Unconventional natural gas in the courts: An overview

Keynote Address by the Hon. Justice Brian J Preston SC* to the

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I Introduction

The issue of deriving energy from unconventional gas sources is one that has attracted much controversy and debate in Australia and other jurisdictions, most notably the United States. In the past, unconventional gas sources have generally been dismissed as a viable energy source, a fact that may be attributed to technological difficulties and the high costs associated with the process for producing energy from such sources.[1] However, technological innovations such as hydraulic fracturing (commonly referred to as "fracking") and horizontal drilling have effectively transformed unconventional gas into an economically and technologically viable source of energy.[2]

Proponents of energy production from unconventional gas sources have promoted the implementation of large scale projects or activities involving production of energy from such sources. They have argued that implementation of such projects or activities produces a number of benefits, including creation of jobs, positive effects on global markets and promotion of national security in individual countries.[3]

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[1] See, eg, Susan L Sakmar, 'The Global Shale Gas Initiative: Will the United States be the Role Model for the Development of Shale Gas Around the World?' (2011) 33 *Houston Journal of International Law* 369, 370-371.

[2] Sakmar, above n 1, 370-371; Molly Wurzer, 'Taking Unconventional Gas to the International Arena' (2012) 7 *Texas Journal of Oil, Gas and Energy Law* 357, 360-362; Ross H Pifer, 'A Greener Shade of Blue? Technology and the Shale Revolution' (2013) 27 *Notre Dame Journal of Law, Ethics & Public Policy* 131, 134; John Deutch, 'The Good News About Gas: The Natural Gas Revolution and its Consequences' (2011) 90 *Foreign Affairs* 82, 84; Sarah K Adair et al, 'Considering Shale Gas Extraction in North Carolina: Lessons from Other States' (2012) 22 *Duke Environmental Law & Policy Forum* 257, 258.

[3] See, eg, Nicola Swayne, 'Regulating coal seam gas in Queensland: Lessons in an adaptive environmental management approach?' (2012) 29 *Environmental and Planning Law Journal* 163, 163; Laura Letts, 'Coal seam gas production – friend or foe of Queensland's water resources?' (2012) 29 *Environmental and Planning Law Journal* 101, 102; Wurzer, above n 2, 362-366; Pifer, above n 2,139-140; Bernard D Goldstein, Elizabeth Ferrell Bjerke and Jill Kriesky, 'Challenges of Unconventional Shale Gas Development: So What's the Rush?' (2013) 27 *Notre Dame Journal of*

Proponents have also suggested that deriving energy from unconventional gas sources presents a cleaner-burning fossil fuel when compared with conventional sources of energy (e.g. the burning of coal), and thus offers an ideal transitionary measure in moving towards a greener economy built on renewable energy sources.[4] Some have even gone so far as to emphasise that forms of unconventional gas (e.g. shale gas) represent an 'energy panacea',[5] and that the main process associated with extraction of unconventional gas and production of energy from it, i.e. fracking, is 'a safe and effective way to recover oil and gas from shale formations'.[6]

While the benefits associated with the production of energy from unconventional gas sources may be substantial, it should be recognised that the processes used for producing energy from these sources are still in their infancy.[7] Innovative use of technologies for extraction of, and subsequent production of energy from, natural resources carries with it new risk profiles that are uncertain, or not fully known or understood.[8] Indeed, opponents of producing energy from unconventional gas sources have argued that significant adverse environmental risks and impacts are likely to be associated with processes for producing energy from such sources. Such risks and impacts include contamination of groundwater systems and the potable water supply of cities or towns located within the vicinity of an unconventional gas project or activity, as well as generation of atmospheric pollution and soil contamination through energy extraction and production processes.[9] It has also been suggested that unconventional gas projects or activities may result in

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Law, Ethics and Public Policy 149, 149-150; Alec Samuels, 'Fracking' [2013] *Journal of Planning and Environment Law* 1089, 1090.

[4] Sakmar, above n 1, 371; Swayne, above n 3, 163; Letts, above n 3, 102-103; Leonard S Rubin, 'Frack to the Future: Considering a Strict Liability Standard for Hydraulic Fracturing Activities' (2012) 4 *George Washington Journal of Energy and Environmental Law* 117, 117; Bruce M Pendery, 'Generating Electricity with Natural Gas: It's Plentiful and Cheap, but Regulation is Needed to Prevent Environmental Degradation' (2012) 32 *Utah Environmental Law Review* 253, 264-265; Zachary Lees, 'Anticipated Harm, Precautionary Regulation and Hydraulic Fracturing' (2012) 13 *Vermont Journal of Environmental Law* 575, 575.

[5] Jason T Gerken, 'What the Frack Shale We Do? A Proposed Environmental Regulatory Scheme for Hydraulic Fracturing' (2013) 41 *Capital University Law Review* 81, 90. Contra Pendery, above n 4, 259.

[6] Jeffrey C King, Jamie Lavergne Bryan and Meredith Clark, 'Factual Causation: The Missing Link in Hydraulic Fracture – Groundwater Contamination Litigation' (2012) 22 *Duke Environmental Law and Policy Forum* 341, 341.

[7] See, eg, Alan Randall, 'Coal seam gas – Toward a risk management framework for a novel intervention' (2012) 29 *Environmental and Planning Law Journal* 152, 156-157.

[8] Randall, above n 7, 156-157; Goldstein, Bjerke and Kriesky, above n 3, 162.

[9] See Sakmar, above n 1, 399-406; Randall, above n 7, 154-156; Swayne, above n 3, 164; Samuels, above n 3, 1089.

adverse impacts on stakeholders such as the agricultural industry (e.g. pollution of soil where crops are grown or impacts on aquifers used by agriculture), in addition to undesirable social and economic impacts on human communities and populations.[10]

Given the contentious nature of projects or activities involving production of energy from unconventional gas sources, it is unsurprising to find that many stakeholders who feel harmed or aggrieved by, or dissatisfied with decisions to approve, the operation of such projects or activities are beginning to resort to the courts for remedy or redress of a perceived wrong or injustice. Up until this point, we have not witnessed an explosion of cases involving challenges to unconventional gas projects or activities in jurisdictions where such projects or activities are occurring. However, it is evident that the past few years have witnessed a growing number of such cases.[11] As unconventional gas projects or activities become more commonplace in the future, it is likely that we will see a substantial increase in litigation concerning these projects or activities.

For present purposes, we have a sufficient number of cases to make some observations about the variety of forms these cases are currently taking in the courts and to enable us to make some comments or predictions about how the issue of energy production from unconventional gas sources could play out in the courts in the future.

With this in mind, this paper provides an overview of the avenues that have been used or could be used, in the future, to litigate issues relating to the extraction of, and the production of energy from, unconventional natural gas. It will first provide an overview of unconventional natural gas, noting its three main types. It will also distinguish unconventional gas from its traditional counterpart, namely conventional gas. The paper will then move on to provide an overview of the avenues that have been used or could be used in several jurisdictions to litigate issues relating to unconventional gas projects or activities, focussing on the different causes of action that may characterise a case relating to unconventional gas. The paper will conclude by reflecting on the directions unconventional gas litigation is likely to take

[10] Randall, above n 7, 154-156.
[11] See, eg, King, Bryan and Clark, above n 6, 344.

in the future. In the process, this paper will fill a gap in the existing legal literature on unconventional natural gas.

At the domestic level, plaintiffs have used tort or contract law to challenge the operation of unconventional gas projects or activities. Causes of action in tort have generally included actions of trespass, nuisance (both public and private) and negligence. In some cases, actions based in tort have been accompanied by contractual causes of action. Causes of actions founded in contract law have also been litigated in circumstances where tortious issues are not raised by the parties to the given dispute. In unconventional gas cases involving issues of contract, the courts have usually been asked to consider whether there was some vitiating element or characteristic present (e.g. mistake, misrepresentation, duress, undue influence, unconscionable conduct or illegality) that effectively rendered void the contract between the parties or whether some supervening event or fundamental breach entitled one party to terminate the contract.

Litigants have also used administrative law and civil enforcement proceedings to bring unconventional gas issues before the courts. Private and public interest litigants have instituted judicial review proceedings to challenge administrative decisions or conduct concerning particular unconventional gas projects or activities. Property owners have, in civil enforcement proceedings, sought to restrain unconventional gas operators breaching the terms of the relevant petroleum and gas lease and applicable statutes.

Litigation has also occurred in relation to property rights. Real property owners and unconventional gas project operators have litigated over access to land for exploration and production. Joint venturers have litigated over the sale of interests in an unconventional gas joint venture and over ownership of petroleum licences.

There have also been criminal prosecutions against unconventional gas operators and others for offences committed against petroleum, environmental and corporations legislation. At the international level, there has been unconventional gas litigation arising under European Union law.

It is evident that the unconventional gas litigation that has been brought thus far may be generally divided into four categories.

The first category of cases is those between landholders and gas companies. Typically, cases in this category involve landowners bringing causes of action against a gas company alleging tortious conduct on the part of a gas company, breaches of oil and gas leases, and violation or infringement of property rights (e.g. unauthorised access to land). In turn, gas companies have brought actions against landowners to secure access to land.

The second category of cases is those between rival gas companies. So far, cases in this category have mainly focussed on issues relating to competition between rival gas companies during the tender process for unconventional gas projects or activities.

The third category of cases is those between regulatory agencies or authorities and gas companies. Gas companies have brought judicial review proceedings to challenge decisions made by government that relate to unconventional gas projects or activities. Regulatory agencies have brought criminal prosecutions against gas companies for violations of environmental and occupational, health and safety laws.

The fourth category is public interest litigation by environmental non-government organisations seeking judicial review of government decisions to grant leases or approvals for unconventional gas exploration or production.

II What is unconventional gas?

The different forms of natural gas generally fall into one of two categories: conventional gas and unconventional gas.[12] Conventional gas is obtained from reservoirs that generally consist of porous sandstone formations that are capped by an impermeable layer of rock, with the gas trapped by buoyancy.[13] The gas can

[12] Commonwealth Scientific and Industrial Research Organisation (CSIRO), *What is coal seam gas?* (Fact Sheet, April 2012) <http://www.csiro.au/news/coal-seam-gas>.
[13] CSIRO, above n 12; Sakmar, above n 1, 374-375.

often move to the surface through the gas wells, without the need to pump, by simply drilling directly into the reservoir.[14]

Unconventional gas, in contrast to conventional gas, is generally produced from complex geological structures that prevent or significantly limit the migration of gas.[15] The extraction of unconventional gas from complex geological structures requires use of a variety of production techniques, most notably fracking and horizontal drilling.[16] Because of the low permeability of the complex geological structures in which unconventional gas is found, these production techniques are deployed to stimulate the reservoir by creating fissures in the rock, which enable gas to flow more easily through the rock, thereby enhancing production.[17] There are at least three types of unconventional gas: coal seam gas ('CSG'), shale gas and tight gas.[18]

First, CSG, which is also known as coal bed methane, is a form of natural gas that is typically extracted from coal seams with depths of between 300 to 1000 m below the surface.[19] While CSG is a mixture of numerous gases, it is mostly composed of methane (roughly 95-97 per cent pure methane).[20] CSG is absorbed entirely into the coal matrix.[21] Movement of CSG to the surface through gas wells normally requires extraction of formation water from the coal cleats and fractures, which serves to reduce the pressure and allow methane to be released from the coal matrix.[22] Over time, water production will decrease while gas production will increase.[23] CSG production normally requires a higher density of wells in comparison to conventional gas production, but CSG wells are generally shallower than their conventional counterparts and are also less expensive to drill.[24]

[14] CSIRO, above n 12; Sakmar, above n 1, 374-375.
[15] CSIRO, above n 12.
[16] Sakmar, above n 1, 375.
[17] Ibid.
[18] CSIRO, above n 12; Sakmar, above n 1, 375-376.
[19] CSIRO, above n 12.
[20] Ibid.
[21] Ibid.
[22] Ibid.
[23] Ibid.
[24] Ibid.

Secondly, shale gas is generally extracted from clay-rich sedimentary rock which has naturally low permeability.[25] The gas contained in the rock is either absorbed or exists in a free state in the pores of the rock.[26]

Thirdly, tight gas is trapped in reservoirs characterised by very low porosity and permeability (e.g. sandstone).[27] The rock pores that contain the gas are miniscule in size, and the interconnections between them are so limited in nature that the gas encounters great difficulty in migrating through it.[28]

III Unconventional natural gas in the courts

a. Tort law

The bringing of tortious actions, either in a civil or common law system, is one way in which remedy or redress for harm – be it to person, property or the environment – may be sought. The causes of actions employed or likely to be employed are trespass, nuisance and negligence.

i. Trespass

There are three main types of trespass, namely, to the person, to goods and to land.[29] First, trespass to the person involves either an intentional or negligent act committed by the defendant against the plaintiff's will (e.g. assault, battery and false imprisonment). Secondly, trespass to goods comprises an unlawful disturbance of the plaintiff's possession of goods (e.g. by seizure or removal of goods or by a direct act causing damage to them). Thirdly, trespass to land covers every unlawful entry by the defendant onto land in the plaintiff's possession, even when no physical damage is done by the defendant on the land, and includes taking possession, pulling down or destroying anything permanently fixed to it, wrongfully abstracting minerals or resources from it, discharging water or dumping waste on it and so on. It

[25] Ibid.
[26] Ibid.
[27] CSIRO, above n 12; Sakmar, above n 1, 376.
[28] CSIRO, above n 12.
[29] David M Walker, *The Oxford Companion to Law* (Clarendon Press, 1980) 1238.

is this last type of trespass that has formed the basis of the overwhelming majority of unconventional gas litigation involving a cause of action grounded in the tort of trespass. So far, these have all been in the United States.

