter, so that, as far as possible, all matters in controversy between the parties may be completely and finally determined and all multiplicity of proceedings concerning any of those matters may be avoided." I can however find these powers in the Supreme Court Act 1970 (NSW) s69.

58 "A writ of certiorari commanded an inferior court to certify its record of proceedings and allowed a superior court to quash those proceedings for error of law." Creke R., 2009 para 16.1.1

prohibition[59], mandamus[60] and habeus corpus; and or the equitable remedies of declaration[61] and injunction[62]. Given the nature of the breaches, the remedies most useful would be:

(i) a declaration that the breach had occurred, and

(ii) mandamus or a mandatory injunction to order the Minister to order AGLUI to comply with its obligations in the PEL and PPLs, alternatively

(iv) and preferably, to order the Minister to cancel or suspend the PEL and PPL's under s22 or s24 of the POA until the breaches had been remedied and no damage found[63].

Excepting cancellation or suspension, these remedies provide unsatisfactory results for the landholder as they do not require the identification of pollution or contamination, they require the putting into place of procedures. Further, it would appear unlikely that the Minister would cancel or even suspend the PPL's due to failures to implement procedures. A further concern (excepting the access arrangement) is no obligation in the POA on the miner to report contamination or pollution to the landholder even if it finds it. These circumstances leave the landholder in a particularly vulnerable position. The landholder wants some surety that the groundwater is not being polluted or contaminated as it is almost certainly using that groundwater for domestic and stock watering purposes.

(e) Evidentiary issues

Without having a baseline set of data[64], obtained before the mining operations began, it is difficult to prove causation of pollution and or contamination by the miner. The miner can, and has[65], argued that the salinity, methane and BTEX chemicals are naturally occurring and there is no causal evidence to show aquifer connectivity has resulted from the miner's actions[66]. The causation argument is in some sense easier and some sense more difficult to make out with respect to the fraccing chemicals. If they are not naturally occurring or normally present in the PPL area, the argument is easier, that is, their presence in

59 "A writ of prohibition restrained an inferior court from exceeding its powers" Creke R., 2009 para 16.1.1

60 "A writ of mandamus ordered an executive officer or body to perform its public duty". Creke R., 2009 para 16.1.1

61 "Declaration is a conclusive statement by the court of the pre-existing rights of the parties" Creke R., 2009 para 16.7.1

62 "Injunction is an order or decree made by a court in its equitable jurisdiction, requiring a party either to do a particular thing (a mandatory injunction) or to refrain from doing a particular thing (a prohibitory injunction)." Creke R., 2009 para 16.6.1

63 Section 22 POA Cancellation or operational suspension of titles. *"(1) A petroleum title may be cancelled by the Minister if its holder at any time during the term of the title: (a) fails to fulfil or contravenes any of the conditions of the title, or .. (3A) The minister may suspend all or any specified operations under a petroleum title until further notice if the holder of the title contravenes (b) any condition of title that is identified in the title as a condition related to environmental management."*

64 Hydrology, hydrogeology, hydrochemical, positioning and connectivity of aquifers.

65 Cameron D., 2011 p41, Lloyd-Smith 2011 p6 "National Toxics Network believes [industry claims that fraccing chemicals are safe] are misleading". Australia's National Industrial Chemical regulator, the National Industrial Chemical Notification and Assessment Scheme (NICNAS) has assessed only 2 out of the 23 most commonly identified compounds used in fraccing fluids in Australia.

66 Causal evidence would presumably require evidence before the operations occurred of no aquifer connectivity, and after of aquifer connectivity allowing for the increase in BTEX chemicals, methane and fraccing chemicals to flow into the surrounding connected aquifers.

surrounding aquifers should be good evidence of pollution if not contamination, however one must know what the fraccing chemicals are in order to test for them.[67]

(f) Conclusions: A difficult road for the landholder

The current legislative regime does not make it easy for a landholder to determine or enforce its rights.[68] These are costly, lengthy, difficult and questionably provable arguments which the landholder would need to make out in order to be successful in protecting the groundwater. The burden is on the landholder to prove pollution, contamination and causation. Given the power imbalance between the miner and the landholder, in resources, expertise and finances, this path, where the landholder is the applicant in proceedings against either the miner or the State under the POA is an onerous and difficult road to tread.

