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Recommended Citation

Fibbens, M., Mak, M. Y., & Williams, A. (2014). *Compensation for coal seam gas occupation: Assessing the harms*. Paper presented at the 20th Pacific Rim Real Estate Society Conference, Lincoln University, Christchurch, New Zealand. Retrieved from <http://www.prres.net/>

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20th Pacific Rim Real Estate Society Conference,
January 2014, Lincoln University, Christchurch, New Zealand

Compensation for coal seam gas occupation: assessing the harms

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Keywords: Coal seam gas (CSG), compensation, disturbance, land occupied, injurious affection, severance, blot

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Compensation for coal seam gas occupation: assessing the harms

Abstract

Coal seam gas (CSG) extraction is expanding in eastern Australia. However, while the body of knowledge relating to compensation for partial taking is well established, the theory concerning the valuation of landholder compensation for occupation by CSG infrastructure is in an embryonic stage. In order to further the development of theory in this important area, this research investigates the harms that are inflicted upon landholders and their property by CSG occupation. As indicated in the Queensland mining case of *Peabody West Burton Pty Ltd & Ors v Mason & Ors* [2012] QLC 23, the assessment of compensation begins by enquiring as to the acts or events that occasion loss.

In order to identify and assess the relevance of harms that may be inflicted upon landholders, this introductory research analyses key judgments relating to compensation for CSG and mining projects and takes advantage of the material created by the 2011, NSW and Australian Senate inquiries into matters related to CSG.

Some aspects of CSG occupation are unusual. In land affected by CSG works, the property occupied is handed back to the landholder at the cessation of extraction: moreover, the actual term of occupation is difficult to determine at the outset of occupation. The research concludes that the harms inflicted by CSG occupation depend upon the interaction of the CSG project with the property occupied, its uses and its topography. Importantly, the “harms” caused by the occupation by part of land can extend outside the land occupied by the CSG work. The potential loss in value to “balance lands”, disturbance costs and potential for longer term blight are issues that need close consideration in assessing compensation.

Background: evolving theory of compensation for CSG

Although the theory of valuation for compulsory acquisition of land is well developed, the theory relating to the assessment of compensation for occupation by coal seam gas (CSG) infrastructure is still evolving. One of the tenets of compensation in the taking of property is the principle of equivalence.

In determining compensation, the overriding principle is of equivalence, ensuring that, so far as money can do it, the landholders are placed in the same position as if the mining claim was not granted. (Horn v Sunderland Corporation [1941] 2 KB 26 at 43), cited in the Queensland mining case of Messer & Messer v Rossi & Others [2001] QLRT 6 2.

As indicated, in *Peabody West Burton Pty Ltd & Ors v Mason & Ors* [2012] QLC 23, 7, the principle may be implemented by identifying the harms that are occasioned by the occupation of land by mining infrastructure. “*In short, when one looks at the words 'diminution of the value'... one immediately has to ask 'diminution of the value by reason of what acts or events?'*” (*Peabody West Burton idem*) This paper investigates the harms inflicted upon landholders by CSG occupation.

Methodology

CSG and mining cases in NSW, Queensland and Alberta (Canada) are interrogated so as to identify the main affects of partial occupation by CSG infrastructure. The use of material from diverse sources facilitates the corroboration of key influences. The key Australian CSG cases of *Halfpenny Investments Pty Ltd V Sydney Gas Operations 2003/44* (NSW Mining Warden) and *Sullivan and Sullivan v Oil Company of Australia Limited and Santos Petroleum Operations Pty Ltd, [2003] QLRT 2* provide case studies through which the various impacts of CSG can be identified and assessed. Information relating to the CSG development processes is gleaned from industry publications and evidence tendered to the recent NSW and Australian Senate inquiries.