The case of *Coastal Oil & Gas Corp v Garza Energy Trust*[30] constitutes one of the most important cases decided thus far in the United States on the issue of trespass to land through carrying out of the fracking process.[31] The plaintiffs' injury was that the fracking of wells on neighbouring land invaded the gas reservoir beneath the plaintiffs' land causing substantial drainage of gas from beneath the plaintiffs' land to the wells on the neighbouring land. In this case, the Salinas family and other respondents ('Salinas') owned the minerals in a 748-acre tract of land in Hidalgo County called 'Share 13'. Coastal Oil & Gas Corp ('Coastal Oil') leased the minerals on 'Share 13' from Salinas. Coastal Oil also leased the minerals located on 'Share 15' and 'Share 12', which were tracts of land located adjacent to 'Share 13'. It later acquired the mineral estate on 'Share 12'. In leasing the minerals on 'Share 13' to Coastal Oil, Salinas had a royalty interest and the possibility of reverter in the minerals.[32]

A natural gas reservoir, known as the Vicksburg T formation, was located between 11,688 and 12,610 feet below all three tracts of land. The Vicksburg T formation was a 'tight' sandstone formation that was relatively imporous and impermeable, meaning that natural gas could not be commercially produced without the use of fracking. Coastal Oil used fracking to drill three wells on 'Share 13' and a highly productive fourth well (M Salinas No 3) close to the border between 'Share 12' and 'Share 13' (1,700 ft from 'Share 12'). Coastal Oil also drilled another well on 'Share 12' (Coastal Fee No 1) very close to the border (467 ft away from 'Share 13') and yet another well (Coastal Fee No 2) also close to the border on 'Share 13'. Coastal Oil, pursuant to Railroad Commission requirements, shut in an earlier producing well on 'Share 12' (Pennzoil Fee No 1) that lay close to Coastal Fee No 1 well as the

[30] 268 SW 3d 1 (Tex, 2008).
[31] See Hannah Wiseman, 'Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation' (2009) 20 *Fordham Environmental Law Review* 115, 149. See also Levi Rodgers, 'Subsurface Trespass by Hydraulic Fracturing: Escaping Coastal v. Garza's Disparate Jurisprudence through Equitable Compromise' (2013) 45 *Texas Tech Law Review* 99, 119-129 for an analysis of the decision.
[32] 268 SW 3d 1 (Tex, 2008), 5.

Commission was concerned that two adjacent wells on 'Share 12' would drain natural gas from 'Share 13'.[33]

Notwithstanding this action, Salinas sued Coastal Oil, arguing that Coastal Oil had breached its implied covenants by failing to develop 'Share 13' and prevent drainage of natural gas from 'Share 13' to 'Share 12'. Salinas was concerned that Coastal Oil was allowing 'Share 13' gas, on which Coastal Oil owed Salinas a royalty, to drain to 'Share 12' where Coastal Oil, as both the owner and operator of the tract of land, was entitled to the gas unburdened by a royalty obligation. For the Coastal Fee No 1 well on the northeast corner of 'Share 12', the fracking hydraulic length (the distance the fracking fluid will travel) was designed to reach over 1,000 feet from the well while the farthest distance to the 'Share 13' lease line was 660 feet. The parties agreed that the fracking hydraulic length and propped length (the distance the proppant will reach) extended onto 'Share 13', but disagreed on the issue of whether the effective length (the distance within which the fracking operation will actually improve gas production) extended onto 'Share 13'.[34]

Salinas claimed, among other things, that Coastal Oil had trespassed by fracking the well on 'Share 12' (including by the incursion of hydraulic fracturing fluid and proppants into the plaintiffs' subsurface land), causing substantial drainage of gas from the reservoir beneath 'Share 13'. Coastal Oil argued that Salinas, as lessor, had no possessory right to the minerals, and therefore, no standing to sue in trespass.[35]

The 332nd District Court of Hidalgo County (Ramirez, Jr. J) entered judgment on a jury verdict in favour of Salinas. Coastal Oil appealed to the Court of Appeals[36] which affirmed in part, reversed in part, and remanded. Coastal Oil petitioned for review to the Supreme Court of Texas.

In delivering the majority judgment on behalf of the Texas Supreme Court, Hecht J (Brister, Green, Christopher and Pemberton JJ agreeing) held that Salinas could not

[33] Ibid 5-6.
[34] Ibid 6-7.
[35] Ibid 9.
[36] 166 S.W.3d 301.

successfully recover damages on the basis of trespass.[37] Actionable trespass in this case required actual injury, and Salinas' only claim of injury – namely, that Coastal Oil's fracking operation made it possible for gas to flow from beneath 'Share 13' to the 'Share 12' wells – was precluded by the rule of capture.[38] Hecht J elaborated on the effect of the rule of capture in this case as follows:

> [The rule of capture] gives a mineral rights owner title to the oil and gas produced from a lawful well bottomed on the property, even if the oil and gas flowed to the well from beneath another owner's tract. The rule of capture is a cornerstone of the oil and gas industry and is fundamental both to property rights and to state regulation. Salinas does not claim that the Coastal Fee No. 1 violates any statute or regulation. Thus, the gas he claims to have lost simply does not belong to him. He does not claim that the hydraulic fracturing operation damaged his wells or the Vicksburg T formation beneath his property. In sum, Salinas does not claim damages that are recoverable.[39]

Salinas submitted that the rule of capture does not apply because fracking is 'unnatural', and that stimulating production through fracking that extends beyond one's property is no different from drilling a deviated or slant well – a well that departs from the vertical significantly – bottomed on another's property, which is unlawful.[40] Both of these submissions were rejected by Hecht J.

In addressing the submission that the rule of capture does not apply because fracking was 'unnatural', Hecht J stated that the point of this argument was not clear. His Honour noted that the argument, in the circumstances of this case, could be interpreted in three ways: 1) that fracking was 'unnatural' due to the presence of human intervention in the process; 2) that fracking was 'unnatural' in that it was 'unusual', or 3) that fracking was 'unnatural' in that it was 'unfair'.[41] Hecht J found each interpretation of little assistance to Salinas' submission.

First, his Honour held that the presence of human intervention in the fracking process was the very basis for the existence of the rule of capture and not a reason

[37] 268 SW 3d 1 (Tex, 2008), 13.
[38] Ibid 12-13.
[39] Ibid. See also Travis Zeik, 'Hydraulic Fracturing Goes to Court: How Texas Jurisprudence on Subsurface Trespass will Influence West Virginian Oil and Gas Law' (2010) 112 *West Virginia Law Review* 599, 605.
[40] 268 SW 3d 1 (Tex, 2008), 13.
[41] Ibid.

to suspend its application.[42] Secondly, fracking could not be regarded as 'unusual' because the technique of fracking had been commonplace throughout the oil and gas industry for some time and was necessary for commercial production of gas resources located in the Vicksburg T formation and many other formations.[43] Thirdly, fracking could not be regarded as 'unfair' because the law afforded Salinas with ample relief: e.g. permitting Salinas to use fracking to stimulate production from their own wells and drain the gas to their own property.[44]

In addressing the submission that stimulating production through fracking that extends beyond one's property is no different from drilling a deviated or slant well, Hecht J observed that:

> Both produce oil and gas situated beneath another's property. But the rule of capture determines title to gas that drains from property owned by one person onto property owned by another. It says nothing about the ownership of gas that has remained in place. The gas produced through a deviated well does not migrate to the wellbore from another's property; it is already on another's property. The rule of capture is justified because a landowner can protect himself from drainage by drilling his own well, thereby avoiding the uncertainties of determining how gas is migrating through a reservoir. It is a rule of expedience. One cannot protect against drainage from a deviated well by drilling his own well; the deviated well will continue to produce his gas. Nor is there any uncertainty that a deviated well is producing another owner's gas. The justifications for the rule of capture do not support applying the rule to a deviated well.[45]

Hecht J offered four reasons not to change the rule of capture to allow one property owner to sue another for oil and gas drained by fracking that extends beyond the lease lines. First, the law already affords the owner who claims drainage full recourse to remedies other than trespass. Examples of such remedies cited by Hecht J included: 1) the drained owner who has no well may drill one to offset drainage from his property; 2) the owner may apply to the Railroad Commission for forced pooling of gas captured; 3) the owner may sue a lessee who has not drilled a well for violation of the implied covenant in the lease to protect against drainage.[46]

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[42] Ibid.
[43] Ibid.
[44] Ibid.
[45] Ibid 13-14.
[46] Ibid 14.

Secondly, Hecht J observed that allowing recovery for the value of gas drained by fracking usurps to courts and juries the lawful and preferable authority of the Railroad Commission to regulate oil and gas production.[47] Thirdly, his Honour noted that determining the value of oil and gas drained by fracking is an issue that is ill-suited to the adjudicative process.[48] Finally, Hecht J opined that the law of capture should not be changed so as to apply differently to fracking because industry stakeholders did not want or need such a change to be made.[49]

The issue of trespass to land through the carrying out of the fracking process has also been considered by the US District Court in West Virginia in at least two cases. In these cases, the plaintiffs alleged they suffered injuries as a result of the defendant depositing waste from its drilling operations on the plaintiffs' lands. In the first case, *Whiteman v Chesapeake Appalachia LLC* ('*Whiteman*'),[50] Mr and Mrs Whiteman ('the Whitemans') owned the surface of a parcel of land, which was roughly 101 acres in size, in Wetzel County, West Virginia. A series of severance deeds had the effect of splitting the subsurface mineral estate from the surface estate. Chesapeake Appalachia ('Chesapeake') operated three natural gas wells on a ten acre section of the Whitemans' property pursuant to its lease of mineral rights. The Whitemans did not lease these mineral rights to Chesapeake; rather, Chesapeake's rights flowed entirely from its lease with a third party, a prior lessee, whose rights flowed from the deeds severing the minerals. Chesapeake had obtained well work permits and pit waste discharge permits for its gas wells on the Whitemans' property.

The Whitemans brought proceedings against Chesapeake alleging that it had committed several tortious wrongs in constructing and subsequently depositing drill cuttings (the pieces of rock and earth dislodged by the drill as it created a bore hole) and waste (such as wastewater and chemically-laden fracking fluids used in the drilling) in pits on their land. The Whitemans also submitted that Chesapeake's actions were a physical intrusion or trespass to their land and, as a result, constituted a violation of their property rights.

[47] Ibid 14-16.
[48] Ibid 16.
[49] Ibid.
[50] 873 F Supp 2d 767 (ND W Va, 2012).

In addressing the trespass claim, District Judge Stamp Jr. observed at the outset that it was settled law in West Virginia that the owner of subsurface rights to a parcel of land has the right to use the surface land 'in such a manner and with such means as would be fairly necessary for the enjoyment of the subsurface estate',[51] and that the issue of unreasonable use of the surface land is one for determination by the court.[52] It was not in dispute between the Whitemans and Chesapeake that Chesapeake held lease rights to the minerals beneath the Whitemans' land.[53] Consequently, the main issue raised in this case was whether Chesapeake's actions, in constructing and subsequently depositing drill cuttings and waste into pits on the surface land owned by the Whitemans, were reasonably necessary for the extraction of the mineral and whether the waste pits substantially burdened the surface land.[54]

District Judge Stamp Jr. found that the relevant provisions in the statutes, rules and regulations governing the exploration, drilling, storage, and production of oil and natural gas in West Virginia relating to pits and impoundments suggested that the creation of the waste pits on Whitemans' property was necessary and reasonable.[55] In making this finding, his Honour noted that prior to the commencement of the well work on the surface land, the Whitemans were given an opportunity to file comments regarding the permit sought by Chesapeake from the regulatory authority for oil and gas waste pit discharge and the maps with pit locations drawn.[56] The Whitemans signed a voluntary statement of no objection to this permit (or any other permit, for that matter).[57] While observing that the failure to object to this permit did not prevent the Whitemans from bringing a cause of action in trespass, his Honour noted that it did indicate that the Whitemans were aware of Chesapeake's intention to dig waste pits and yet they did not raise any concerns about the pits during the pendency of the permit application process.[58]

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[51] Ibid 772. His Honour cited *Depeterdy v Cabot Oil & Gas Corp*, 1999 WL 33229744, 2 (SD W Va, 1999) as support for this proposition.
[52] 873 F Supp 2d 767 (ND W Va, 2012), 772. His Honour cited *Adkins v United Fuel Gas Co*, 134 W Va 719, 724, 61 SE 2d 633 (1950).
[53] 873 F Supp 2d 767 (ND W Va, 2012), 770, 772.
[54] Ibid 772, 774.
[55] Ibid 775.
[56] Ibid.
[57] Ibid.
[58] Ibid 775-776.

In relation to the issue of reasonableness of the use of the surface land, the Whitemans further submitted that Chesapeake's use of the pits was unreasonable because an alternative existed – specifically, the closed-loop system.[59] A closed-loop system is one in which there is no on-site disposal of any waste produced or created during the drilling, completion or other operations phase associated with the well.[60] The process involves separating solids from liquids, and extracting water out of the solids. Solids are dried and, if not contaminated, used to construct access roads or new well pads. Water is re-used in the drilling process. Closed-loop drilling systems require all drilling and fracking waste to be stored in tanks and not pits, which thereby eliminates the use of pits.[61] District Judge Stamp Jr. expressed sympathy for the Whitemans' concerns, but held that the mere fact that Chesapeake eventually migrated to a closed-loop system did not render its prior use of the pits unreasonable, especially in light of the existing law regulating use of such pits in West Virginia.[62] Thus, the Whitemans' trespass action failed.[63]

The second case to be decided by the US District Court in West Virginia involved a virtually identical set of facts, and again involved a plaintiff surface landowner bringing action against Chesapeake. In *Teel v Chesapeake Appalachia LLC*,[64] the Teels owned the surface land of approximately 104 acres of land, known as Blake Ridge, in Wetzel County, West Virginia. In 1959, the then owner of Blake Ridge entered into a severance deed that split the surface estate and the mineral estate. From 2008, Chesapeake conducted natural gas drilling operations on the Teels' property. Again, as was the case in *Whiteman*, the subsurface rights of Chesapeake were sourced from a third party lease agreement. Like the Whitemans, the Teels brought proceedings against Chesapeake alleging that its actions were a physical intrusion or trespass to their land and, as a result, constituted a violation of their property rights. District Judge Stamp Jr., who also was the presiding judge in

[59] Ibid 776.
[60] Ibid 776, fn 9.
[61] See generally Hannah Wiseman and Francis Gradijan, 'Regulation of Shale Gas Development, Including Hydraulic Fracturing' (Research Paper, 2012) 106.
[62] 873 F Supp 2d 767 (ND W Va, 2012), 777.
[63] Ibid.
[64] 906 F Supp 2d 519 (ND W Va, 2012), 523-528.

Whiteman, ultimately dismissed the Teels' trespass claim on similar grounds to those cited in dismissing the Whitemans' trespass claim.[65]

These particular types of trespass cases are less likely to occur in Australia. Unlike the United States, Australian legislation vests ownership of petroleum (including unconventional gas) in the Crown.[66] The legislation provides a licensing regime whereby the Crown (through the relevant Minister) can grant licensees rights to prospect for petroleum and to conduct petroleum mining operations on land of any title or tenure, and thereby recover petroleum and acquire ownership of it, paying a royalty to the Crown.[67]

The State, therefore, regulates the petroleum and the protection of the correlative rights of owners above a common reservoir. Consequently, it has been suggested that there is insufficient support for advocating the existence of the rule of capture as a rule of common law in Australia and New Zealand, but in any event, legislation vesting ownership in the Crown leaves little room for the application of the rule.[68]

Holders of petroleum titles have the right to carry out the activities authorised by the particular titles including, for a production lease, the right to construct and maintain works, buildings, plant, waterways, roads, pipelines, dams, reservoirs, pumping stations, telephone lines, electric power lines and other structures and equipment as are necessary for the full enjoyment of the lease.[69] The legislation may therefore authorise use of pits and impoundments on land on which petroleum mining operations are conducted.