5.2 Access arrangement (AA)

(a) Access arrangements under the PEL

As set out above, the landholder does have some rights in the POA vis a vis the miner, the most potent contained in Part 4A Access arrangements for prospecting titles requiring the miner to enter into an access arrangement with the landholder before it commences prospecting operations. "Prospecting titles" are defined to include "exploration licences, assessment leases and special prospecting authorities[69]. Section 69C of the POA provides:

> *"The holder of a prospecting title must not carry out prospecting operations on any land except in accordance with an access arrangement … (a) … **agreed** with the landholder of the land, or (b) **determined** by an arbitrator in accordance with this Part".*

"Prospecting operations" are undefined, however "prospect" is defined in s3 of the POA:

> ***prospect** means to carry out **works** on, or to **remove** samples from, land for the purpose of testing the quality and quantity of petroleum in the land and the potential to recover petroleum from the land, but does not include any activity declared by the regulations not to constitute prospecting.[70]*

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67 Fraccing chemicals are covered by a patent held by Halliburton in the USA.
68 The system is not transparent, one must purchase copies of the mining tenements ($165 from Maitland) and collect additional essential documents physically from Woollongong (the PPOP). Information required to be provided by the miner to the Minister under the POA is not to be made available to the public for between 2 and 5 years after the fact68. The landholder generally has no expertise in hydrogeology, hydrology, hydrochemistry, aquifer interconnectivity, nor the financial or legal knowledge necessary to pull the picture together. These issues on top of the legal issues outlined above, that the miner's obligations under the PPL vis a vis groundwater are to the State not the landholder, that the landholder does not own the water and will need to establish its common law riparian rights. The fact that no monitoring has been done means no evidence of damage is the death of a landholders tortious rights, that judicial review may get the Minister moving, yet until damage is proved the Minster is unlikely to cancel the PPLs, make for an unhappy landholder.
69 S68A POA note that it does not include production leases.
70 There is no activity declared under the regulations not to constitute prospecting.

(b) The process of entering into an access agreement

The process for agreeing or determining an access arrangement is set out in detail in Part 4A of the POA[71]. Essentially it proceeds from negotiation, to conciliation at the LEC, to arbitration in the LEC, to an appeal from the decision of the arbitrator to the LEC.

*(c) Terms of an access arrangement (**AA**)*

Part 4A of the POA provides some guidance on the terms to be included in the AA, including the "*things which the holder of the prospecting title needs to do in order to protect the environment while having access to the land and carrying out prospecting operations on the land*"[72]. Recent amendments provide that the Director General has, with the concurrence of the NSW Minerals Council and the NSW Farmers Association, published a template standard access arrangement[73]. Further, s69D(1A) of the POA provides if the terms of the access arrangement are breached by the miner, the landholder can prevent the miner from continuing to access his land until that breach is remedied[74]. Section 69D(2A) provides the landholders initial legal costs are to be paid by the miner, if so provided in the AA.

Given that the access arrangement is simply a contract between the landholder and the miner concerning rights of access, use of the land and compensation to the landholder, it need not be limited to the confines of the POA. Schedule 4 to this paper sets out the terms which the POA suggests may be included in an AA, the table of contents of the terms of the NSW Minerals Council and NSW Farmers Association draft template AA and the table of contents of the Caroona Coal access arrangement with BHP. Strangely, none of these drafts:

(i) provides security for damage accessible by the landholder held for the term of the AA plus some;
(ii) has a breach and consequences of breach provision which terminates the arrangement and denies access to the miner;
(iii) has a concurrent breach provision such that a suspected breach of the PEL, PPL or the POA is a breach of the AA;
(iv) is in the form of a deed, giving the landholder a longer limitation period for actions;
(v) has a term extending as long as the miner holds a tenement over the land;
(vi) provides compensation for loss of land value, loss of water, loss of quiet

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71 See Schedule 2 to this paper.
72 Section 69D(1)(e) POA
73 Which in the author's view is cast very much in favour of the miner.
74 Note s69D(4) the request for the appointment of the arbitrator to resolve a contravention of the AA is made by the landholder not the miner. Odd but favourable to a landholder who does not want a miner to continue its activities.

enjoyment;

(vii) includes the environmental protection provisions which are in the mining tenement[75];

(viii) requires an independent baseline study to determine the hydrogeological, hydrochemical, positioning and interconnectivity of the aquifers on the PEL, before any prospecting activity was to occur and thereafter water quality and quantity monitoring at times and places in accordance with the advice of an independent geologist or hydrogeologist and tested by an independent water laboratory. There should also be access to the security to pay for these services, and ownership and control of the information held by the landholder; and

(ix) contain provisions which allow for denial of access for actual or suspected pollution or contamination of the groundwater.