CSG occupation and compensation in NSW

The *Halfpenny* case demonstrated the compensation outcomes that are possible under the current NSW legislation (which was introduced prior to the advent of CSG production in NSW). The NSW Mining Warden’s Court brought down its decision in the case of *Halfpenny* on the 20th January 2004. The court “compensated” *Halfpenny* for the occupation of a 229.5 ha rural property on the south western fringe of Sydney by ten wells and accompanying roads. Table 1 summarises the award (based on the areas on page 20 of the judgement).

| Table 1 The compensation award in <i>Halfpenny</i> | | |
|---|----------------------|-------------------|
| Upfront payment for establishment of 10 wells. | | \$2,333.33 |
| <i>Rent value derived from summated capital value \$25,000 per ha for land occupied (\$2.50 per m²) at 8% =rent of \$0.20 per m² per annum.</i> | | |
| 1 | Wells | \$64.00 |
| 2 | Other land and roads | \$3,283.60 |
| 3 | Workover | 24.04 |
| Total Per Annum | | \$3,371.64 |

In handing down a distinctly ungenerous award, the court raised key issues. The evidence of valuers was criticised because it did not address the compensable items in s 109 of the NSW legislation. The court produced an estimate (at page 20) of compensation based upon *common practice within the industry*, and proceeded to base its calculations entirely upon the land occupied by the work (but subject to confirmation of areas by survey). The *Halfpenny* case gives rise to a fundamental question: *what harms result from occupation by CSG infrastructure?*

Access for exploration and production

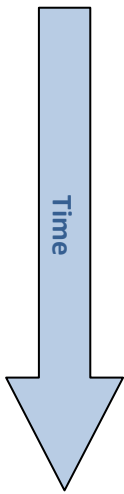
The basis of the problem is that to recover the resource, miners often need to access surface land that is owned by others. In NSW and Queensland, the NSW *Petroleum [Onshore] Act 1991* and the Queensland *Petroleum and Gas (Production and Safety) Act 2004* authorise CSG miners to enter land for the purposes of CSG exploration and production. Access for CSG projects is instituted at the request of the CSG miner, who must request access and acquire a formal “*Access Arrangement*” in NSW and a “*Conduct and Compensation Agreement*” in Queensland. The right of access that is conferred by statute creates the need to compensate landholders for intrusion (Bodenmann et al, 2012, 9), and as this paper shows, the right of access itself can (through the imposition of a “tenancy” arrangement of an imprecise term) even be the source of harm.

As Bodenmann (et al, 2012, 8 & 25) pointed out, access to land will ultimately be granted. No plainer exemplar of this exists than the NSW CSG case of *Halfpenny*, 2003/44, 5, where the court observed: “*Sydney Gas Operations Limited has the right, in accordance with PEL 2, to enter and explore upon the property of Halfpenny Investments Pty Limited, without the consent of the landholder...*” The right of access is not a new phenomenon, in order to promote exploration and mining of minerals and petroleum (which are the property of the Crown), NSW has provided miners with rights of access over land since ‘*the end of the 19th century*’ (Roth, 2012, 10).

The CSG development process

Mining exploration frequently involves temporary drilling activities on private land. For example, in *Electricity Authority of NSW v Reynolds* (1978, 1) access was required for six months, and in *Australian Gaslight Company v O’Grady & Burrell* NSW [Mining Warden] 1986, 7 access was required for an estimated eight weeks. When mining exploration is complete, activities usually cease. The process in CSG developments can be different.

Examination of the literature (for example Australian Petroleum Production and Exploration Association (APPEA), 2011, 2) Metgasco, 2011, 6 and NSW Government *Draft Code of Practice* 2012 , 7) indicates the CSG process can involve the stages in Table 2.

| | Stage | Activities and supporting literature / cases |
|--|-------|--|
|  | 1 | Exploration (development or establishment) Drilling core wells; seismic (Metgasco op cit; APPEA idem: <i>Halfpenny v Sydney Gas 2003</i>). |
| | 2 | Assessment Pilot wells & attendant gas lines plus access roads (Metgasco op cit; APPEA op cit). |
| | 3 | Production Production phase entered as gas flow from reaches satisfactory levels. Maintenance tasks. <i>Sullivan and Sullivan v Oil Company of Australia Limited and Santos Petroleum Operations Pty Ltd, [2003] QLRT 2</i> . |
| | 4 | Decommissioning Fluids removed and excavations filled. Wells cemented. Removal of wells and hardstand (Metgasco op cit, 20). |