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[65] Ibid 523-528.
[66] See, eg, *Petroleum (Onshore) Act 1991* (NSW) s 6; *Mineral Resources Act 1989* (Qld) s 8; *Petroleum and Geothermal Energy Act 2000* (SA) s 5; *Mineral Resources Development Act 1995* (Tas) s 6; *Petroleum Act 1998* (Vic) s 13; *Petroleum and Geothermal Energy Resources Act 1967* (WA) s 9.
[67] See, eg, *Petroleum (Onshore) Act 1991* (NSW) s 9 (grant of petroleum titles), s 29 (rights under exploration licences), s 33 (rights under assessment leases), s 41 (rights under production leases) and s 85 (royalty).
[68] See also Yangmay Downing, 'Hydraulic Fracturing and Protection in Law from Negative Effects in New Zealand' (2012) 16 *New Zealand Journal of Environmental Law* 243, 270.
[69] See, eg, *Petroleum (Onshore) Act 1991* (NSW) s 41.

The legislation further empowers the holder of any prospecting title to seek and obtain access arrangements over land in order to carry out prospecting operations.[70] The legislation also empowers the Minister to grant easements or rights of way over lands comprised in petroleum titles as are necessary or appropriate to the development or working of lands comprised in petroleum titles.[71] The Minister may also grant temporary rights of way over any land for the construction of access roads to the land comprised in a petroleum title.[72] The legislation, therefore, authorises access over land that would otherwise be a trespass.

The legislation does, however, provide a statutory remedy of compensation. The holder of a petroleum title, or a person to whom an easement or right of way has been granted under the legislation, is liable to compensate every person having any estate or interest in any land injuriously affected, or likely to be so affected, by reason of any operations conducted or other action taken in pursuance of the legislation or the petroleum title, easement or right of way concerned.[73] The measure of compensation is limited to damage to the surface of the land, including crops, trees, grasses or other vegetation on it, and any buildings or improvements on it.[74] Damage to the subsurface, including groundwater not expressing itself on the surface, is not compensable. The legislation, therefore, provides a statutory alternative to a common law trespass action to compensate a landowner or occupier for injury caused to the surface of the land by petroleum activities.

ii. Nuisance

On a general level, nuisance encompasses acts unwarranted by law which cause inconvenience or damage to the public in the exercise of rights common to all peoples (public nuisance), acts connected with the occupation of land which injure another person in his or her use of land or interfere with the enjoyment of land or some right connected therewith (private nuisance), and acts or omissions that have

[70] See, eg, *Petroleum (Onshore) Act 1991* (NSW) pt 4A.
[71] See, eg, *Petroleum (Onshore) Act 1991* (NSW) s 105.
[72] See, eg, *Petroleum (Onshore) Act 1991* (NSW) s 106.
[73] See, eg, *Petroleum (Onshore) Act 1991* (NSW) s 107.
[74] See, eg, *Petroleum (Onshore) Act 1991* (NSW) s 109.

been declared by statute to constitute nuisance (statutory nuisance).[75] Wrongs that have been held to be nuisances include noxious fumes and pollution.[76]

Perhaps the most comprehensive judicial treatment of nuisance in the context of extraction and production of unconventional natural gas is the case of *Kartch v EOG Resources Inc*,[77] which was decided by the US District Court in North Dakota. Mr and Mrs Kartch ('Kartch') owned the surface rights to land located in Mountrail County, North Dakota. Frankie Kartch purchased this land on 29 March 2004 from the Iversons. The Iversons retained the mineral rights. On 30 November 2006, the Iversons leased their mineral interest in the land to Ritter, Laber and Associates Inc. On 26 November 2007, Ritter, Laber and Associates assigned their lease with the Iversons to EOG Resources Inc ('EOG'). On 25 August 2008, Kartch was notified that EOG intended to commence drilling operations on the land. The drilling commenced soon thereafter.

After the drilling commenced, Kartch brought proceedings against EOG, claiming that its use of a reserve pit when drilling the wells was not reasonably necessary and violated chapter 38-11.1 of the *North Dakota Century Code* ('the Code') in circumstances where alternatives to a reserve pit (e.g. a closed loop system) existed. Kartch alleged that EOG did not exercise ordinary care in the construction and maintenance of the reserve pit, which resulted in a tear in the liner and contamination of surrounding soil and waters. Kartch further alleged that EOG's activities on the site – including the use of a reserve pit rather than a reasonable alternative, the burial of toxic waste in the reserve pit, excessive noise and odour, litter and the storage of unnecessary equipment constituted a private nuisance in violation of the Code.[78]

EOG moved for summary judgment. Hovland J granted the motion in respect of all activities claimed to constitute a nuisance other than on the issue of whether EOG reclaimed and maintained the reserve pit in a reasonable manner, which was a

[75] Walker, above n 29, 894; Paula Giliker, 'Nuisance' in Carolyn Sappideen and Prue Vines (eds), *Fleming's The Law of Torts* (Lawbook Co, 10th ed, 2011) 487, 487.
[76] Walker, above n 29, 894; Giliker, above n 75, 487.
[77] 845 F Supp 2d 995 (ND, 2012).
[78] Ibid 999, 1008.

triable fact issue. First, in relation to the use of a reserve pit, the rights of EOG as lessee of the subsurface mineral estate extended to the use of so much of the surface as was reasonably necessary to explore, develop and transport the minerals. Kartch bore the burden of showing that EOG's use of a reserve pit was unreasonable. The reasonableness of the method and manner of use of the dominant mineral estate may be measured by what are usual customary and reasonable practices in the industry under like circumstances of time, place and servient estate use.[79] The evidence established that in 2008 and 2009 when EOG drilled and reclaimed the well, reserve pits were commonly used in North Dakota. Hovland J found that EOG's use of a reserve pit in 2008 and 2009, rather than a closed-loop system, was therefore not unreasonable.[80]

Secondly, in relation to Kartch's complaint of excessive noise produced by the generators operated by Mountrail-Williams Electric Cooperative for the wells, Hovland J found that there was no evidence to indicate that the level of noise generated by EOG's drilling operations was excessive and that Kartch could have mitigated their damages by granting an easement to Mountrail-Williams Electric Cooperative – an action that was not taken.[81] Thirdly, in relation to Kartch's complaint of diminished air quality and excessive odours through use of a flare, Hovland J noted that the Code required EOG to use a flare in circumstances where the gas could not be put to a useful purpose and that EOG's use of a flare had not caused any ill effects to either Kartch or their land (other than annoyances of the smell and sight of the flare).[82] Fourthly, his Honour held that the litter on the site was not a persistent problem and did not meet the threshold of unsanitary conditions that give rise to a nuisance.[83] Finally, in relation to the storage of unnecessary equipment claim, Hovland J noted that Kartch had not claimed any injury from the stored equipment other than mere displeasure with its presence, and that such displeasure did not constitute a nuisance under North Dakota law.[84]

[79] Citing *Hunt Oil Co v Kerbaugh*, 283 NW 2d 131 (ND, 1979) at 136.
[80] 845 F Supp 2d 995 (ND, 2012), 1002-1006.
[81] 845 F Supp 2d 995 (ND, 2012),1009-1010.
[82] Ibid 1011.
[83] Ibid.
[84] Ibid 1012.

In *Strudley v Antero Resources Corporation*,[85] the Colorado Court of Appeals reversed the ruling of the District Court, City and County of Denver, dismissing the Strudley family's toxic tort action against natural gas defendants for failure to present prima facie evidence supporting their claims after initial disclosures but before other discovery commences. Such an order was based on the order made in *Lore v Lone Pine Corp*,[86] known as a *Lone Pine* order. The Colorado Court of Appeals held that the trial court lacked authority to issue a *Lone Pine*[87] order but, in any event, the circumstances did not warrant a *Lone Pine* order.[88] The suit was not a mass tort case. Rather, it involved four family members suing four defendants involving the alleged pollution of only one parcel of land.[89] The Strudleys' complaint was that the companies committed tortious acts (including nuisance) when chemicals and contaminants from their drilling activities at three well sites polluted the air, water and ground near and around their home, and that those acts caused property damage and personal and physical injuries.[90] The case was not complex or cost intensive and expert testimony would not be extensive.[91] By making the *Lone Pine* order the trial court unduly interfered with the Strudleys' opportunity to prove their claims. The order was therefore reversed and the Strudleys' claims reinstated and remanded to the trial court.[92]

The hurdles a landowner may face in satisfying the threshold of nuisance under law are well illustrated by the decision of *Natale v Everflow Eastern Inc*.[93] Mr Natale resided in Warren, Ohio. He alleged that in April 2004, Everflow erected an oil and gas well and several storage tanks on the property of his next-door neighbour, Mr Harris. Mr Natale alleged that the location of these tanks had created such an offensive smell, sight and noise that he had been deprived of the enjoyment of his property and that Everflow had increased the level of flood water on his property. It was submitted that this gave rise to private nuisance.[94]

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[85] 2013 WL 3427901 (Colo App).
[86] 1986 WL 637507 (NJ Super Ct Law Div, 1986).
[87] 2013 WL 3427901 (Colo App), [32]-[35].
[88] Ibid [36].
[89] Ibid.
[90] Ibid [4].
[91] Ibid [37].
[92] Ibid [41].
[93] 195 Ohio App 3d 270, 959 N E 2d 602 (2011).
[94] 959 N E 2d 602, 605.

The Trumbull County Court of Common Pleas entered summary judgment in favour of Everflow with respect to Mr Natale's claims based on nuisance. It found that Mr Natale's evidence in relation to Everflow's dumping fill, removing trees from his property, and locating its well on the Harris property after obtaining city and state approval was insufficient to establish a nuisance.[95] The Court also found that the placement of the well and its operation did not constitute a nuisance based on negligence.[96] Moreover, the court found that the operation of the well was not a nuisance *per se* because the operation of the well was carried out subject to state approval.[97] Mr Natale appealed against the Court's decision to the Court of Appeals of Ohio, which held that the trial court did not err in granting summary judgment in favour of Everflow on the various nuisance claims and affirmed the decision at first instance (Cannon PJ and Rice J, Grendell J dissenting).[98]

An action for nuisance is, however, subject to statutory authority to commit the particular acts that constitute the nuisance. Statutory authority is a defence to an action in nuisance, but only if statutory authority to commit a nuisance is expressly given or necessarily implied by the statute authorising the commission of the acts. The latter will apply where a statute authorises the use of land in a way which will inevitably involve a nuisance, even if every reasonable precaution is taken.[99]

As noted earlier, petroleum legislation in Australia vests ownership of petroleum (including unconventional gas) in the Crown which can grant to licensees rights to conduct petroleum prospecting and production operations on any land, including constructing and operating various works, buildings, plant, structures and equipment on the land. Consents and licences under planning and environmental legislation also authorise the carrying out of petroleum mining operations. In order for these statutes, and the various licences issued under the statutes, to provide a defence to an action in nuisance, they must authorise the doing of the acts in the manner which constitutes the nuisance. If, for instance, the licences require the use of best

[95] Ibid 606.
[96] Ibid.
[97] Ibid.
[98] Ibid 605-612.
[99] *Barr v Biffa Waste Services Ltd* [2012] EWCA Civ 312; 3 All ER 380, [36], [46], (Carnwarth LJ; Patten and Arden LJJ agreeing); *Van Son v Forestry Commission (NSW)* (1995) 86 LGERA 108, 129-130.

practicable means to prevent air or water pollution, they cannot be read as expressly or impliedly authorising such pollution which constitutes the nuisance.[100]

If, however, the licences do authorise the doing of particular acts in a manner which constitutes the nuisance, an individual who is injured thereby cannot maintain an action in nuisance but must rely on a remedy given by the statutes, such as compensation.[101]

iii. Negligence

It has been said[102] that the classic formulation of negligence is that provided by Alderson B: "Negligence is the omission to do something which the reasonable man, guided upon those considerations which ordinarily regulate the conduct of human affairs would do, or doing something which a prudent and reasonable man would not do".[103] The elements of the cause of action of negligence have been concisely described by Vines as follows:

> 1. A duty, recognised by law, requiring conformity to a certain standard of conduct for the protection of others against unreasonable risks. This is commonly known as the "duty issue".
> 2. Failure to conform to the required standard of care or briefly, breach of that duty. This element usually passes under the name of "negligence".
> 3. Material injury resulting from the breach to the interests of the plaintiff. Merely exposing someone to danger is not an actionable wrong if the hazard is averted in time. Nor is there any question here of vindicating mere dignitary interests or compensating fright or apprehension in the absence of ascertainable physical or psychiatric injury. This element is known as "causation".
> 4. Not only must the defendant's breach of duty have been a cause of the injury, it must not have been too remote. This is generally referred to as the question of "remoteness of damage" or "proximate cause".
> 5. The absence of any conduct by the injured party prejudicial to his recovering in full for the loss he has suffered. This involves a consideration of two specific defences, contributory negligence and voluntary assumption of risk.[104]

The tort of negligence loomed large in the case of *Roth v Cabot Oil & Gas Corporation* ('the *Roth* case').[105] In this case, Mr and Mrs Roth ('Roth') owned land

[100] *Barr v Biffa Waste Services Ltd* [2012] EWCA Civ 312; 3 All ER 380, [97].
[101] *Metropolitan Water, Sewerage and Drainage Board v OK Elliott Ltd* (1934) 52 CLR 134, 143.
[102] See Barbara McDonald, 'Standard of Care' in Carolyn Sappideen and Prue Vines (eds), *Fleming's The Law of Torts* (Lawbook Co, 10th ed, 2011) 123, 123.
[103] *Blyth v Birmingham Waterworks Co* (1856) 11 Ex 781, 784; 156 ER 1047, 1049.
[104] Prue Vines, 'Negligence: Introduction' in Carolyn Sappideen and Prue Vines (eds), *Fleming's The Law of Torts* (Lawbook Co, 10th ed, 2011) 119, 122.

in Springville, Pennsylvania. Cabot Oil & Gas Corporation ('Cabot') was a Delaware corporation headquartered in Houston, Texas which engaged in various oil and gas exploration and production activities. In March 2008, a representative of Cabot visited Roth's property for the purpose of executing an oil and gas lease agreement in order to obtain the legal right to drill on or near Roth's property and extract natural gas from the property. The representative of Cabot offered several warranties to Roth in negotiating the lease (e.g. Cabot would test Roth's pond and water supplies prior to and after commencement of drilling operations to ensure that the water would not be adversely affected; Roth's persons, property and land resources would be undisturbed by the operations; Roth's quality of life and use and enjoyment of the property would not be disrupted or adversely affected and so on).[106]

Cabot's drilling operations, which commenced in April 2010, involved use of fracking. By August 2010, Roth began to notice that the groundwater supply on the land had diminished in quality, containing excess sedimentation and appearing brown and cloudy. The Department of Environmental Protection subsequently cited Cabot on several occasions for noncompliance with state laws by failing to dispose of drill fluids in a manner that prevents pollution of waters.[107]

Roth brought proceedings against Cabot which involved, among other things, claims of negligence and negligence *per se*. Roth generally asserted that Cabot had been responsible for allowing the groundwater supply to become contaminated, and argued that this contamination had resulted in Roth suffering loss of use and enjoyment of the land and a reduced quality of life. Cabot put on a motion seeking summary dismissal of Roth's complaint.