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The inclusion of such provisions in its access arrangement would give the landholder some control to protect the groundwater under its land enforceable in contract. Most importantly, with an access arrangement in place, including such provisions, the burden is shifted onto the miner to prove it has not polluted or contaminated the groundwater and gives the landholder the right to deny access until that proof is provided to the landholder's satisfaction. The power to deny access is the most powerful weapon of the landholder, and one which could be more fully utilized for the protection of groundwater.[76]

(d) Access arrangement under the PPL

Unlike under the Mining Act 1991 (NSW), there appears to be no provision in the POA for continuance of the access arrangement under a PPL. Conversely, there is also no provision terminating the AA on the grant of a PPL. On that basis, as long as the access arrangement is not inconsistent with the POA, the AA should continue concurrently in contract.[77]

6 Other applicable legislation

The other applicable legislation protecting groundwater from pollution and or contamination in NSW in most instances clearly provides rights to a landholder by allowing "any person" to

75 The Caroona Coal arrangement does have substantive environmental protection provisions, including water monitoring. If included in the AA then a breach gives the landholder the right to deny access. It will be an obligation which the landholder can enforce.

76 Unfortunately, the author has no copies of access arrangements entered into for the CGP. Given the breaches and the queried breaches of the PPL's by AGLUI, a landholder with these sorts of provisions in its AA could deny access to the miner until the breach was remedied, and would not have to resort to the courts as an applicant or prove there was pollution or contamination, these would be burdens on the miner.

77 The Access arrangement could either provide that a breach of the POA is a breach of the AA or expressly set out the POA provisions in Parts 5, 6 and 11 of the POA expressed in favour of the landholder. Part 5 of the POA Restrictions on titles, Part 6 of the POA concerns Protection of the Environment.
Part 11 of the POA deals with compensation payable to the landholder by the miner "for any estate or interest in any land injuriously affected or likely to be so affected by reason of any operations conducted or action taken in pursuance of this Act".

institute proceedings for a breach[78] and these instruments have penalty and restraint powers. Notwithstanding or limiting the powers under these instruments, the Water Act 1912 (NSW) is also applicable to the CGP until 1 July 2011 and that Act does not expressly provide such rights to "any person" and gives no powers to restrain or prohibit unauthorised taking of water or pollution or contamination of water. Although the road is easier, it will still involve the landholder as the applicant and require proof of pollution and or contamination and causation.

6.1 Protection of Environment Operations Act 1997 (PEOA)

Parts 5.2 and 5.3 of Chapter 5 of the *Protection of the Environment Operations Act 1997* (NSW) set out the tier 1 and tier 2 offences in relation to water pollution.

(a) Tier 1 Offences

Part 5.2 Tier 1 Offences provides in section 116 that if:

> *a person wilfully or negligently causes any substance to leak, spill or otherwise escape (whether or not from a container) in a manner that* ***harms or is likely to harm*** *the environment, the person is guilty of an offence.*

A tier 1 breach has very serious penalties including gaol time.

The granting of the PPL does not excuse AGLUI from leaks, spillages or escapes of petroleum (methane gas), BTEX chemicals or fraccing chemicals. Arguably, the defences provided in Part 5.2 would not be available to AGLUI for pollution or contamination of the groundwater. AGLUI has neither exercised due diligence in relation to the protection of the groundwater, nor has it taken reasonable precautions to ensure that there is no pollution of the groundwater, it has done nothing at all with respect to protection of the groundwater. Nor does it have lawful authority to pollute the groundwater as its Protection of Environment Operations licences[79] do not allow breaches of s120 of the PEOA.

(b) Tier 2 offence Pollution

Part 5.3 Water pollution provides in section 120 of the PEOA, a person who pollutes waters is guilty of an offence. "Water pollution" is defined in the Dictionary of the PEOA to mean:

[78] PEOA and CLMA and the Water management Act (s336) allow for "any person" to commence action in the LEC.

[79] PEO Licence 12003 The applicant shall comply with s120 of the Protection of Environment Operations Act 1997 (NSW) during the carrying out of the development. PEO Licence 117134 The applicant shall comply with s120 of the Protection of Environment Operations Act 1997 (NSW) during the carrying out of the development.

placing in or otherwise introducing into or onto waters (whether through an act of omission) any matter, whether solid, liquid or gaseous, so that the physical, chemical or biological ***condition of the waters is changed****.*

Proof of pollution requires baseline data as previously described to be taken before the prospecting activities commence. "Any person" can bring proceedings in the LEC for an order to remedy or restrain a breach (or a threatened or apprehended breach) of the PEOA.[80] A landholder could commence proceedings if it has evidence of pollution or contamination of surrounding aquifers.