The prime problem associated with the CSG development process is the difficulty in separating the exploration process from production. As the NSW Government *Draft Code of Practice for Coal Seam Gas Exploration*, 2012, 10 indicated, an “exploration well” will only become a “production well” if there is satisfactory flow of gas. This means that an exploration well may prove to be just that, if the resource proves to be unviable the well (and the requirement for access) will be temporary, and use will cease after exploration. However, if viable gas is found, wells move into an “assessment” and “production” phase.

CSG access: inconveniences and harms

Perusal of CSG and mining cases in NSW, Queensland and key Albertan cases, and examination of evidence heard at the NSW 2011 inquiry and the Senate Murray Darling inquiry (2011) indicates that the harms that can be caused by CSG occupation fall into the categories of disturbance; occupation of lands; severance; and injurious affection.

CSG processes first affect property at the exploration stage. Landholders report the exploration-establishment stage can disrupt property operations and the quiet enjoyment of property. Lloyd Pastoral, 2011, 4) reported establishment of a CSG project generated considerable nuisance. This is supported by International Energy Agency (IEA), 2012, 22 who reported establishment works (including drilling) as “*the most visible and disruptive in any oil and gas development*”. The *Halfpenny* case indicated the establishment of wellheads can take up significantly more land than that occupied by production wells and establishment can include (in addition to drilling operations) the burying of gas pipelines and grading of access roads. IEA (2012,23) went on to say that drilling is often conducted 24 hours per day, and that works can generate a number of truck movements as materials and apparatus are delivered to wellheads.

Disturbance

Disturbance costs incorporate a wide range of inconveniences that can occur throughout the CSG process (including physical damage to fences etc, owner’s time, lost production and legal fees). The case of *Australian Gaslight Company v O’Grady & Burrell* NSW [Mining Warden] 4 1986 (where the NSW *Petroleum Act 1955* applied) provided examples of the disturbances that can result from gas exploration. At page six of *Australian Gaslight* the area of the single well was said to be 6,000 square metres. Additionally, there was a bridge that needed upgrading (page nine), and page 10 of the judgement indicated the need to improve roads so that heavy equipment could access the drill site. Because the drilling operations were to be on a 24 hour basis, the tenant/manager was said to have articulated concern about being able to occupy her home during the work (and O’Grady pointed out that this could adversely affect supervision of livestock). At page 18, the judgement provided an allowance for the owner’s time in supervising the operation. Importantly, negotiations as to access and variations to projects (which take place over the life of a CSG project) consume time. According to one affected owner (SBS Insight 20 September 2011 (10 & 11 of transcript) complained that access compensation “*gets chewed up*” by meetings and phone calls. Allowance for this time can be an important component of compensation. Because on-going access is required, landholders will find themselves in contact with gas operators over the term of occupation.

The property in *Australian Gaslight* was used for grazing, however, no compensation appears to have been made for loss of production (though the property was said to be occupied for only 55 days). In the case of cropping land it is possible that even short-term occupations (particularly at key times in the growing cycle) could do significant damage to both farm processes and income. Importantly, identification of financial losses (and tax implications from varied profitability) may be possible after only accounting advice; and although the current NSW legislation makes allowance for deprivations to farm and farming infrastructure, its provisions in respect of professional fees are restricted.

The more liberal Queensland Petroleum and Gas (Production and Safety) Act 2004 532 (4) (b) bestows a right to claim for *accounting, legal or valuation costs the claimant necessarily and reasonably incurs to negotiate or prepare a conduct and compensation agreement, other than the costs of a person facilitating an ADR*. However, at the date of this paper its NSW counterpart the NSW *Petroleum [Onshore] Act 1991* (69D (2A) only provides *the reasonable legal costs of the landholder in obtaining initial advice about the making of the arrangement*.