The task for the US District Court in Pennsylvania was to determine whether Roth's proceedings should be summarily dismissed. Ultimately, Judge Jones III decided that the motion should be granted in part and denied in part.

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[105] 919 F Supp 2d 476 (MD Pa, 2013).
[106] Ibid 482.
[107] Ibid 483.

In determining whether a particular claim should be summarily dismissed (e.g. negligence), Jones J observed that the making of this determination involved two tasks. First, a court must identify all factual allegations that constitute nothing more than 'legal conclusions' or 'naked assertions'.[108] Such allegations were said to not be entitled to the assumption of truth and must be disregarded for the purposes of resolving a motion for summary dismissal. Secondly, the court must identify the nub of the complaint – i.e. the well-pleaded, non-conclusory factual allegations.[109] Taking these allegations as true, the judge must then determine whether the complaint states a plausible claim for relief.[110] In making that determination, the judge must consider whether there are enough facts to raise a reasonable expectation that discovery will reveal evidence of the necessary elements to make out a cause of action.[111]

With respect to Roth's negligence claim, Cabot broadly submitted that Roth had stated no facts in support of this claim but instead only legal conclusions to which the Court was required to not give any assumption of truth.[112] This submission was firmly rejected by Jones J, who held that Roth satisfied the pleading burden for each of the four elements necessary for making out a claim for negligence in Pennsylvania, namely: 1) duty; 2) breach; 3) causation; and 4) harm.[113]

First, there was no dispute that Cabot had a duty to Roth to conform to a certain and articulable standard of conduct in undertaking oil and gas operations on Roth's land.[114] Secondly, Roth satisfied the element of breach by pleading that Cabot had used improper drilling techniques and materials and that it had constructed, and failed to remedy, deficient and ineffective well casings and waste disposal pits in violation of this standard of conduct.[115] Thirdly, Jones J observed that the temporal and physical proximity of Cabot's action to Roth's harm, and the lack of contemporaneous and alternative sources of the contamination, permit the

[108] Ibid 481.
[109] Ibid.
[110] Ibid 481-482.
[111] Ibid 482.
[112] Ibid 486.
[113] Ibid 486-487.
[114] Ibid 486.
[115] Ibid 487.

reasonable inference that Cabot was responsible for that harm. Jones J was unpersuaded, at such a preliminary stage in the proceedings, by Cabot's argument that causation had not been established.[116] Hence, his Honour found that Roth had satisfactorily pleaded that it had suffered injury as a result of Cabot's conduct.[117]
It should also be noted that Roth brought a claim against Cabot for negligence *per se*. In Pennsylvania, negligence *per se* has been defined as:

> [C]onduct, whether of action or omission, which may be declared and treated as negligence without any argument or proof as to the particular surrounding circumstances. Pennsylvania recognises that a violation of a statute or ordinance may serve as the basis for negligence *per se*…In order to prove a claim based on negligence *per se*, the following four requirements must be met: (1) the purpose of the statute must be, at least in part, to protect the interest of a group of individuals, as opposed to the public generally; (2) the statute or regulation must clearly apply to the conduct of the defendant; (3) the defendant must violate the statute or regulation; (4) the violation of the statute or regulation must be the proximate cause of the plaintiff's injuries.[118]

Jones J ultimately held that Roth had satisfied each of these four elements of the pleading burden with respect to the negligence *per se* claim.[119] The Roth's negligence claims were, therefore, not summarily dismissed and instead allowed to proceed to discovery and trial.

In *Fiorentino v Cabot Oil & Gas Corporation* ('*Fiorentino*'),[120] 63 individuals ('the plaintiffs') alleged that they had executed leases with Cabot that conferred upon Cabot the right to extract natural gas from their properties. The plaintiffs brought proceedings alleging that Cabot had improperly conducted fracking and other natural gas production activities that resulted in contamination of the plaintiffs' land and groundwater.[121] One of the causes of action relied upon by the plaintiffs was negligence *per se*. It may be recalled that in the *Roth* case, Cabot had sought summary dismissal of all negligence-related claims brought by Roth. By contrast, in *Fiorentino*, Cabot only sought to strike the negligence *per se* claim from the plaintiffs' complaint. Cabot did, however, succeed in having a gross negligence claim

[116] Ibid.
[117] Ibid.
[118] *Wagner v Anzon Inc*, 684 A 2d 570, 574 (Pa Super, 1996) (citations omitted).
[119] 919 F Supp 2d 476 (MD Pa, 2013), 488-490.
[120] 750 F Supp 2d 506 (MD Pa, 2010).
[121] Ibid 509.

summarily dismissed on the basis that this cause of action was not recognised under Pennsylvanian law.

The presiding judge in *Fiorentino* was Jones J, who would later go on to also decide *Roth* (as discussed above). With respect to the negligence *per se* claim in *Fiorentino*, his Honour ultimately held that the claim was neither impertinent nor immaterial to the plaintiffs' complaint, noting that the allegations of negligence *per se* were well-pleaded and, if later proven, would be entirely relevant to the plaintiffs' negligence claim.[122] As a result, Cabot's motion to strike the negligence *per se* claim from the plaintiffs' complaint was denied.[123]

To date, there has not yet been a final judgment upholding an action in negligence for damage or loss caused by fracking specifically, and unconventional gas extraction and production more generally. Notwithstanding this, the potential does exist. The cases of *Roth* and *Fiorentino* tend to suggest that at least some courts will be minded to permit negligence claims pleaded by plaintiffs to progress to trial without being summarily dismissed. This can be contrasted with cases involving negligence claims relating to loss or harm suffered from climate change, as many of these cases have been summarily dismissed by the courts.[124] The main reasons for summary dismissal have been non-justiciability of the claims, plaintiff's lack of standing, and displacement of the common law of torts by the environmental statutes. More substantively, however, cases involving negligence claims relating to loss or harm suffered from climate change are much harder to prove than cases involving negligence claims relating to loss or harm suffered from fracking or the operation of unconventional gas projects or activities.

First, it will usually be indisputable that the proponent of an unconventional gas project or activity owes a duty of care to a defined set of persons (e.g. the owners of the surface land under which the proponent's unconventional gas project or activity is extracting gas). By contrast, in climate change litigation, it will often be difficult for a party who is or feels that it has been wronged or injured to establish that a legal

[122] Ibid 516.
[123] Ibid.
[124] See Brian J Preston, 'Climate Change Litigation (Part 1)' (2011) 5 *Carbon & Climate Law Review* 1, 6-9.

relationship existed between it and the party who has allegedly caused the wrong or injury.[125] As Hunter and Salzman note, "climate change is essentially a global environmental tort".[126] Defendants and plaintiffs are indeterminate. This situation is generally exacerbated in circumstances where the common law or statutes regulating climate change are silent or unclear on the issue of whom owes whom a duty of care with respect to activities that contribute to climate change. It should be noted that the precise nature, content and scope of the duty of care owed by the proponent of an unconventional gas project or activity to stakeholders also remains somewhat unclear, although increasing awareness of the issues posed by unconventional gas extraction and production has stimulated substantial legislative and judicial consideration in several jurisdictions in this area.

Secondly, a lack of certainty regarding the presence, nature, content and scope of a duty of care in relation to climate change or unconventional gas extraction and production can be fatal to a negligence claim. Put simply, if a defendant does not owe a duty of care to a plaintiff, there can be no breach of that "duty" because it does not exist. Much climate change litigation falls at the first hurdle of establishing a duty. However, as noted above, it will usually be indisputable that a proponent of an unconventional gas project or activity will owe a duty of care to a defined set of persons. Once it is established that such a duty exists, it is a fairly straightforward task to determine what sorts of wrongful conduct may give rise to a breach of that duty (e.g. where fracking operations result in groundwater contamination or damage to person, property or the environment). This may be contrasted with climate change litigation, where it is often difficult to determine the level of wrongful conduct necessary to trigger breach of a duty.

Finally, the issue of causation will often loom large in climate change litigation where a plaintiff has somehow managed to navigate the often insurmountable hurdles of duty and breach. Causation for a climate change-induced event resulting in loss or damage to a plaintiff is confused by there being myriad and diffuse contributors of greenhouse gas (GHG) emissions, distributed globally and over long timeframes,

[125] Ibid 6-7.
[126] David Hunter and James Salzman, 'Negligence in the Air: The Duty of Care in Climate Change Litigation' (2007) 155 *University of Pennsylvania Law Review* 1741, 1748.

with delays between the emission of GHGs and the consequence of climate change and any particular adverse effect of climate change.[127] This may be contrasted with unconventional gas projects or activities, where the consequences of inappropriate use of gas extraction and production techniques will usually have a more tangible consequence that is felt locally and immediately by affected parties (e.g. owners of surface land).

Thus, to bring this section to a close, it is evident that tortious claims relating to unconventional natural gas projects or activities may constitute viable causes of action in some circumstances. In this regard, it is likely that the courts will see an increased number of cases involving tortious claims. The process of enacting statutes and other legislative instruments to regulate unconventional gas projects and activities remains in its early stages in many jurisdictions. Until such regulatory regimes are finalised and commence operation, it seems likely that prospective plaintiffs may, in the short term, rely on common law actions such as trespass, nuisance and negligence.

b. Contract law

There have been some unconventional gas cases in the United States that have involved causes of action based in the law of contract. For the most part, these cases have focussed on whether an oil and gas lease may be terminated by one party due to the occurring of some supervening event which renders performance, if not impossible, at least fundamentally different from what was contemplated, or because of a breach by one party in a fundamental respect.

In two of the cases, the supervening event was a government memorandum requiring gas producers to undertake environmental impact assessment and apply for a horizontal drilling permit. Compliance with the memorandum delayed full gas production.

[127] Preston, above n 124, 8.

In the first case of *Wiser v Enervest Operating LLC* ('*Wiser*'),[128] the plaintiffs owned property located within Broome County, New York. Collectively, the land owned by the plaintiffs covered an area in excess of 1000 acres and was situated above several geological formations containing natural gas and oil, including the Marcellus Shale, Trenton Black River, Oriskany, Herkimer and Utica formations. Between 29 October 1999 and 15 February 2000, the plaintiffs entered into ten-year leases with Belden & Blake Corporation ('B&B') (a subsidiary of Enervest) permitting the exploration for gas and oil on their properties. The leases, which were all identically worded for the purposes of the motions before the Court (see below), conferred a right upon B&B to extract gas, oil, or hydrocarbon substances indefinitely for so long as gas was produced in paying quantities. Under the leases, B&B was also required to pay annual delay rental payments until drilling began. A *force majeure*[129] clause was also included in each lease.[130]

In July 2008, the Governor of New York State issued a memorandum requiring that the state perform an environmental study of the effects of horizontal drilling and fracking. This memorandum seemingly did not entirely prohibit drilling; it required producers to apply to the New York Department of Environmental Conservation for a permit allowing horizontal drilling in the Marcellus Shale formation after conducting an independent, site-specific Environmental Impact Statement.[131] During the 10 year primary term of each site-specific lease, no wells were drilled on the plaintiffs' lands. B&B made the annual delay rental payments to the plaintiffs until December 2008. No delay rental payments were made in 2009 and the payments offered in 2010 were rejected by the plaintiffs.

The plaintiffs brought proceedings in the United States District Court in New York, asserting, amongst other claims, that the leases were rendered void after B&B had failed to make the required delay rental payments. B&B filed a counterclaim, arguing

[128] 803 F Supp 2d 109 (ND NY, 2011).
[129] A *force majeure* (literally, act of God) clause "generally operates to discharge a contracting party when a supervening, sometimes supernatural, event, beyond control of either party, makes performance impossible. The common thread is that of the unexpected, something beyond reasonable human foresight and skill": see *Atlantic Paper Stock Ltd v St Anne-Nackawic* [1976] 1 SCR 580, 583.
[130] 803 F Supp 2d 109 (ND NY, 2011), 112-113.
[131] Ibid 113-114.

that the Governor's memorandum created a de facto moratorium and qualified as a *force majeure* thereby extending the primary term of each lease until completion of the Supplemental Generic Environmental Impact Statement and excusing the delay rental payments that were contractually required. Both parties moved for summary judgment.[132]

The United States District Court in New York (Magistrate Judge Peebles) granted the plaintiffs' motion for summary judgment. His Honour assumed that the moratorium did trigger the *force majeure* clause, so that any delay or interruption was not counted against B&B, with the effect of extending indefinitely the primary terms of the leases.[133] Proceeding on that basis, his Honour observed that this required the defendants to continue to make timely delay rental payments indefinitely so as to avoid termination of the leases.[134] The failure of B&B to do so rendered the leases void.[135]

In the second case of *Aukema v Chesapeake Appalachia LLC* ('Aukema'),[136] the plaintiffs brought proceedings seeking summary judgment to the effect that certain oil and gas leases entered into between the parties expired at the conclusion of the primary terms of those leases and that the terms had not been extended by payment or *force majeure* (namely, the Governor's memorandum of 2008 as in *Wiser*). Hurd J found that even if the Governor's memorandum constituted a *force majeure* event, it did not prevent Chesapeake from performing under the terms of the leases. Under the leases, it was entitled to explore for natural gas and oil, and if gas or oil was discovered and subsequently drilled producing marketable gas or oil, to tender royalty payments to the plaintiffs. As Chesapeake did not have an obligation to drill, the invocation of *force majeure* to relieve Chesapeake from its contractual duties was unnecessary.[137]

In addition to relying on *force majeure*, Chesapeake submitted that the leases should be extended based on the doctrine of frustration of purpose. That doctrine excuses

[132] Ibid 114-115.
[133] Ibid 121 and 126.
[134] Ibid 112, 121-122, 126.
[135] Ibid 112, 126.
[136] 904 F Supp 2d 199 (ND NY, 2012).
[137] Ibid 210.

performance of contractual obligations when a 'virtually cataclysmic, wholly unforeseeable event renders the contract valueless to one party'.[138] Hurd J held that Governor's memorandum was a foreseeable event and did not prevent Chesapeake achieving the purpose of the leases (i.e. to explore, drill, produce and otherwise operate for oil and gas and their constituents). The only thing Chesapeake was unable to do was to horizontally drill using fracking. Even if other, more conventional drilling methods were impractical, mere impracticability was not enough to excuse performance.[139] As a result, Chesapeake could not rely on the doctrine of frustration of purpose to extend the leases and summary judgment was made in favour of the plaintiffs on the issues of *force majeure* and the doctrine of frustration of purpose.[140]

In the case of *Hite v Falcon Partners*,[141] the plaintiffs entered into oil and gas leases with persons who assigned their interests to Falcon Partners granting rights to drill oil and gas in, on and under the plaintiffs' land. At no stage during the primary terms of the leases did Falcon Partners commence drilling operations. Delayed rental payments were required under the leases until production began so Falcon Partners duly sent cheques to the plaintiffs for $2.00 per acre for each day that drilling did not take place. After the plaintiffs were presented with offers from competing gas companies, they sent Falcon Partners a termination letter as a result of their inaction and expressed their intention to enter into new leases.[142] The plaintiffs brought proceedings against Falcon Partners, arguing that the delayed rental payments only protected Falcon Partners' drilling rights during the primary terms of the leases and that if these terms expired before production began, Falcon Partners lost its drilling rights. Falcon Partners submitted that the delayed rental payments protected their mineral interests, and bound the plaintiffs to the terms of the leases.