6.2 Water Act 1912 (NSW)

Currently, the CGP area falls within the jurisdiction of the Water Act 1912 (NSW). The relevant provisions to a landholder in the CGP area are:

(a) section 21A Pollution of rivers or lakes[81]; and

(b) section 112 Bores to be licenced[82].

Issues with an action under section 21A have in some sense already been dealt with and will not be recanvassed due to word constraints. However, the Act simply provides a penalty for breach.

An interesting result could be investigated in relation to s112 of the Water Act in a landholder seeking to have a court order the NSW Office of Water to penalise AGLUI for taking water from its 130 csg wells without a licence and either:

(a) grant the licences with conditions to ensure baseline data, limitation on volume, and timing and regular monitoring; or

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80 Section 252+ 253 PEOA

81 Section 21A of the Water Act provides: (1) Any person who discharges or puts, or permits to be discharged, put, or carried, or to fall, or flow into a river or lake: (a) any noisome, noxious, poisonous or unwholesome matter,… shall be guilty of an offence and shall be liable on summary conviction to a penalty not exceeding 25 penalty units and, in the case of a continuing offence, to a further penalty not exceeding 1 penalty unit for each day during which the offence continues after notice in writing by the Ministerial Corporation to abate or cease the offence has been given to the person offending. This action will require a landholder to have proff of pollution, and causation.

82 Under the Water Act 1912, s112 requires that bores be licensed, it provides the sinking of a bore shall not be commenced unless pursuant to a licence issued under Part 5. A "bore" is defined in s105 of the Water Act as: any bore or well or any excavation or other work connected or proposed to be connected with sources of subsurface water … but does not include a work to which Part 2 extends. A coal seam is an aquifer, it contains subsurface water, and methane is only extractable if the coal seam contains water. AGLUI requires a bore to access the coal seam. Contravention of s112 of the Water Act 1912 is an offence liable for conviction. Section 117I Offences provides "Any person: (b) who takes or uses water from an unlicensed bore, .. is guilty of an offence."82 There however does not appear to be a power under the Water Act to restrain unlicensed taking of water, simply to levy a fine. AGLUI claims to have bore licences for its existing wellfield. We note that the NSW Office of Water in its submission to the Department of Planning on AGL's Part 3A application, has stated that it has not yet approved the licence applications made by AGLUI. As such the taking of water without those licences from the existing 130 wells is in a breach of the Water Act 1912 and presumably has been since 2002 when production began. The Water Act does not confer rights on "any person" to institute proceedings and solely refers to "Authorised officers", as defined in the Water Management Act 2000 (NSW)82. The Dictionary of the Water Management Act 2000 provides:

(b) preferably, refuse to grant the licences, given the flagrancy and length of time of the breach, the possibility of contamination or pollution and the vicinity of the Sydney Water catchment area, in which event, it must order AGLUI to stop petroleum production, as otherwise it would be in breach of the Water Act 1912 (NSW).

6.2 Water Management Act 2000 (NSW) (WMA)

From 1 July 2011, the Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2011 (**Groundwater WSP**) under the Water Management Act 2000 (NSW) will come into force. This plan will bring AGL's CGP Stages 1 and 2 under the jurisdiction of the Water Management Act 2000 (NSW)[83].

The WMA provides that it is a Tier 1 offence for a person to take water from a water source other than in accordance with a licence. The WMA provides for various types of licence. AGL must have aquifer access licences for each of its 130 CSG wells. Those access licences will regulate the taking of water from coal seam gas wells. [84] AGLUI acknowledges that it will require aquifer access licences under the WMA when the Groundwater WSP comes into force.[85]

There is an amendment sitting in the wings waiting to commence under the Water Management Act Amendment Act 2010 to be s60I Access licence required for water used in mining activities. This amendment in the author's view simply reinforces the existing regime.

If the NSW Office of Water fails to require AGLUI to gain aquifer access licences for its 130 wells a landholder could seek the same judicial review remedy of mandamus, or mandatory injunction for the same purposes would be available under this Act as under the Water Act to either prevent the taking of water, and close down production, which at this stage is probably unlikely until pollution or contamination is proved, or to regulate and monitor the taking of water.

83 Chapter 2 WMA water Management Planning sets out water management areas, licences only apply in water management areas s56(1)(a) WMA

84 The Environmental Protection and Assessment Act s75U does not exempt Part 3A Projects from the requirement to obtain an Aquifer Access Licence under Part 2 of the WMA.