Although the Queensland provisions are wider than those of NSW, neither of the two states currently affected by CSG exploration and production have provisions that are as wide as the Australian Law Reform Commission 1980 (122) definition:

... economic losses which result naturally, reasonably and directly from acquisition. It may include such items as removal expenses, costs of necessary replacement of furniture and fittings, legal and other costs of purchasing new accommodation and loss of local goodwill.

Although advice obtained from sources such as accountants and valuers in the course of responding to requests for access by CSG operators appears to be a *natural* and *reasonable* consequence of the acquisition, currently the legislative base for professional costs is not as wide as that in the Australian Law Reform Commission 1980 definition.

Disturbance losses need to be specified carefully. Importantly, where nuisances occur throughout the CSG process (for example maintenance work) they may be best classified as injurious affection where clear legislative support exists for this concept.

CSG occupation

The most obvious “harm” inflicted upon property is physical occupation. The density of wells depends upon the grid pattern adopted by CSG miners. Grids vary, and the Australian Senate (Canberra Tues 9 August, 2011) reported grids of 400 to 750 metres.

APPEA indicated a *15m x 15m plot* for is required for production wells (APPEA, 2011, 2). In *Halfpenny* (pages 20-21 of the judgement), ten well sites occupied an estimated total area of 320 square metres and roads totalled a further 16,418 square metres. In all, this averages 1,673 square metres per well. This indicates a significant variation in the area of wellhead sites (requiring a cautious appraisal of areas in the assessment of compensation for individual properties).

How long does occupation last?

The key issue of duration of occupancy is subject to uncertainty, and this differentiates occupancy for CSG from other forms of partial occupation (for example easements for electricity or water infrastructure). One industry body commented: *A typical coal seam gas well can last 10 to 15 years. It depends on the well. Obviously as time goes on you may want to abandon one well and drill one or two others*” (Australian Senate Management of the Murray-Darling Basin System 9 September 2011 Canberra, 18). In fact, a range of estimates of the length of occupation exists. One puts the probable time of occupation as 42 years (*Australian Senate August 2011, Canberra, 32*).

This is consistent with overseas experience where estimates vary from 5 – 15 years (Global Environment Alert Service, 2012, 8) to the report by the International Energy Agency, 2012, 27; *“unconventional gas wells¹”* may have a life equal to the *“30 years”* attributed to conventional gas wells. At the onset of access, the ultimate term is difficult to estimate. While extraction is viable, it is likely that miners will seek to renew their licenses and remain in possession (Fibbens et al 2013).

At the outset, neither the CSG miner nor landholder knows how long occupation will last. Thus, the landholder has no certainty as to when they will regain full control of their estate.

The scope of the CSG works: uncertainty and compensation

As evidence tendered at the Australian Senate Inquiry (2011) indicated, uncertainty as to the scope of the CSG work also exists. The statement *“...as time goes on you may want to abandon one well and drill one or two others”* (Australian 9 September 2011 Canberra, 18) discloses a desire for flexibility as to the location and number of wells. The evolution of CSG projects is evidenced by *Sullivan and Sullivan v Oil Company of Australia Limited and Santos Petroleum Operations Pty Ltd, [2003] QLRT 2*, where the need for judicial intervention was made necessary by the expansion of existing CSG

¹ A term used to describe shale and CSG gas (CSG is classed as an “unconventional” gas, whereas “conventional” gas is trapped within rock strata and is often under pressure).

infrastructure. Variations to CSG projects dictate that extra works would have to be negotiated (and compensated) as they arise. However, this additional element of “flexibility” brings added uncertainty for landholders.

Coal seam gas exploration and extraction often entail construction of works. For example, in NSW Section 41 of the *NSW Petroleum [Onshore] Act 1991* provides for the following rights in respect of production licenses:

with the right to construct and maintain on the land such works, buildings, plant, waterways, roads, pipelines, dams, reservoirs, tanks, pumping stations, tramways, railways, telephone lines, electric powerlines and other structures and equipment as are necessary for the full enjoyment of the lease...