The Superior Court of Pennsylvania (Stevens J delivering the majority opinion) held that payment of delay rentals functioned to release Falcon Partners of the obligation to develop the leasehold during the primary term of the lease. Once that primary term expired, however, the mere payment of delay rentals alone did not preserve

[138] See *United States v Gen Douglas MacArthur Senior Vill Inc*, 508 F 2d 377, 381 (2d Cir 1974).
[139] 904 F Supp 2d 199 (ND NY, 2012), 210-211.
[140] Ibid 212-213.
[141] 13 A 3d 942 (Superior Court, Pa, 2011).
[142] Ibid 944.

Falcon Partners' drilling rights.[143] Falcon Partners could not postpone development indefinitely by the mere payment of delay rentals.[144] The Court affirmed the lower court's summary judgment in favour of the plaintiffs.

A different type of contract case involved the alleged presence of a vitiating factor, a fraudulent representation, which rendered the contract void. In *Harrison v Cabot Oil and Gas Corporation*,[145] Harrison owned property in Susquehanna County, Pennsylvania. He had entered into an oil and gas lease with Cabot. In bringing proceedings against Cabot, Harrison alleged that they were fraudulently induced to enter into the oil and gas lease with Cabot by Cabot's promise to pay a bonus per acre as well as royalty payments. Cabot counterclaimed for equitable extension of the lease, and moved for summary judgment.[146]

The United States District Court (Mariani J) held that there was no evidence to suggest that Cabot's representative knowingly misstated the per acre amount that Cabot would be willing to pay as a bonus to Harrison for entering into a lease, or that Cabot authorised the representative's statements in circumstances where it knew them to be false, as required under Pennsylvanian law to support a cause of action relating to fraudulent inducement.[147] Mariani J therefore granted Cabot's motion for summary judgment on Harrison's fraudulent inducement claim.[148] Mariani J further held that Harrison did not effectively repudiate the lease by bringing the action against Cabot, and thus Cabot was not entitled to an equitable extension of the lease term.[149]

c. Administrative law and civil enforcement

Administrative disputes resolved by the courts may be grouped into four categories: merits review of administrative decisions; appeals against administrative orders;

[143] Ibid 948.
[144] Ibid 948-949.
[145] 887 F Supp 2d 588 (MD Pa, 2012).
[146] Ibid 589.
[147] Ibid 593-594.
[148] Ibid 594.
[149] Ibid 594-598.

judicial review of the exercise of legislative and executive powers and functions; and civil enforcement of laws.[150]

i. Merits review

Merits review involves the re-exercise by a court or tribunal of the administrative power previously exercised by the original executive decision-maker. The court has the same functions and discretions as the original decision-maker. The appeal is by way of re-hearing and fresh evidence or evidence in addition to or in substitution for the evidence given on the making of the original decision may be given on the appeal. The decision is deemed to be the final decision of the original decision-maker and is to be given effect accordingly.

The administrative power the subject of merits review commonly involves determination of an application for some form of authorisation, such as a permit or licence. On the merits review appeal, the court re-determines the application on the evidence before the court and according to the law that applies at the time of the hearing. The court makes the correct decision (if there is only one decision available on the applicable facts and law) or the preferable decision (if there is a range of decisions available on the applicable facts and law).

Not all exercises of power by an executive decision-maker are subject to merits review. Decisions to refuse or to grant on unsatisfactory conditions development consent for unconventional gas projects[151] may be subject to review on the merits.[152] However, decisions not to grant an exploration licence or a production lease to prospect for unconventional gas or to conduct unconventional gas operations are not subject to merits review.[153]

[150] See generally Brian J Preston, 'The use of alternative dispute resolution in administrative disputes' (2011) 22 *Australasian Dispute Resolution Journal* 144, 145-146.
[151] For example, development consent is required in New South Wales for drilling or operating petroleum (which includes natural gas) exploration wells and petroleum production under State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 and s 76A of the *Environmental Planning and Assessment Act 1979* (NSW).
[152] Such as an appeal under s 97 of the *Environmental Planning and Assessment Act 1979* (NSW) to the Land and Environment Court of NSW.
[153] Such as under the *Petroleum (Onshore) Act 1991* (NSW).

ii. Administrative order appeals

Under certain types of legislation, a regulatory agency may issue administrative orders to persons. These orders may be of a prohibitory nature (to cease undertaking specified actions or conduct) or of a mandatory nature (to undertake specified actions or conduct). Examples of such administrative orders may be found in much environmental legislation.[154] The legislation may grant the person to whom an order is given the right to appeal to a court against the order.[155] The appeal is usually a rehearing on the merits. The court determines the matter afresh and may affirm, vary or discharge the order.[156]

An example of an appeal against an administrative order is *Cougar Energy Ltd v Debbie Best, Chief Executive under the Environmental Protection Act 1994*.[157] Cougar Energy Ltd ('Cougar') operated a pilot underground gasification project near Kingaroy, Queensland. It has an environmental authority to carry out the project. Five days after commencing operations, the only operational production well had a failure involving fracturing of the cement grout lining of the well wall. The well became blocked and gas, including the contaminants benzene and toluene, escaped into the surrounding geology.[158] The regulatory agency issued environmental protection orders requiring Cougar to comply with certain requirements, notices requiring an environmental evaluation of the incident, and a notice regarding amendments to conditions of the environmental authority.[159] Cougar appealed against the agency's decisions to the Queensland Planning and Environment Court and sought a stay of the decision to amend two of the conditions of the environmental authority pending the final hearing and determination of the appeal.[160]

[154] See, eg, the environmental protection notices (clean up, prevention or prohibition notices) can be given under Ch 4 of the *Protection of the Environment Operations Act 1997* (NSW).
[155] See, eg, s 289 of the *Protection of the Environment Operations Act 1997* (NSW) which allows a person to appeal to the Land and Environment Court of New South Wales against a prevention notice.
[156] *Land and Environment Court Act 1979* (NSW) ss 17 and 39.
[157] [2011] QPEC 150; [2012] QPELR 370.
[158] [2011] QPEC 150, [10].
[159] Ibid [13].
[160] Ibid [13], [18], [19].

The Court (Jones DCJ) declined to grant the stay. Amongst the reasons for declining the stay were that the potential for environmental harm (particularly contamination of groundwater) was real;[161] Cougar's assertion that the two conditions challenged would require cessation of operations on the site was not made out;[162] Cougar could minimise the risk of exposure to prosecution and enforcement proceedings by taking steps to prosecute its appeal as quickly as possible;[163] and Cougar's argument that if required to comply with the two conditions costs and time would be wasted, was not made out on the evidence.[164]

iii. Judicial review

Judicial review involves the review by a court with supervisory jurisdiction of the legality of the exercise of legislative and executive powers and functions. Judicial review does not permit a court to consider the merits of administrative actions. It stands in contrast to merits review. The right to seek judicial review may be derived from the common law (in common law countries) or statute (in civil and common law countries where there is codification of judicial review of administrative action). The types of administrative conduct and decisions able to be reviewed, the grounds of review, the intensity of review and the remedies available will vary depending upon the source and the terms of the right of judicial review. Judicial review is a means of enforcement of the law: the court reviews legislative and executive action or inaction of government to ensure that it is within constitutional and legal boundaries.

A substantial number of judicial review proceedings relating to unconventional natural gas have been brought by persons and non-government organisations in several jurisdictions, including the United States,[165] Canada,[166] the United

[161] Ibid [45].
[162] Ibid [50], [51].
[163] Ibid [52].
[164] Ibid [54]-[59].
[165] See *Coalition for Responsible Growth and Resource Conservation v United States Federal Energy Regulatory Commission*, 485 Fed Appx 472 (2nd Cir, 2012); *Strudley v Antero Resources Corp*, 2013 WL 3427901; *Harris v Devon Energy Production Company*, 500 Fed Appx 267 (5th Cir, 2012); *Minard Run Oil Co v US Forest Services*, 670 F 3d 236 (3rd Cir, 2011); *Center for Biological Diversity and Sierra Club v Bureau of Land Management and Salazar*, 2013 WL 1405938; *US v Range Production Company*, 793 F Supp 2d 814 (ND Tex, 2011).
[166] See *Dene Tha' First Nation v British Columbia (Minister of Energy and Mines)* [2013] BCSC 977.

Kingdom[167] and Australia.[168] The discussion below considers some of the important or interesting cases from each of these jurisdictions.

First, in the United States in *Coalition for Responsible Growth and Resource Conservation v United States Federal Regulatory Commission*,[169] the plaintiffs (a coalition of environmental non-governmental organisations) petitioned for review of orders made by the United States Federal Energy Regulatory Commission ('the FERC') prior to allowing a proponent gas company to build and operate a 39 mile natural gas pipeline in Pennsylvania. The plaintiffs submitted that the FERC's environmental assessment inadequately assessed the cumulative impact of the project by failing to consider the environmental impacts associated with the development of the Marcellus shale natural gas reserves as part of the impacts of the pipeline development.[170]

Ultimately, the United States Court of Appeals (2nd Circuit) disagreed with the plaintiffs' submission and held that the FERC's environmental assessment complied with the requirements of the *National Environmental Policy Act 1969*.[171] It observed that the FERC had included a short discussion of the development of the Marcellus Shale natural reserves in the environmental assessment and the FERC had reasonably concluded that the impacts of that development were not sufficiently causally related to the project to warrant a more in-depth analysis.[172] In addition, the FERC's discussion of the incremental effects of the project on forests and migratory birds, was sufficient.[173] The Court also noted that the environmental concerns raised by the plaintiffs had been considered and addressed by the FERC's environmental assessment and the actions it had taken in response to that assessment (e.g.

[167] See *Abbey Mine Ltd v Coal Authority* [2008] EWCA Civ 353; *Europa Oil and Gas Limited v Secretary of State for Communities and Local Government & Ors* [2013] EWHC 2643 (Admin).
[168] See *Fullerton Cove Residents Action Group Incorporated v Dart Energy (No 2)* [2013] NSWLEC 38; *Barrington-Gloucester-Stroud Preservation Alliance Inc v Minister for Planning and Infrastructure* [2012] NSWLEC 197; (2012) 194 LGERA 113.
[169] 485 Fed Appx 472 (2nd Cir, 2012).
[170] Ibid 474.
[171] Ibid 474-475.
[172] Ibid.
[173] Ibid 474.

imposing conditions requiring implementation of various management plans for migratory birds, forests and habitat restoration).[174]

In *Center for Biological Diversity v Bureau of Land Management*,[175] environmental organisations brought action against the Bureau of Land Management ('BLM') and the Department of Interior, seeking declaratory and injunctive relief under the *Administrative Procedure Act 1946* challenging the defendants' decision to sell four oil and gas leases for approximately 2,700 acres of federal land in Monterey and Fresno counties in California. The plaintiffs sought summary judgment that the leases were sold in violation of the *National Environmental Policy Act 1969* ('NEPA') and the *Mineral Leasing Act 1920*. The US District Court (Magistrate Judge Grewal) held that the BLM had violated NEPA in its environmental assessment of the leases by unreasonably relying on an earlier single-well development scenario. That scenario did not adequately consider the development impact of fracking techniques when used in combination with technologies such as horizontal drilling. Not only was the environmental assessment erroneous as a matter of law, the BLM's finding of no significant impact based on the assessment and resulting decision not to prepare an environmental impact statement was also erroneous as a matter of law.[176] The Court therefore granted the plaintiffs' motion for summary judgment as to the NEPA claims.[177]

In the Canadian case of *Dene Tha' First Nation v British Columbia (Minister of Energy and Mines)*,[178] the Crown, through the Ministry of Energy and Mines ('the MEM'), disposed of 21 parcels of subsurface oil and gas tenures located in the Cordova Embayment Boundary Area in the north-eastern corner of British Columbia. These tenures conferred on their holders the exclusive right to apply to the Oil and Gas Commission for the approval of exploration and extraction activities (relating to potential shale gas development) on the parcels. At the time of the litigation, Nexen Inc, Penn West Petroleum Ltd and Vero Energy Inc were the holders of those parcels. All 21 parcels were located within the traditional territory of the Dene Tha'

[174] Ibid 474-475.
[175] 2013 WL 1405938 (ND Cal).
[176] Ibid 1.
[177] Ibid 15.
[178] [2013] BCSC 977.

First Nation ('the DTFN') and thus were within the geographic scope of *Treaty No 8* (1899), to which DTFN was a signatory.[179]

DTFN sought judicial review of the decision of the MEM to sell the parcels, asking for a declaration that the Crown had breached a constitutional duty to consult with and accommodate DTFN in relation to potential adverse impacts from the parcel sales. DTFN also sought an order setting aside the parcel sales on the basis of the alleged failure to consult and accommodate DTFN appropriately, or alternatively, a stay in relation to the development of the parcels until the Crown had fulfilled its constitutional obligations.[180] Thus, the issue before the British Columbia Supreme Court was whether, in disposing of the 21 tenure parcels pursuant to a policy of shale gas development, the Crown fulfilled its constitutionally-mandated obligations arising from *Treaty No 8* (1899).