85 http://majorprojects.planning.nsw.gov.au/index.pl?action=search&page_id=&search=camden+gas+project&authority_id=&x=0&y=0

6.3 Contaminated Land Management Act 1997 (NSW) (CLMA)

The object of the CLMA is to establish a process for investigating, and where appropriate remediating, land the EPA considers contaminated. In this Act, "land" is defined "to include water"[86]. Contamination is defined in s5 to mean:

> *the presence … of a substance at a concentration above which the substance is normally present in, on or under the land in the same locality being a presence that presents a risk of* ***harm to human health or any aspect of the environment****.*

Many fraccing chemicals are toxic and known to cause harm to human health and the environment, and BTEX chemicals, contained in the coal seam, if released from it, are also highly toxic.[87] Under the CLMA the person responsible for contamination is the person who caused the contamination[88]. It is the duty of the EPA to examine and respond to information it receives of actual or possible contamination of land, address it and record what it has done[89].

Breaches or apprehended breaches of the CLMA can be the subject of restraint orders of the LEC under Part 10 of the CLMA on the application of "any person"[90]. Part 10 Division 2 sets out who can institute proceedings: the EPA, and "any person … if the court grants the person leave to bring the proceedings"[91]. Section 95(2) CLMA provides the court is not to grant leave unless the listed criteria are satisfied.

"Any person" under the CLMA could be a landholder, or a representative body[92], such as those which have sprung up down the east coast of Australia[93]. Under the CLMA "any person" including a landholder can:

(i) notify the EPA of the breaches or queried breaches of AGLUI of its CGP PPL's and request investigation;
(ii) seek mandamus in the LEC against the EPA under the CLMA requiring the EPA to conduct a study of the hydrochemistry of and hydraulic connectivity between aquifers in the CGP subsurface area;
(iii) institute proceedings in the LEC seeking restraint orders against AGLUI until a full investigation is undertaken of the groundwater at least in PPL's 1,2 and 4; and or
(iv) have a representative body such as a community body like the Environmental Defenders Office institute proceedings on the landholder's behalf.

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86 Section 4 CLMA
87 Lloyd-Smith 2011 p6.
88 Section 6 CLMA
89 Section 8 CLMA
90 Section 96 CLMA
91 Section 95(1)
92 Section 96 CLMA
93 Lock The Gate Alliance (LTG), Great Artesian Basin Protection Alliance, Southern Highlands Coal Action Group, Hunter Valley protection Alliance, and the list goes on. There are at least 91 such groups currently represented by a head alliance the LTG Alliance www.lockthegate.com.au Those groups are listed at http://lockthegate.org.au/groups/ and this is not a complete list.

7 Nuisance, negligence and recklessness

Unfortunately it is beyond the scope of this paper to fully investigate the possible common law actions against AGLUI however it is worth noting that landholders in the CGP will have difficulties establishing the torts of nuisance and negligence without there being any proven damage and provable causation. In relation to negligence the landholder will also need to hurdle the "negligence calculus test" established in *Graham Barclay Oysters Pty Ltd v Ryan anors* [94] and McHugh J summed this up as

> "The duty owed by a … producer to a consumer is a duty to take reasonable care to avoid injury to the consumer … so the critical question is what would be the reasonable producer's response to this risk? … the reasonable producer would consider the magnitude of the risk of contamination, the degree of probability that such contamination might occur and cause harm to individuals and the expense, difficulty and inconvenience of the Barclay companies to taking the suggested alleviating action"

It is arguable AGLUI has attempted to cover its bases in its Environmental Assessment for Stage 3[95] that although the magnitude of risk may be great, the probability of it happening is low. AGLUI argues in the EA the coal seams and the surrounding aquifers are some distance apart and divided by impermeable strata.

Nevertheless the difficulty of lack of evidence, expertise, finance and resources is still there for the landholder in these common law actions.

8 Economics

94 (2002) 194 ALR 337 following Wyong Shire Council v Shirt (1980) 146 CLR 40 following the Bolton v Stone 1951 AC 850 negligence calculus

95 AGLUI's Environmental Assessment (EA) Chapter 12 dated October 2010 on Groundwater provides a conceptual summary of the groundwater conditions but no modelling, no mapping of where the aquifers are in relation to the coal seam wells, this is consistent with the admission that there has been no actual hydrogeological or hydrochemical studies done by AGLUI. There are also inconsistencies between what AGL provides in it's EA and what it is reporting in its Petroleum Production Operations Plan (PPOP). AGLUI provides at para 12.2.1

"Fracing would be conducted at depths of approximately 700 metres within the targeted coal measures."