Individual access documents may also convey the right to CSG miners to make improvements. In *Halfpenny*, at page three of the access schedule, the access arrangement imposed by the court authorised the making and use of improvements including wellheads; access roads; bridges; water pipelines; electric lines; and buried gas lines.

The statutes of both NSW and Queensland make provision for the loss of surface land. The *NSW Petroleum [Onshore] Act 1991* provides for compensation 109 (1) (b) *by deprivation of the possession or of the use of the surface of land or any part of the surface*. However, the *Queensland Petroleum and Gas (Production and Safety) Act 2004*, goes further by providing: (532 (4) (a) (ii) *diminution of its value*. In the Queensland mining case of *Wills v Minerva Coal Pty Ltd QLC/1998/149*, 24 the court considered that the use of the term “value” in the *Queensland Mineral Resources Act 1989* invoked varying interpretations of the term (including both *market value* and *special value*).

Compensation for deprivation of the surface is often accomplished by striking a value for the land occupied by the work. In *Halfpenny* compensation was awarded solely on the basis of a rent value per square metre of \$0.20 for land occupied (derived from values in the district of \$25,000 per hectare as per rows 1 & 2 of Table 1).

Occupation by CSG and the effects of severance

The landholder is excluded from entering fenced sites and cannot erect fences and sink bores on hardstand areas. Road networks and wellheads can extend over a property (as was the case in *Halfpenny*), and this can exacerbate affects. Additionally, wellheads are fenced, and form an obstacle that can cause a nuisance. As the court indicated in *Canadian Natural Resources Ltd v Bennett & Bennett Holdings Lt and Circle B Holdings Ltd. QBA Alberta 2008*, 18: “...the site contains an obstruction which must now be farmed around...”

However, there is a key question. Does “severance” under mining and petroleum legislation mean the same as it does in compulsory acquisition? The Queensland case of *Wills v Minerva Coal Pty Ltd [QLC] 1998 149*, 25 provides a broad discussing of compensation (including the right to severance). The court observed, in respect of “severance” and its interpretation in *Suntown Pty Ltd v Gold Coast City Council* (1979) 6 QLCR 196 that it saw “no obstruction to attributing the same meaning to severance in the MRA (*Queensland Mineral Resources Act 1989*). The decision in *Wills* was referred to in the Queensland CSG case of *Sullivan and Sullivan v Oil Company of Australia Limited and Santos Petroleum Operations Pty Ltd, [2003] QLRT 2, 7*. Moreover, in the NSW mining case of *Moolarben Coal Mines Pty Ltd & Ors v Ulan Coal* (NSW Mining Warden, 2008, 26) a sum of \$50,000 was allotted for severance compensation following expert valuation evidence. Severance was discussed in the NSW case of *Australian Gaslight Company v O’Grady & Burrell NSW [Mining*

Warden] 4 Feb 1986, 17; but no compensation was specifically awarded for this head. However, although severance would have been claimable in *Halfpenny*, analysis of the award shows that no compensation was awarded.

Importantly, the compensable item of “severance” will almost certainly be limited to its meaning within valuation theory generally. Any loss in utility and amenity due to the use of the land that is occupied fittingly falls outside of “severance” damages: and is most appropriately claimed under what general valuation theory classifies as “injurious affection”.

Occupation of land by CSG: the injurious affection

In *Canadian Natural Resources Ltd v Bennett & Bennett Holdings Lt and Circle B Holdings Ltd. QBA Alberta* 2008, 18 the court observed that: “(f)actors such as noise emanating from a well site, or the unsightly view of a well jack from the living room window, are considered compensable factors under the *Surface Rights Act*. In Australia influences of this nature are referred to as injurious affection.

Injurious affection arises from the use and the activities upon the land taken (see Hyam 2009, 445, Brown 2009, 165, 166), and it is potentially a more significant item of harm than severance. In CSG extraction, the harms resulting from the use and activities include drilling, fracking, the extraction process, well maintenance, vehicles using roads and maintenance operations are classified as injurious affection (*Sullivan and Sullivan v Oil Company of Australia Limited and Santos Petroleum Operations Pty Ltd, [2003] QLRT 2, 23*).