The British Columbia Supreme Court (Grauer J) held that, in all of the circumstances, the Crown had correctly assessed the scope and extent of its duty to consult with the DTFN in relation to the disposition of the tenure parcels in question,[181] engaging in consultation at the middle level of the spectrum outlined in the Supreme Court of Canada's decision in *Haida Nation v British Columbia (Minister of Forests)*.[182] His Honour further found that the consultation process utilised by the Crown was reasonable in the circumstances, having regard to the required scope of consultation, the ongoing nature of the process, and the steps taken and available to mitigate potential harm.[183] As a consequence of these findings, Grauer J dismissed the DTFN's judicial review challenge.[184]

Thirdly, there are two judicial review cases in the United Kingdom. The first was a dispute between rival mining operators who had bid for coal mining licences in an area which contained a large quantity of high quality coal as well as coal bed methane from which electricity could be generated. The subject mineral was not,

[179] Ibid [1]-[3].
[180] Ibid [3].
[181] Ibid [137].
[182] [2004] 3 SCR 511.
[183] [2013] BCSC 977, [137].
[184] Ibid [138].

therefore, wholly unconventional gas, but the nature of the judicial review challenge is relevant to rival unconventional gas producers bidding for petroleum titles.

In *Abbey Mine Ltd v The Coal Authority*,[185] Abbey Mine appealed to the UK Court of Appeal (Civil Division) against the decision of the Administrative Court dismissing its application for judicial review of the Coal Authority's decision to offer an underground coal mining licence and demise of coal in relation to the Margam area of South Wales to Corus UK Ltd ('Corus') rather than Abbey Mine (both companies having put in bids).[186] On the appeal, Abbey Mine focussed on two main grounds of challenge. First, it submitted that the Authority's procedures should have required the details of Corus' rival application (redacted if necessary so as to exclude commercially sensitive information) to be disclosed to Abbey Mine, and such disclosure should have been given. Secondly, it argued that the Authority failed to give Abbey Mine fair notice of their concerns about the "track record" of Abbey Mine's chairman, Mr Williams, in relation to previous mining ventures in which he had been involved.[187]

In relation to the first ground of challenge concerning the argument that the Authority should have disclosed Corus' rival application, Laws LJ relevantly noted:

> There is no question of sacrificing fairness to administrative convenience. The duty of fairness always takes its place in a practical setting. Where the setting involves statutory functions imposed in the public interest, the court must be alert to see that they are fulfilled and not frustrated. Here…all competitors are in the same boat. In my judgment, in a competition case like this (in addition to the elementary imperative of impartiality in the decision-maker) fairness imposes two broad requirements: (1) that an applicant be told the substance of the decision-makers concerns about his own case, and (2) that each applicant be treated like every other: there should, to use the hackneyed phrase, be a level playing-field. The first of these requirements applies the distinction I drew earlier: the applicant is entitled to be told of the decision-maker's concerns about his own case, but not the details of his rival's case.[188]

On this basis, the Authority was not obliged to disclose Corus' application details to Abbey Mine and the first ground of challenge failed.[189]

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[185] [2008] EWCA Civ 353.
[186] Ibid [1].
[187] Ibid [14].
[188] Ibid [34].
[189] Ibid [35].

In relation to the second ground of challenge concerning the failure of the Authority to raise its concerns with Abbey Mine about the 'track record' of Mr Williams, Laws LJ noted that the focus of the Authority's consideration was on the rival proposals for the Margam site, and not on any concern about Mr Williams. Laws LJ found that the Authority would have granted Abbey Mine's application had it not been for Corus, which negated the Authority having any real concerns about Mr Williams. In these circumstances, it was fanciful to suppose that these concerns could have had a material, far less a decisive, effect on the outcome of Abbey Mine's application.[190] As a consequence, his Honour held that the failure of the Authority to raise any concerns about the 'track record' of Mr Williams caused no unfairness.[191]

The second case from the United Kingdom is the recent case of *Europa Oil and Gas Limited v Secretary of State for Communities and Local Government & Ors*.[192] Europa Oil and Gas Limited ('Europa') applied to Surrey County Council for planning permission for exploration and appraisal through testing of hydrocarbons in an area in the Metropolitan Green Belt. The proposed development would involve offset drilling. It would be conducted in four phases: site clearance and preparation; equipment assembly and drilling operations; testing and evaluation (if hydrocarbons are found); and site reinstatement.[193] Surrey County Council refused permission. Europa appealed. The inspector dismissed this appeal. Europa challenged, by judicial review proceedings, the inspector's decision. Amongst the grounds of challenge, Europa contended the inspector had wrongly concluded that the development was neither mineral extraction nor engineering operation and so was not appropriate development in the Green Belt for the purposes of the applicable planning policy documents.[194]

Ouseley J held that the inspector did err in not finding that the development was not "mineral extraction" within each planning policy document.[195] The phrase "mineral extraction" is not synonymous with and exclusively confined to "production", but also covers the inevitable precursor steps of exploration and appraisal where they are

[190] Ibid [45], [46].
[191] Ibid.
[192] [2013] EWHC 2643 (Admin).
[193] Ibid [1], [2].
[194] Ibid [6].
[195] Ibid [44], [51].

necessary. The three phases of oil and gas production, namely exploration, appraisal and production, are components of the one, overall process of extraction.[196] However, Ouseley J held that the inspector did not make an error in his conclusion that the development was not an "engineering operation". It was a matter of fact and degree whether the engineering works involved were sufficient to make the development an "engineering operation".[197]

Ouseley J next considered whether, notwithstanding the inspector's error in not finding the development to be for mineral extraction, the error did not affect the inspector's decision to refuse permission. Ouseley J held that he was not satisfied that without the error the decision would inevitably have been the same.[198]

In Australia, there are two judicial review cases, both in the Land and Environment Court of NSW. The first is *Barrington-Gloucester-Stroud Preservation Alliance Inc v Minister for Planning and Infrastructure*.[199] In February 2011, the Minister for Planning (by his delegate, the Planning Assessment Commission) granted two approvals, namely a concept plan approval and major project approval, to the Gloucester Gas Project. This development involved the extraction, processing and transportation of coal seam gas. The approvals, which were issued under the then in-force Part 3A of the *Environmental Planning and Assessment Act 1979* (NSW) ('EPA Act'), were subject to several conditions pertaining to groundwater, wastewater and gas well locations.[200]

The Preservation Alliance sought judicial review of the decisions made and approvals granted by the Planning Assessment Commission ('the PAC') as delegate for the Minister. It raised two main grounds of challenge. First, it claimed that particular conditions contained in the project approval relating to groundwater and wastewater left open the possibility of a significantly different development from that for which approval was sought and granted and were, therefore, uncertain.

[196] Ibid [44].
[197] Ibid [55].
[198] Ibid [63], [79].
[199] [2012] NSWLEC 197; (2012) 194 LGERA 113.
[200] [2012] NSWLEC 197, [2]-[6].

Secondly, it claimed that the PAC failed to correctly formulate and properly consider the precautionary principle when making its decision to issue the project approval.[201]

Pepper J disagreed with both of the Preservation Alliance's submissions. First, her Honour held that the impugned conditions, properly construed, were within the permissible limits of the power pursuant to which they were imposed and were not uncertain in relation to the environmental impacts of the Gloucester Gas Project.[202] Secondly, Pepper J found that, while the precautionary principle was a mandatory relevant consideration forming part of the public interest,[203] the PAC had adequately considered this principle of ecologically sustainable development when granting the project approval.[204]

The second case is *Fullerton Cove Residents Action Group Inc v Dart Energy Ltd (No 2)*.[205] The NSW Minister for Mineral Resources had granted a petroleum exploration licence for three years subject to conditions to prospect for coal seam gas over an area of approximately 2000 km^2, extending down the New South Wales coast from Myall Lakes in the north to Belmont in the south.[206] One of the licence conditions required written approval to be obtained before certain activities, including petroleum exploration bore hole activities, could be commenced.[207] Pursuant to the condition, Dart Energy Ltd ('Dart') sought approval from the Department of Trade and Investment, Regional Infrastructure and Services ('the Department') for the proposed drilling of two sets of pilot appraisal wells and production flow testing of coal seam gas ('the pilot program') at Fullerton Cove, north of Newcastle. The pilot program site was adjacent to the Hunter Estuary National Park containing wetlands listed under the Ramsar List of Wetlands of International Importance.[208]

The Department approved the pilot program for 12 months.[209] An environmental organisation sought judicial review of the Department's decision. Amongst the

[201] Ibid [6].
[202] Ibid [7], [71]-[144].
[203] Ibid [7], [169]-[171].
[204] Ibid [145]-[216].
[205] [2013] NSWLEC 38.
[206] Ibid [4], [6].
[207] Ibid [7].
[208] Ibid [8]-[15].
[209] Ibid [23].

grounds of challenge, the organisation contended that the Department had failed to consider its adopted environmental assessment guidelines for petroleum exploration ('ESG 2 Guidelines'), a groundwater assessment of the pilot program, and the impact on certain threatened species on fauna and flora. The organisation contended that the Department had breached s 111 of the EPA Act by failing to consider these matters and also s 112 of the EPA Act by not concluding that the pilot program was likely to significantly affect the environment and as a consequence obtaining and considering an environmental impact statement.[210]

Pepper J dismissed the challenges. Her Honour held that the Department's ESG 2 Guidelines were not made under the EPA Act and were not a mandatory relevant consideration under that Act. Hence, any failure to consider them could not be a breach of s 111 or s 112 of the EPA Act. In any event, however, the factors in the ESG 2 Guidelines were considered in the approval process.[211] Pepper J held that the Department did not breach s 111 of the EPA Act by reason of any failure to obtain and consider a groundwater assessment[212] or with respect to its consideration of the pilot program's impacts on threatened species of fauna and flora.[213]

Pepper J held that the question under s 112 of the EPA Act of whether or not an activity is likely to significantly affect the environment is a jurisdictional fact.[214] However, Pepper J found that on the evidence before the court, the pilot program was not likely to significantly affect the environment and that the Department did not breach s 112 of the EPA Act.[215]

Thus, it is evident that judicial review has proven to be a fairly popular cause of action for challenging the approval of unconventional gas projects or activities. Many, if not all, of the judicial review challenges that have been brought thus far have related to decisions that have been taken under existing environmental statutes that regulate approval of major projects generally. As governments enact new laws that are specifically directed towards regulating unconventional natural gas projects

[210] Ibid [35], [36].
[211] Ibid [100], [101], [108], [303], [306].
[212] Ibid [153], [174].
[213] Ibid [178], [188], [200], [209], [210], [221].
[214] Ibid [300].
[215] Ibid [308], [319], [324], [325], [326], [330].

or activities, it is likely that there will be an increased number of judicial review challenges to remedy breaches of statutory duties by government and/or project proponents.

iv. Civil enforcement

Courts can also enforce compliance with the law by persons other than the government. Civil proceedings may be brought to remedy and restrain breaches of laws. The breach may involve a failure to comply with a statutory obligation to do or not to do something under the statute, or a failure to comply with an administrative order issued under the statute. Civil proceedings to enforce compliance are usually brought by the regulatory agency or governmental body responsible for administering the statute. However, non-government organisations or members of civil society with a legally sufficient interest to have standing may also be able to bring civil enforcement proceedings.[216]

The given court usually has a broad discretion to grant such relief as it thinks fit to remedy any proven breach. For example, in New South Wales, under a variety of environmental statutes, any person may bring civil proceedings to remedy or restrain breaches of the statute and the Land and Environment Court may grant such order as it thinks fit.[217]

An example of civil enforcement is provided by the Australian case of *O'Connor & O'Connor v Arrow (Daandine) Pty Ltd*.[218] In this case, Mr and Mrs O'Connor ('O'Connor') sought injunctive and declaratory relief in relation to the respondent's construction of a treated water pipeline across their land in Dalby, Queensland. The respondent was a subsidiary of Arrow Energy Ltd, which had been granted a 30 year lease under the *Petroleum and Gas (Production and Safety) Act 2004* (Qld) ('the PG Act') over an area in the Surat Basin (referred to as 'PL230'). This area encompassed numerous properties, including the property owned by O'Connor. By

[216] See, eg, *New York v United States Army Corps of Engineers*, 896 F Supp 2d 180 (ED NY, 2012), 189-195 where the plaintiffs (New York State and several non-government organisations) did not allege an injury-in-fact, and therefore lacked standing to challenge draft agency regulations concerning natural gas drilling and environmental impact assessment.
[217] See, eg, *Environmental Planning and Assessment Act 1979* (NSW) ss 123-124.
[218] [2009] QSC 432.

virtue of its lease and an environmental authority obtained under the *Environmental Protection Act 1994* (Qld), Arrow Energy Ltd and its subsidiaries were entitled to carry out business involving exploration for, developing reserves of, and producing CSG. As part of the production process for CSG, subterranean water is extracted from the wells. Arrow proposed to pipe the associated water extracted from the coal seams (by an untreated water pipeline) to be treated in a reverse osmosis plant on land owned by Arrow and then pipe back the treated water (by a treated water pipeline) to be discharged on other land owned by Arrow for irrigation purposes.[219] The route of the treated water pipeline included traversing O'Connor's property.

O'Connor brought proceedings seeking an injunction to restrain the construction of the treated water pipeline. Amongst other claims, O'Connor claimed that, first, the construction of the treated water pipeline was not 'an authorised activity' for the purposes of PL230 and, secondly, Arrow's entry on O'Connor's land for the purpose of constructing the treated water pipeline was unlawful because of a failure to give an entry notice as required by s 497 of the PG Act.

With respect to the first issue, the Supreme Court of Queensland (Margaret Wilson J) noted that the respondent's plan for management of water associated with the CSG extraction and production process was one that provided for its treatment and beneficial use.[220] Her Honour further observed:

> The only way the treated water can be beneficially used is for it to be transported to somewhere it can be put to good use. The treated water pipeline is necessary infrastructure for the attainment of that end. The respondent's activities, within the area of PL230, in establishing the reverse osmosis plant and laying a pipeline to transport the treated water from that plant to land on which it is to be discharged are reasonably necessary for and incidental to the production of CSG.[221]

Accordingly, Margaret Wilson J held that Arrow's construction of the water pipeline was an authorised activity for the purposes of PL230.[222]

[219] Ibid [10].
[220] Ibid [36].
[221] Ibid.
[222] Ibid.