Yet in the PPOP the depths of the drilling are set out as between min 69 and max 147 meters. Significantly shallower depths, depths at which water bores are drilled. Chapter 12 of the EA goes on to say at para 12.2.2

"Fracing is unlikely to result in dewatering of overlying aquifers as the fracture lengths and heights are not expected to reach overlying aquifers, the closest being the Bulgo Sandstone which is approximately 100 metres above the coal measures. Subsurface drilling of lateral well paths would remain within the coal seam and is therefore equally unlikely to result in dewatering of overlying aquifers.

These depths do not appear to be consistent with the PPOP drilling depths where none is greater than 146m.

AGLUI concludes in its EA Executive Summary "given the deep aquifer is not used for any beneficial use in the vicinity of the Subsurface or Surface Project Areas, there is no measurable impact." Use and pollution and or contamination are quite different things and as there would appear to also be no inter aquifer connectivity study pollution and contamination are real possibilities.

Currently the CGP supplies 6% of the Sydney gas market[96] and employs 37 people[97]. AGLUI is a proprietary limited company wholly owned by AGL Limited a public listed company on the ASX. The royalty payable by AGLUI for the first 5 years is nil and there after ratchets up 1% a year from 6% to 10% in the 10th year and remains steady thereafter for the remainder of the lease[98]. The State will receive no income tax from the revenue generated from this project as that will go to the Commonwealth.

These benefits need to be balanced against the possible contamination of the groundwater over an area of 21,389 hectares in very close vicinity to the Sydney water catchment area in such a way according to current science is impossible to clean up, and would appear to outweighed by the detriments. One also needs to factor in the cost of replacement water, the cost to health: human, animal and ecosystems, the cost of the damage to land, the loss of use of the land, the loss of value to the land.

Arguments that gas is a transition energy to renewables currently do not consider the fugitive emissions from csg mining which are thought to be substantial. Some say that when fugitive emissions are combined with the emissions from the burning of gas outstrip those from the burning of coal. [99]

The social benefit on the Camden Cambelltown area can be summed up in the 5000+ signatories and 2 substantial community groups currently fighting against its continuance.

9 Conclusion

AGLUI has obligations to protect groundwater:

(a) under it's PPL's,
(b) under it's PEL,
(c) under the Water Act 1912 (NSW),
(d) under the Protection of Environment Operations Act 1997 (NSW),
(e) under its Protection of Environment Operations Licences,
(f) under the Contaminated Land Management Act (NSW),

yet it has ignored those obligations in Stages 1 and 2 of the CGP. Further, AGLUI is currently in breach of the Water Act 1912 for failing to have licences for each of its 130 wells yet the NSW Office of Water has done nothing to prevent it's unauthorised taking of water.

96 Cameron D., 2011 p38
97 AGLUI's Environmental Assessment (EA)
98 Part 7 POA and Regulations
99 I have seen this written on a number of occasions but cannot put my hands on the references. Others say that CH4 is 23 times more potent than co2 as a green house gas.