Figure 1 CSG Well at Menangle showing wellhead within fenced area

Source: Photograph courtesy Hon Jeremy Buckingham 2013

The fenced enclosure and water tank (Figure 1) are characteristic of many wells located in the Menangle area of NSW. The wellhead site comprises the wellhead pipe and associated plant. Wellheads observed in the field often contain signage warning of explosive gas (indicating the gas retrieval process incurs some risks) and prohibiting “unauthorised entry” (Figure 2a). Additionally, the Energy Resources Conservation Board (Alberta), 2013, 7, notes that “*flaring incinerating and venting*” of gasses can occur. These processes can increase bushfire risk and disrupt amenity.

In *Sullivan (QLRT)* the CSG works were said to consist of a central processing plant, and a compressor was said (at paragraph 102 of the judgement) to cause a noise nuisance. One expert witness in *Sullivan* was quoted as observing "*Springton* is now a property which contains within its boundaries, two competing and fundamentally conflicting industries." The witness identified these uses as "primary producer" and "operating gas field".



Unlike public infrastructure such as electricity sub-stations and sewer and water pumping facilities, CSG plant requires regular maintenance. In south western Sydney one maintenance task involved the regular removal of waste water. The CSG operator reported: "At the moment, it is captured at each of the wellheads and, periodically, a 'vac' truck goes round and collects the produced water and it is sent it off to a recycling plant in Sydney..." (Australian Senate Canberra Tues 9 August 2011, 35).

Evidence heard in *Sullivan (2003)*, 27 substantiated the nuisance that can be generated by CSG activities. "There are daily visits by the respondents' personnel to *Springton*. There is constant monitoring and testing of the wells... Even when it rains and the respondents cannot reach their wells by road, the respondents' personnel arrive by helicopter." The witness went on to observe the CSG miners were "basically free to go wherever they please on *Springton*" and they constituted "a constant, visible interruption to what would otherwise be a peaceful rural environment". The inconvenience of sharing surface land "with unknown people" was confirmed by *Lloyd Pastoral's* 2011 submission (at page 4). The potential for injurious affection is probably significantly greater for CSG projects than for acquisitions of property for many forms of water and power infrastructure.

In *Sullivan and Sullivan v Oil Company of Australia Limited and Santos Petroleum Operations Pty Ltd*, [2003] *QLRT* 2, an award was made for injurious affection in the sum of \$95,760. This was based upon the decrease in value of the balance land of \$40 per hectare (adjusted for "time" of occupation). Oil Company of Australia and Santos appealed the judgement, and this was successful (*Sullivan and Sullivan v Oil Company of Australia Limited and Santos Petroleum Operations Pty Ltd*, *Re* [2003] *QCA* 570. At the time, there was no legislative authority for compensation for injurious affection.

Notwithstanding this technicality, the problem of injurious affection remained. Because of the nature of the CSG development and production processes, the "harms" identified in *Sullivan* are likely to apply to many properties affected by CSG occupation. The decision in *Sullivan* has significance for NSW (where there is currently no clear authority for payment of injurious affection in s 109 of the *NSW Petroleum [Onshore] Act 1991 (Scarr, 2004, 57)1*).

The Queensland legislation was replaced in 2004, and now provides for, at 532 (4) (a), (ii) *diminution of its value; (iii) diminution of the use made or that may be made of the land or any improvement on it.* (Scarr, idem) indicated that this terminology includes loss in value to the balance lands. Similar provisions exist in Tasmania *Mineral Resources Development Act 1995* and Victoria *Petroleum Act 1998*. However, the compensation provisions of the NSW act remain much as they were when enacted in 1991.

The judicial comments in *Sullivan* (2003) QLRT identified a number of examples of the significance of injurious affection in compensation for CSG occupation. In commenting on the various nuisances, the court concluded:

... it must be accepted that the hypothetical prudent purchaser will pay less for the property for a reason no more than that people do not care to live and work in the vicinity of such works, irrespective of the other amounts of compensation paid.... A hypothetical prudent purchaser would have those fears enhanced on viewing the property for the purpose of purchase on seeing the many 'danger' and 'warning' signs ... (Sullivan [2003, 38).