In relation to the second issue, her Honour stated that Arrow had not expressly referred to the construction of the treated water pipeline in the entry notice issued by it to O'Connor pursuant to s 497 of the PG Act.[223] On the contrary, the notice indicated that Arrow required access for:

(a) drilling and completing 12 vertical wells;

(b) work for an access corridor incorporating roads and other access ways and other infrastructure (including for pumping equipment, gas and water pipelines, electricity conduits and communications services) that relate to or provide access or services to vertical wells or any other infrastructure described in this paragraph (b);

(c) inspections of and maintenance of the 12 vertical wells and land surrounds and such remedial works as may be necessary from time to time;

(d) such activities and works on, under and over the land under the authority of PL230 as are incidental to and required for undertaking the activities described in paragraphs (a) to (c) above.[224]

Arrow submitted that the laying of the water pipeline was included by implication in the entry notice, referring to matters raised in paragraphs (b) and (d). Margaret Wilson J disagreed. First, her Honour found that, having regard to the factual matrix in which the entry notice was given, the phrase 'water pipelines' in paragraph (b) should be construed as relating to untreated water pipelines.[225] Margaret Wilson J also found that the treated water pipeline was not 'other infrastructure...that relate(s) to or provide(s) access or services to the vertical wells' as described in paragraph (b).[226] Her Honour elaborated on this finding as follows:

> I acknowledge that the expression "relate to" is a very broad one. However, the treated water pipeline relates to the management of the associated water rather than to the vertical wells. It does not relate to any of the other infrastructure

[223] Ibid [40].
[224] Ibid [38].
[225] Ibid [42].
[226] Ibid [43].

> described in paragraph (b). Nor does it provide access to the vertical wells or any other infrastructure described in paragraph (b).[227]

Accordingly, her Honour held that the laying of the treated water pipeline did not fall within paragraph (b).[228] Margaret Wilson J also found that the laying of the treated water pipeline did not fall within paragraph (d).[229]

As a consequence, her Honour found that Arrow's entry onto O'Connor's land to lay the treated water pipeline was unlawful as it had not given notice of entry in relation to that activity.[230] O'Connor was thus entitled to declarations as to the unlawfulness of the respondent's entry and an order restraining the further construction of the treated water pipeline unless and until a valid entry notice was served.[231]

Margaret Wilson J, however, declined to issue a mandatory injunction to require the respondent to remove the treated water pipeline on the basis that it would lack practical utility because Arrow could give O'Connor a new entry notice and then enter their land to construct the pipeline.[232] Instead, an award for damages would be adequate compensation. The Act contemplated the payment of compensation for compensable effects of authorised activities.[233]

d. Real property, personal property and intellectual property law

The law of property regulates relationships involving the creation, transfer and enforceability of rights over and interests in things.[234] On a general level, things may be broadly categorised as either real or personal property.[235] Land is usually, if not always, regarded as the only thing that may constitute real property and, as such, it is regulated by real property law.[236] In contrast, there are various forms of chattels (e.g. books, furniture, vehicles and so on) that may be regarded as personal

[227] Ibid.
[228] Ibid [44].
[229] Ibid [45].
[230] Ibid [46].
[231] Ibid [49].
[232] Ibid [50].
[233] Ibid.
[234] Brendan Edgeworth et al, *Sackville and Neave Australian Property Law* (LexisNexis Butterworths, 9th ed, 2013) 1.
[235] Ibid 64.
[236] Walker, above n 29, 1007.

property.[237] Irrespective of whether a thing is regarded as real or personal property, it is important to note that the concept of property, in a legal sense, is defined 'not as the object itself but, rather, the relationship which an individual or corporation has with the object and with the rest of the world in relation to that object'.[238]

During more recent times, advances in technology have resulted in an expansion of the law of property so as to encompass a broader variety of personal proprietary rights.[239] The field of intellectual property law, through mechanisms such as copyrights, patents and trademarks, now regulates relationships involving the creation, transfer and enforceability of rights over and interests in incorporeal things (e.g. original ideas, inventions and designs).[240]

There have been some instances where persons have resorted to the courts in an effort to protect their rights in real property in circumstances where those rights are threatened or adversely impacted on by the operation of an unconventional gas project or activity. This has often occurred in tandem with causes of action involving tort (e.g. nuisance generated by a project or activity is of such a degree that it deprives a landowner of his or her right to enjoyment of his or her property). However, there have also been some cases where real property law issues have been the crux of the proceedings brought by the plaintiff. Two of the cases concern gaining access to land on which prospecting or petroleum or mining operations were to be conducted.

The first is the United States case of *Bosley v Cabot Oil & Gas Corporation of West Virginia*.[241] In this case, Mr and Mrs Bosley purchased their property from an adjoining landowner, McClanahan, in 1965. The deed effecting the transfer granted Mr and Mrs Bosley a right of way over McClanahan's property. McClanahan subsequently sold her property to Comer. In January 1969, Cabot acquired from Comer a right of way over the Comer property in anticipation of locating a well on another landowner's property. Cabot drilled a well on that site in 1971. It gained

[237] Samantha Hepburn, *Principles of Property Law* (Cavendish, 2nd ed, 2001) 15-16.
[238] Ibid 1.
[239] Ibid 15-16.
[240] Walker, above n 29, 1007.
[241] 624 F Supp 1174 (SD W Va, 1986).

access to the well by travelling across the Comer property via the Bosley right of way which had, by that time, become an improved roadway. During this period, Mr and Mrs Bosley alleged that the drilling activity conducted by Cabot resulted in a degree of damage to the roadway. The two parties settled this dispute and, as part of the settlement, Cabot acquired a right of way from Mr and Mrs Bosley.[242]

Following completion of the well, Cabot continued to regularly use the right-of-way to tend its well. Mr and Mrs Bosley made no complaints about such use until November 1984. On 26 November 1984, Cabot moved a service rig onto the well site. It was removed on 20 December 1984. During these operations, Cabot accessed the well site via the right of way. Mr and Mrs Bosley brought proceedings against Cabot, submitting that, first, Cabot had no right to use their right-of-way and, secondly, such use resulted in damage to that right of way.[243] Cabot sought summary judgment.

The United States District Court in West Virginia (Haden CJ) held that Cabot's motion for summary judgment should be granted in relation to the first claim but not the unreasonable use of the right of way claim.[244] The main issue arising in this case was whether the owners of the servient estate, McClanahan and Comer, had the right to grant successive rights of way, first to Mr and Mrs Bosley and then to Cabot, along the same route. In addressing this issue, Haden CJ relevantly observed:

> Public policy arguably supports the right of the servient estate owner to grant successive easements. An easement such as a right-of-way is a limited property interest. Generally, the holder of the interest is most concerned with traversing the servient estate. Unlike other property interests, there is no inherent conflict with sharing this type of interest with someone else. If a right-of-way given under this state of facts was presumed to be "exclusive", a servient estate could be subjected to the wasteful result of playing host to two or more roadways where one would suffice. Conservation of economic resources and the ecology of the servient estate are best served by precluding where possible duplicative easements.[245]

[242] Ibid 1175.
[243] Ibid.
[244] Ibid 1176, 1179.
[245] Ibid 1177.

Haden CJ accepted that Comer could grant to Cabot a right-of-way along the same route previously designated for use by Mr and Mrs Bosley and rejected the submission that Cabot had no right to use Mr and Mrs Bosley's right of way.[246] His Honour noted that Mr and Mrs Bosely were protected by a restraint of "reasonableness" governing Cabot's shared use of the right of way and could bring an action seeking damages for any injury suffered in circumstances where Cabot exceeded its right to share the right of way.[247] Mr and Mrs Bosley had also brought this action.[248] On this basis, Haden CJ gave summary judgment in favour of Cabot in relation to the claim that Cabot had no right to use the right of way at all, but left remaining the claim that Cabot's use of the Bosley right of way unduly interfered with Mr and Mrs Bosley's rights.[249]

The second case concerning gaining access to land on which to carry out prospecting or petroleum or mining operations is *Hume Coal Pty Ltd v Alexander (No 3)* ('*Hume Coal*').[250] In Australia, mining and petroleum legislation enables gas producers to gain access to and over land comprised in petroleum titles.[251] Holders of prospecting titles have brought proceedings to enforce rights of access to and over land comprised in titles. *Hume Coal* is an example. It concerned access under the *Mining Act 1992* (NSW) to prospect for coal under an exploration licence but the statutory provisions and rights concerned are relevantly the same as those for access to prospect for petroleum (including gas) under a prospecting title. Hume Coal Pty Ltd ('Hume Coal') had entered an access arrangement with the owner of the land comprised in the exploration licence ('the Koltai land'). Access to the Koltai land was through a right of carriageway over neighbouring land owned by the Alexanders ('the Alexander land'). A restrictive covenant over both the Koltai and Alexander lands restricted use of the land for any industrial or commercial purpose. The Alexanders declined to agree on an access arrangement with Hume Coal. They and other members of the local community set up a blockade on the Alexander land to prevent Hume Coal gaining access to the Koltai land to conduct prospecting

[246] Ibid 1176-1178.
[247] Ibid 1177-1178.
[248] Ibid.
[249] Ibid 1179.
[250] [2013] NSWLEC 58.
[251] See, eg, *Petroleum (Onshore) Act 1991* (NSW), pt 4A (access over land for prospecting) and ss 105 and 106 (granting of easements and rights of way).

activities. Hume Coal applied to the Land and Environment Court of NSW for an injunction to restrain the Alexanders and others from preventing Hume Coal from accessing the Koltai land via the right of carriageway.

Sheahan J granted the injunction. His Honour held that the restrictive covenant did not prevail over the exploration licence under the Mining Act so as to prevent prospecting.[252] Hume Coal's rights under the access arrangement over the Koltai land entitled Hume Coal to enjoy the benefit of the right of carriageway over the Alexander land that was attached to the title of the Koltai land. It was not necessary for Hume Coal to negotiate a separate access agreement with the Alexanders.[253]

Other cases involving property have concerned disputes over interests in an unconventional gas joint venture and over ownership of gas licences.

An example of the first type of dispute is *Power Gas Marketing & Transmission Inc v Cabot Oil & Gas Corporation and Linn Energy LLC*.[254] In this case, Power Gas and Cabot were partners in a joint venture to explore and develop leases and interests in oil and gas in Pennsylvania. Cabot sold its interest in the joint venture to a third party, Linn. Power Gas alleged that Cabot breached a provision of the joint venture agreement that gave Power Gas a preferential right to purchase to Linn's interest. Cabot claimed the provision offended the rule against perpetuities and was unenforceable. The Court of Common Pleas granted the respective motions of Cabot and Linn for summary judgment finding that the preferential purchase rights provision was not enforceable because the rule against perpetuities applied.[255]

On the appeal, Power Gas submitted that Cabot failed to offer Power Gas the opportunity to purchase Cabot's interest prior to selling it to Linn, a company with no prior interest in the joint venture and, as a consequence, breached a preferential purchase rights provision in the joint venture agreement. The Superior Court of Pennsylvania (Tamilia J; Lally-Green and Panella JJ agreeing) held that the rule

[252] [2013] NSWLEC 58, [108].
[253] Ibid [110].
[254] 948 A 2d 807 (Superior Court, Pa, 2008).
[255] The rule against perpetuities states that for an interest in property to be valid, it must be certain to vest, if it vests at all, not later than the expiration of the perpetuity period (i.e. 21 years after the death of the last 'life in being' at the date the interest was created): see Edgeworth et al, above n 234, 662.

against perpetuities did not apply to the agreement because the agreement did not fetter specific property, which is a requirement for application of the rule.[256] The Court further noted that because the rule had been abolished on a prospective basis by the legislature, the policy underlying the rule was no longer applicable.[257] Accordingly, the rule of perpetuities did not apply to the preferential right to purchase and the lower court's decision was reversed and the matter remanded to the lower court.

An example of the second type of dispute is *Ashborder BV v Green Gas Power Ltd*[258] where the claimants and defendants sought rival declarations as to the ownership of, and the right to operate, various petroleum licences which permitted the extraction of oil and gas from various regions within the United Kingdom.

In relation to unconventional gas litigation focussing on issues of intellectual property law, it appears that there has been no case where a court has handed down judgment in a matter that extensively considers issues relating to intellectual property. However, in the future, it is likely that there will be an increasing amount of litigation in this area. For example, an equitable action could be brought by a company involved in unconventional gas extraction and production against an employee or other person who has disclosed trade secrets or information protected by patent regarding the procedures followed by that company for extracting natural gas and subsequently producing energy (e.g. disclosure of the chemical compound a company adds to water injected in fracking operations).[259]

e. Criminal law

The various petroleum, planning and environmental statutes make contravention of statutory obligations offences. The heightened concern over the risk to the

[256] 948 A 2d 807 (Superior Court Pa, 2008), [15]-[31].
[257] Ibid.
[258] [2004] EWHC 1517 (Ch).
[259] See generally Poe Leggette et al, 'Trade Secrets and the Regulation of Hydraulic Fracturing: Toward a Global Perspective – Pt 1' [2013] *International Energy Law Review* 154, 154; Daniel R Cahoy, Joel Gehman and Zhen Lei, 'Fracking Patents: The Emergence of Patents as Information-Containing Tools in Shale Drilling' (2013) 19 *Michigan Telecommunications and Technology Law Review* 279; Travis D Van Ort, 'Hydraulic Fracturing Additives: A Solution to the Tension Between Trade Secret Protection and Demands for Public Disclosure' (2012) 4 *Kentucky Journal of Equine, Agriculture and Natural Resources Law* 439, 440.

environment and to workers by the drilling methods involved in oil and gas production has led to prosecutions of producers whose commission of offences has caused harm to the environment or to workers.

Horizontal drilling is used in unconventional gas extraction. Two prosecutions in NSW involved the pollution of waters by horizontal drilling, albeit not for unconventional gas extraction.[260] The offences involved the discharge of a bentonite slurry into a wetland. Horizontal directional drilling uses a bentonite slurry as a lubricant to aid the drilling operation. The discharge of the slurry into the wetlands constituted water pollution offences.

In *Department of Sustainability, Environment, Water, Population and Communities v Stuart Petroleum Pty Ltd*,[261] an oil and gas company was prosecuted for failing to obtain the necessary statutory approvals under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) ('EPBC Act'). Stuart Petroleum Pty Ltd had subcontracted the responsibility of managing and undertaking drilling operations in connection with an oil and gas exploration project at Stuart Petroleum's Oliver 2 well site in the Northern Territory of Australia. The subcontractor had referred the drilling activities to the responsible Commonwealth Minister for approval to undertake a controlled action under Pt 7 of the EPBC Act. The subcontractor was informed that no drilling was to commence until the Minister had given approval under Pt 3 of the EPBC Act. The subcontractor nevertheless commenced drilling activities before the Minister had given his approval. On becoming aware of the failure to obtain Ministerial approval, Stuart Petroleum suspended drilling operations and did not recommence until after the Minister had granted approval. The Northern Territory Magistrates Court fined Stuart Petroleum Pty Ltd $102,750, emphasising the need for environmental protection and to deter companies from circumventing environmental protection systems.