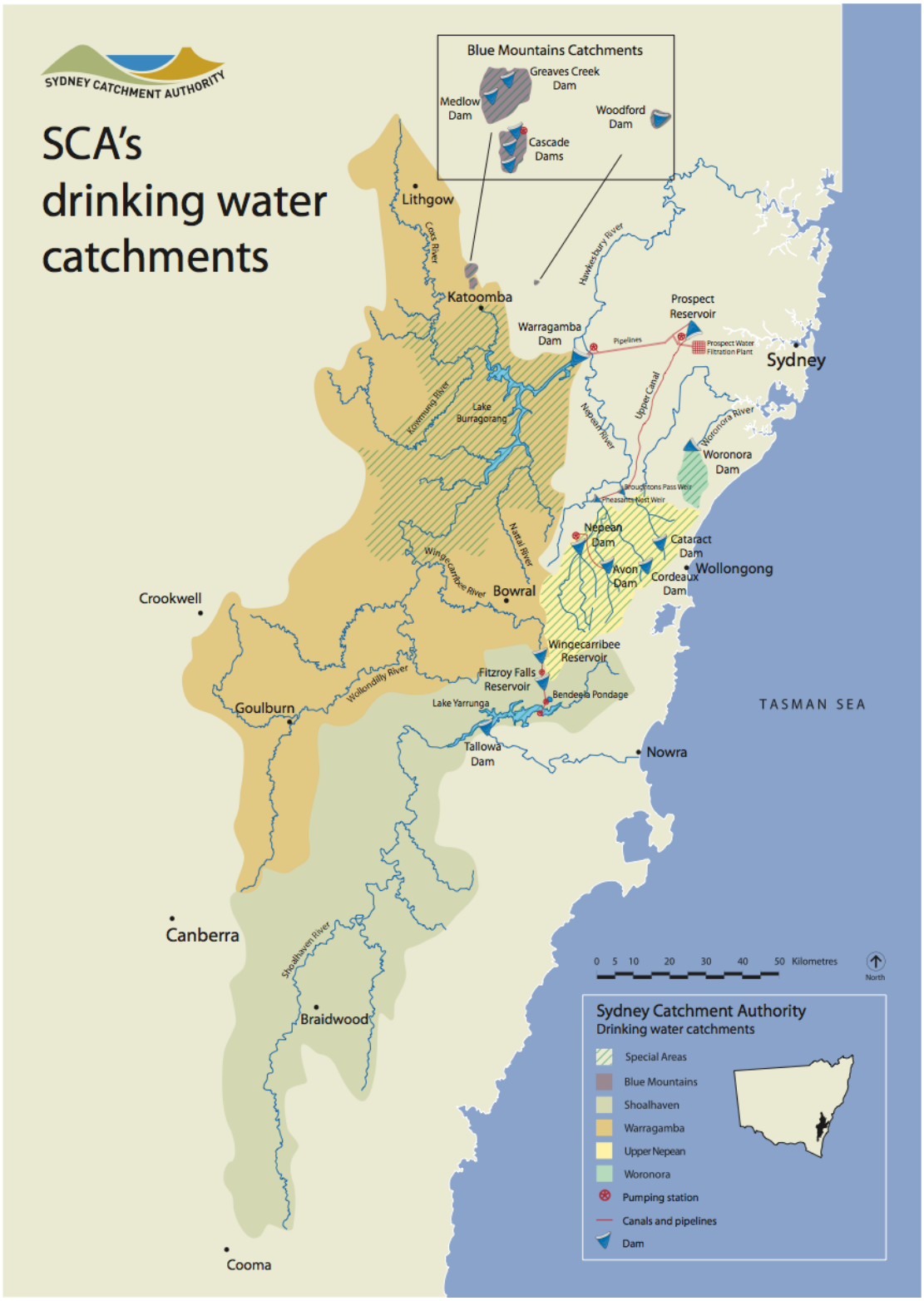
Precautionary action would require identifying and implementing operations to ensure no pollution or contamination of groundwater, testing of the chemistry, positioning and connectivity between the coal seam aquifers and surrounding aquifers is essential, and regular monitoring thereafter should be mandatory. This needs to be done by an independent body whose fees should be drawn from the proponent's security under its PPL's or access arrangements, which should then be topped up. The results of the testing and monitoring should be made available to the public immediately on production.

The legislation is not this prescriptive and the responsible government departments appear inattentive to current practices.

As a consequence, a practical means available to a landholder to ensure it can protect the groundwater under its land would be to demand that the access arrangement contain these precautionary provisions. Certainly on the facts available today, neither the NSW Office of Water nor the Department of Mineral Resources appear concerned to ensure that AGLUI complies with its obligations under the existing regulatory regime. This leaves the landholder in a particularly vulnerable position vis a vis its access to and use of groundwater under its land.

This investigation of both AGLUI's activities and the government's inaction are reminiscent of the Commissioner's comments made in the Report of the Montana Commission of Inquiry of the widespread and systemic failures of both industry and government.

Schedule 1 Sydney Water Catchment Area



Schedule 2 Access Agreement settlement

If a miner is not given access to the land by the landholder, the miner may serve written notice of its intention to enter into an access arrangement on the landholder (s69E). If after 28 days of service of such a notice the miner and the landholder cannot agree on an access arrangement, the miner may, by further notice served on the landholder, request that the landholder agree to an arbitrator (s69F). If 28 days after the service of this later notice, the parties are unable to reach an agreement on the appointment of an arbitrator, either party may apply to the Director General under the POA for an arbitrator to be appointed (s69G).