The powers of access; rights and blot on title

The uncertainty about the duration of occupation and the ultimate number of wells combine with the extractive character of the enterprise to introduce negative characteristics. Depressing influences caused solely by the notification of an interest on title such as an easement are referred to as the *blot on title*. The problem is, in the case of CSG no interest is registered on tile. As Christensen et al (2012, 6) pointed out (in the context of access and compensation arrangements in Queensland): “*Land access agreements do not fall within any recognised category of proprietary interest although it arguable that they are functionally similar to an easement*”.

Notwithstanding the lack of interference with land title, access for CSG projects creates a right for someone other than the registered proprietor to be on the surface of the holding for an indeterminate time and to carry out activities and make improvements. There is no apparent mechanism by which a landholder can arbitrarily bring occupation to an end (see comment in Christensen, et al, 2012, 10). In *Canadian Natural Resources Ltd. v. Bennett & Bennett Holdings Ltd., [2008] ABQB 26*, the court observed that adverse effect does not arise solely from the loss of land and physical structures: “*It also arises from the need to interact with the operator as a business associate. The problem for the landowner is that it did not voluntarily choose to have this business relationship...*” The nebulous term of occupation and extractive processes set CSG occupations aside from other forms of partial occupation (for example occupation by a small electricity sub-station or sewage pump).

Perhaps the most appropriate place for any “blot” or “blight” that results from a compulsory occupation for extractive purposes for a term of occupation that may be ill-defined is to include allowances under the heading of “injurious affection”.

The CSG process: harms and compensation

Moreover, as the Australian Petroleum Production and Exploration Association (APPEA) reported, a number of farm and project related factors interact to affect the way in which property is impacted by CSG infrastructure (*Australian Senate Response to Questions Taken on Notice APPEA July 2011, 1*). This is confirmed by the board’s remarks in *Conocophillips Canada Resources Corp v Taylor, 2007 (AB SRB), 5*: “*The subject taking is on their home quarter, will cause them more disturbance and inconvenience than the site on the adjacent quarter ...*” Location of wells in relation to property infrastructure and roads is an important consideration in assessing compensation.

The “traditional” headings of disturbance; land occupied; severance and injurious affection are valuable in the assessment of compensation for CSG occupation. They form a useful outline for compensation. However, “harms” that result from CSG occupation can occur throughout the various stages of CSG process, including exploration, establishment, production and decommissioning. As an example, physical disturbance and injurious affection can occur on establishment, during annual maintenance and at the decommissioning stage. Moreover, disturbance costs (fees) can be incurred at inception, and upon the execution of further access arrangements (necessitated by expiry of term for original arrangements or through variations such as extra wells, or other infrastructure). This process requires flexible compensation provisions. As the court observed in *Enbridge Pipelines (Athabasca) Inc., Operator, - And - John Karpetz & Ors, 2008, 11*

Since the landowner’s rights are taken for an indefinite period of time and the landowner must co-exist with the company, the only fair way to compensate the landowners is by a method of ongoing compensation which is reviewable at regular intervals to take into account changing circumstances over time.

Because of the uneven occurrence of “harms” compensation packages may best comprise both upfront and annual payments.

Assessing compensation

Legislators have the responsibility to ensure that all harms occasioned through the partial occupation of surface lands have complete legislative support. Moreover, the CSG process (which may evolve as it progresses) demands a legislative base that provides for revision of compensation over time. Landholders considering financial packages offered as “compensation” for occupation should ensure that the net present value (NPV) of the package equals that of compensation for the various harms occasioned by occupation. Importantly, valuers preparing compensation claims on behalf of affected landholders must take care to identify all harms that occur throughout occupation. Particularly, valuers need to ensure there is a clear legislative right for items claimed. Future papers in this series examine the valuation methods that are applicable to the assessment of compensation.

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