The petroleum operation PTTEP AA was convicted and fined $110,000 by the Northern Territory Magistrates Court for four offences against the *Offshore*

[260] See *Environment Protection Authority v Coe Drilling Australia Pty Ltd* [2005] NSWLEC 719 and *Environment Protection Authority v Pipeline Drillers Group Pty Ltd* [2012] NSWLEC 18.
[261] (Unreported, Northern Territory Magistrates Court – Court of Summary Jurisdiction, E Morris SM, 17 December 2010).

Petroleum and Greenhouse Gas Storage Act 2006 (Cth) over the Montara Wellhead Platform blowout in the Ashmore-Cartier region oil and gas fields 254 km northwest off the Western Australian coast. On 21 August 2009, the Montara Wellhead Platform and the West Atlas Mobile Offshore Drilling Unit positioned above the platform were evacuated after an uncontrolled release of oil and gas from the well. The flow of oil and gas continued without interruption until 1 November 2009, when fluid was pumped into the well from a relief well, however a fire stated in the platform shortly afterwards and continued until 3 November 2009 when the flow of oil and gas was contained. The Montara Platform blowout was Australia's most significant offshore petroleum incident and caused significant environmental and occupational health and safety impacts. The oil slick spread over 6,000 square kilometres in the Timor Sea.[262] The three occupational health and safety offences comprised failures by PTTEP AA to verify barriers in the well, which increased the risk of an uncontrolled hydrocarbon release, causing the wellhead platform to be unsafe and a risk to the health of any persons at or near the facility. The fourth offence comprised a failure by PTTEP AA to carry out operations in a proper and workmanlike manner and in accordance with good oilfield practice.[263]

In the United States, the Environmental Protection Agency has prosecuted oil and gas producers for environmental offences. The owners and managers of Swamp Angel Energy, engaged in oil and gas development on the Allegheny National Forest in Pennsylvania, violated the *Safe Drinking Water Act 1974* by dumping 200,000 gallons of brine produced in the drilling process into an oil production well. The persons were sentenced to three years probation and fined $4,000 to $5,000.[264] Chesapeake Appalachia LLC violated the *Clean Water Act 1972* by discharging crushed stone and gravel into sensitive wetlands in Northern West Virginia to create a roadway for the purpose of improving access to its Marcellus Shale drilling

[262] ABC News, 'Oil slick moving closer to coast', 5 September 2009 at <http://www.abc.net.au/news/2009-09-04/oil-slick-moving-closer-to-coast/1417966>.
[263] *NOPSEMA v PTTEP AA* (Unreported, Northern Territory Magistrates Court, 21 August 2009), noted in National Offshore Petroleum Safety and Environment Authority (NOPSEMA), 'Successful prosecution over Montara platform blowout' (Media release, 31 August 2012) <http://www.nopsema.gov.au/assets/media/Media-Release-31-August-2012-Successful-prosecution-over-Montara-platform-blowout.pdf>.
[264] US Environmental Protection Authority, *Summary of Criminal Prosecutions: EPA v Morgan and Evans*, <http://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm?action=3&prosecution_summary_id=2032>.

activities. Chesapeake was convicted and fined $600,000 and placed onto supervised release for a period of two years.[265]

In a different context, the Supreme Court of New South Wales in Australia has recently considered the criminal offence of insider trading[266] involving unconventional gas in the case of *R v Fysh (No 4)*.[267] Fysh was found guilty of offences under ss 1043A(1)(c) and 1311(1)(a) of the *Corporations Act 2001* (Cth) in that he acquired 250,000 shares in Queensland Gas Company Ltd ('QGC') whilst in possession of inside information relating to a proposed alliance between that company and the offender's employer, a UK-based multinational energy company called BG Group plc (formerly British Gas) in December 2007.[268] The proposed alliance between QGC and BG Group related to pursuing business opportunities in Australia in the area of liquefied natural gas and CSG extraction and production.[269] After having regard to the relevant mitigating factors involved in the case, McCallum J sentenced Fysh to a term of imprisonment of 2 years.[270]

f. Employment law

The risks in extracting unconventional gas are not only for the environment but also for the occupational health and safety of the workers engaged in unconventional gas extraction. There has been, therefore, litigation concerning breaches by employers of their obligations owed to employees or other persons. The prosecution of the occupational health and safety offences arising from the Montara platform blowout is one example. Another is the recent case of *Nash v Austerberry Directional Drilling Services Pty Ltd*.[271] Austerberry pleaded guilty to an offence against s 8(2) of the *Occupational Health and Safety Act 2000* (NSW) in respect of a workplace incident

[265] US Environmental Protection Authority, *Summary of Criminal Prosecutions: EPA v Chesapeake Appalachia LLC*, <http://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm?action=3&prosecution_summary_id=2394>.
[266] The term "insider trading" refers to a situation where a person who possesses price-sensitive information uses that information to make a profit when dealing in securities: see Tony Ciro and Christopher Symes, *Corporations Law in Principle* (Thomson Reuters, 8th ed, 2009) 477.
[267] [2012] NSWSC 1587.
[268] Ibid [3].
[269] Ibid [15]-[35].
[270] Ibid [82]-[85].
[271] [2013] NSWIRComm 37.

which resulted in a worker, who was employed by another company, being fatally injured.

In 2009, Eastern Energy Australia Pty Ltd, a company that undertakes coal seam gas exploration in New South Wales, contracted with Austerberry to install a pipe under Bohena Creek, a worksite located near Narrabri in regional New South Wales. The pipe was to be installed using horizontal drilling technology. On 31 July 2009, the pipe became stuck under the ground. Six unsuccessful attempts were made to retrieve the pipe. On the next day (1 August 2009), Mr Shayne Austerberry, the sole director of Austerberry, decided that a further attempt should be made to retrieve the pipe. To this end, Mr Austerberry attempted to pull the pipeline out from under the ground using an excavator with a chain connecting to the pipeline. During the course of this activity, Mr Bruce Austin, the sole director of Save Guys Pty Ltd, received serious injuries when the chain broke and the pipeline recoiled. Mr Austin was hospitalised and later died from his injuries.[272]

After having regard to the various aggravating and mitigating factors involved in the case, the Industrial Court of NSW (Staff J) held that the defendant be convicted as charged and imposed a fine of $170,000.[273]

Given the inherent risks facing many employees who work in the unconventional gas industry,[274] we could see an increase in this type of litigation in the future.

g. International law and European Union law

There is potential for disputes over unconventional gas projects or activities to be brought before international courts, tribunals or other adjudicative fora in the future in circumstances where the approval or operation of such projects or activities are in breach of State obligations under international law. An example is the operation of the Clean Development Mechanism ('CDM') under the *Kyoto Protocol*.[275]

[272] Ibid [2]-[11].
[273] Ibid [139].
[274] See, eg, Susan Johnston, 'Whose Right? The Adequacy of the Law Governing Coal Seam Gas Development in Queensland' (2001) 20 *Australian Mining & Petroleum Law Journal* 259, 260.
[275] *Kyoto Protocol*, opened for signature 11 December 1997, 2303 UNTS 148 (entered into force 16 February 2005).

Article 12 of the *Kyoto Protocol* establishes the CDM as a mechanism to assist non-Annex I parties to achieve sustainable development and Annex I parties to comply with their quantified emissions limitation and reduction commitments under Article 3 of the *Kyoto Protocol*.[276] In essence, the CDM is a system for creating GHG offsets that are represented by certificates possessing market value.[277] Zahar et al have noted that the creation of a GHG offset under the CDM generally requires satisfaction of the following conditions:

(i) a proposed project, which
(ii) itself would not have been realised but for the expected proceeds from the sale of the offsets ('additionality'), and which
(iii) acts as a sink for, or destroys GHG, or creates a product or service that substitutes itself for (i.e. displaces) an existing or planned and comparatively more GHG-intensive product or service, and
(iv) the quantity of GHGs removed or avoided through the project is reasonably quantifiable.[278]

In their discussion of CSG projects in Indonesia, Godfrey et al observed that Indonesia (as a non-Annex I country for the purposes of the *United Nations Framework Convention on Climate Change*)[279] may be eligible to host a mitigation project under the CDM.[280] Most importantly, they noted that CSG projects in developing countries, such as Indonesia, can receive additional funding under the CDM.[281] This tends to suggest that a CSG project in a developing (non-Annex I) country may serve as a GHG offset under the CDM.

[276] State parties to the *United Nations Framework Convention on Climate Change* ('UNFCCC') – the international convention which the *Kyoto Protocol* was made – are divided into one of three categories: Annex I, Annex II and Non-Annex I parties. The first and third categories are the main ones. Generally speaking, Annex I parties are industrial countries whereas Non-Annex I parties are developing countries: see UNFCCC, *Parties and Observers* (2013) <http://unfccc.int/parties_and_observers/items/2704.php>; Tony Hill, 'UN Climate Change Conference in Durban: Outcomes and Future of the Kyoto Protocol' (2011) 7 *Macquarie Journal of International & Comparative Environmental Law* 92, 92.
[277] Alexander Zahar, Jacqueline Peel and Lee Godden, *Australian Climate Law in Global Context* (Cambridge University Press, 2013) 201.
[278] Ibid.
[279] *United Nations Framework Convention on Climate Change*, opened for signature 9 May 1992, 1771 UNTS 107 (entered into force 21 March 1994).
[280] See Peter Godfrey, Tan Ee and Toby Hewitt, 'Coal Bed Methane Development in Indonesia: Golden Opportunity or Impossible Dream?' (2010) 28 *Journal of Energy & Natural Resources Law* 233, 247.
[281] Ibid.

There is an Executive Board that regulates and supervises the implementation of projects constituting GHG offsets under the *Kyoto Protocol*.[282] While the CDM procedures do not foresee any formal rights of review of Executive Board decisions at present,[283] the growing economic importance of the CDM has led to calls for the reviewability of Executive Board decisions by international courts or tribunals under international law.[284]

The potential for unconventional gas litigation arising under European Union law has, by contrast to the example of the CDM discussed above, already been realised. This is illustrated, for example, by the recent decision of the European Court of Justice in *European Commission v Republic of Poland*.[285]

In this case, the European Commission sought a declaration that Poland had failed to comply with Articles 2(2), 3(1), 5(1) and 5(2) of Directive 94/22/EC of the European Parliament and of the Council of 30 May 1994 concerning the conditions to be met for granting and using authorisations for the prospecting, exploration and production of hydrocarbons (including unconventional gas). In particular, the European Commission claimed that Poland had failed to adopt the measures necessary to ensure that access to activities relating to the prospecting, exploration and extraction of hydrocarbons was free of any discrimination between interested entities and that the authorisations to carry out those activities were granted following a procedure in which all interested parties could submit applications in accordance with certain defined criteria prior to the beginning of the period in which applications could be submitted.[286]

The European Court of Justice largely agreed with the submissions of the European Commission, finding that Poland failed to comply with the obligations contained in Articles 2(2), 5(1) and 5(2), but not Article 3(1), of the Directive 94/22/EC.[287] The

[282] Zahar et al, above n 277, 200.
[283] Ibid.
[284] Ibid 200, 225-227. See also Jolene Lin and Charlotte Streck, 'Mobilising Finance for Climate Change Mitigation: Private Sector Involvement in International Carbon Finance Mechanisms' (2009) 10 *Melbourne Journal of International Law* 70, 72.
[285] [2012] C-569/10 (Fourth Chamber).
[286] Ibid [1].
[287] Ibid [102].

requirement of the Polish Geological and Mining Law that a hydrocarbon operator wishing to obtain a concession must have an office in Poland before the concession can be granted to it was discriminatory and in breach of Article 2(2) of Directive 94/22/EC.[288] The restriction on a successful tenderer obtaining a hydrocarbon extraction concession, if an entity which carried out geological work earlier does not make its geological documentation available to it, also infringed the rule of non-discriminatory access in Article 2(2).[289] The Polish government's failure to publish all of the criteria on the basis of which authorisations are granted, and to fix and make available conditions and requirements concerning the pursuit or termination of an authority, before the start of the period for submission of applications, breached Articles 5(1) and 5(2) of Directive 94/22/EC.[290]

The Court rejected, however, the Commission's argument that Poland infringed Article 5(1)(a) of Directive 94/22/EC in granting concessions subject to the provision of a guarantee relating to environmental protection. Where warranted by particularly important public interests relating especially to environmental protection, the grant of a concession may be made conditional on the provision of a guarantee capable of providing compensation for the harmful effects of the activities carried out under the concession.[291]

Media reports suggest that this decision has affected around 100 shale gas exploration licences that had been issued to firms and accompanied by production permits that had not been put out to tender.[292]

IV Conclusion

This paper has provided an overview of the diverse and distinct causes of action that a person, corporation or public interest environmental group may bring to challenge (in the case of a person or public interest environmental group) or protect (in the

[288] Ibid [51]-[54].
[289] Ibid [60]-[64].
[290] Ibid [92]-[94], [97]-[100].
[291] Ibid [87].
[292] See ASSER Institute, *EEL News Service* (Issue 2013/06 of 25 July 2013) <http://www.asser.nl/upload/documents/20130725T023346-2013%2006%20EEL%20News%20Service%20pdf%20version.pdf>.

case of a corporation) the approval and/or subsequent operation of an unconventional gas project or activity.

While governments throughout the world are striving to devise and implement legal regimes for regulating unconventional gas projects or activities, it is apparent that much work remains to be done. It is likely that the process of devising and implementing such legal regimes will take at least a few years before this process will be completed.

The courts are likely to be afforded increased opportunities with respect to hearing and disposing of disputes concerning unconventional gas projects or activities. In the present absence of comprehensive legislation or other legal instruments for specifically regulating unconventional gas projects or activities, it is likely that litigation in this area will focus either on common law causes of action founded in areas such as tort, contract or property, or on alleged violations of substantive or procedural rights that are protected under existing statutes that are generally applicable to unconventional gas projects or activities (e.g. statutes relating to environmental and planning, competition and consumer law, real property and so on).

Once the process of devising specific legal regimes for regulating unconventional gas projects or activities is completed, it is likely that the focus on these two types of actions will be reduced, even if only slightly, and more emphasis will be placed by litigants on bringing actions that relate to alleged violations of substantive or procedural rights conferred by statutes pertaining to unconventional gas specifically. In particular, once governments have established specific legal regimes for regulating unconventional gas projects or activities, it is likely that there will be an increased amount of public interest litigation. This is especially so in Australia, where legal regimes for regulating unconventional gas projects or activities are either in the process of being devised or still in their infancy, when compared with jurisdictions such as the United States.

In any event, the courts will increasingly be presented with opportunities to make meaningful and relevant contributions to the development of unconventional gas jurisprudence and governance in the future.

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