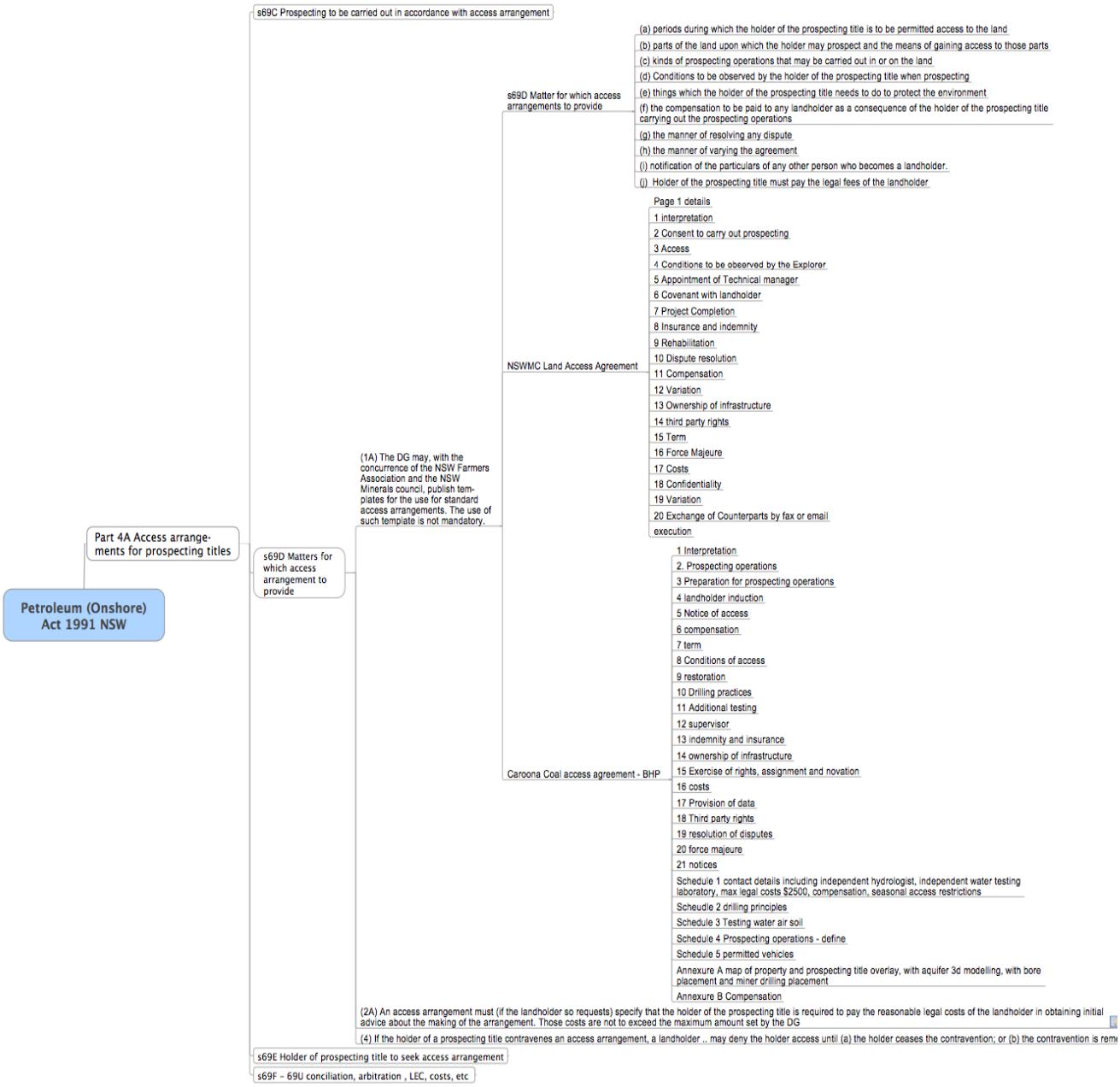
The arbitrator may not make a determination until having first attempted to bring the parties to their own settlement by conciliation (s69J). If the conciliation is unsuccessful, the arbitrator must make an interim determination which is served on the parties as to whether or not access should be granted and, if so, prepare a draft access arrangement (s69L).

Within 14 days of service of the interim determination, a party may apply to the arbitrator for reconsideration of the question of access or variation of the draft access arrangement (s69M). The arbitrator must fix a time and place for continuing the hearing into the question of access (s69M). If an application is not made within the 14 days, the interim decision becomes the final determination of the arbitrator and the draft access arrangement becomes the final access arrangement (s69N). If an application is made, the arbitrator must make a final determination and serve it on each of the parties (s69N).

Each party must bear its own costs in relation to the arbitration hearing. The arbitrator's costs are to be paid by the miner (s69O). The reasonable legal costs of the miner for the negotiation of the access arrangement must also be paid by the Miner. The maximum amount of those costs is yet to be set.

If either party is unhappy with the arbitrator's decision an application may be made to the Land and Environment Court (**LEC**) (s69R).

Schedule 3 Access arrangement provisions



PPL1, POP

Attachment B

[see separately attached document]

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