

FEDERAL COURT OF AUSTRALIA

Moreton Resources Limited v Innovation and Science Australia [2019] FCAFC

120

File number: VID 1291 of 2018

Judges: **DAVIES, MOSHINSKY AND STEWARD JJ**

Date of judgment: 25 July 2019

Catchwords: **TAXATION** – research and development tax offset – underground coal gasification (UCG) facility – pilot project – where appellant undertook a pilot project to test the viability of using UCG technology at a particular site to produce UCG synthesis gas that would then be cleaned and stabilised for production of electricity using gas turbines – where pilot project failed – where registered activities for subsequent years included remediation of the site – whether the registered activities for the subsequent years were “supporting R&D activities” within the meaning of Div 355 of the *Income Tax Assessment Act 1997* (Cth) – whether the registered activities constituting the pilot project fell within the definition of “core R&D activities” – whether the Administrative Appeals Tribunal erred in its construction of “core R&D activities”

Legislation: *Administrative Appeals Tribunal Act 1975* (Cth), s 44
Corporations Act 2001 (Cth), s 249D
Income Tax Assessment Act 1936 (Cth), s 73B
Income Tax Assessment Act 1997 (Cth), ss 355-1, 355-5, 355-20, 355-25, 355-30, 355-35
Industry Research and Development Act 1986 (Cth), ss 4, 27A, 27B, 27F, 27J, 27K, 27L, 30D, 30E, 39J
Tax Laws Amendment (Research and Development) Act 2011 (Cth)
Environmental Protection Act 1994 (Qld), ss 22, 193, 322, 324
Mineral Resources Act 1989 (Qld), ss 186, 208
Petroleum and Gas (Production and Safety) Act 2004 (Qld)
Petroleum and Gas (Production and Safety) Regulation 2004 (Qld)

Cases cited: *Cougar Energy Ltd v Debbkie Best, Chief Executive under the Environmental Protection Act 1994* [2012] QPELR 370; [2011] QPEC 150

Federal Commissioner of Taxation v Consolidated Media Holdings Ltd (2012) 250 CLR 503

Federal Commissioner of Taxation v Cooling (1990) 22 FCR 42

Minister for Immigration & Multicultural Affairs v Al-Miahi (2001) 65 ALD 141; [2001] FCA 744

Re DBTL and Innovation Australia (2013) 137 ALD 88; [2013] AATA 573

Regional Express Holdings Ltd v Australian Federation of Air Pilots (2017) 262 CLR 456

Thiess v Collector of Customs (2014) 250 CLR 664

Date of hearing: 6 and 7 May 2019

Registry: Victoria

Division: General Division

National Practice Area: Taxation

Category: Catchwords

Number of paragraphs: 165

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Solicitor for the Respondent: King & Wood Mallesons

ORDERS

VID 1291 of 2018

BETWEEN: **MORETON RESOURCES LIMITED (ACN 060 111 784)**
Applicant

AND: **INNOVATION AND SCIENCE AUSTRALIA**
Respondent

JUDGES: **DAVIES, MOSHINSKY AND STEWARD JJ**

DATE OF ORDER: **25 JULY 2019**

THE COURT ORDERS THAT:

1. Within 7 days, the parties file any agreed minute of proposed orders to give effect to these reasons (including as to costs).
2. In the absence of agreement, within 14 days each party file its minute of proposed orders to give effect to these reasons (including as to costs) and a written submission (of no more than three pages) in support of the proposed orders.

Note: Entry of orders is dealt with in Rule 39.32 of the *Federal Court Rules 2011*.

REASONS FOR JUDGMENT

THE COURT:

Introduction

1 In or about 2006, the applicant (**Moreton**) set out to develop an underground coal gasification (**UCG**) facility at a site near Kingaroy, Queensland, comprising a gas processing plant and a 400 megawatt (**MW**) gas turbine power plant to produce electricity. Before constructing a commercial scale plant, Moreton undertook a pilot project (the **pilot project**) to test the viability of using UCG technology at the Kingaroy site to produce UCG synthesis gas (**syngas**) that would then be cleaned and stabilised for production of electricity using gas turbines.

2 Ultimately, the pilot project failed. In March 2010, the facility broke down five days into its operation and caused underground water contamination. The Environmental Protection Agency (**EPA**) ordered that the facility be shut down. The Queensland government subsequently banned UCG because of its environmental impact.

3 The issues in this appeal concern the research and development (**R&D**) provisions in Div 355 of the *Income Tax Assessment Act 1997* (Cth) (the **ITAA 1997**) and the related provisions of the *Industry Research and Development Act 1986* (Cth) (the **IR&D Act**).

4 Moreton contends that, during the years ended 30 June 2012, 30 June 2013 and 30 June 2014 (the **2012 to 2014 years**), it engaged in activities in relation to the pilot project and that much of this work related to remediation of the site following the failure of the pilot project. Moreton contends that it is entitled to a tax offset for these activities pursuant to Div 355 of the ITAA 1997 on the basis that they constituted “R&D activities” as defined in that Division. The expression “R&D activities” is defined as meaning “core R&D activities” or “supporting R&D activities”. The definitions of these expressions are set out later in these reasons.

5 The IR&D Act establishes a scheme for the registration of research and development activities for particular years of income. Pursuant to that Act, the respondent, which is referred to as the “Board” in the IR&D Act (the **Board**), may make findings as to whether registered activities were, or were not, “core R&D activities” or “supporting R&D activities”

as defined in the ITAA 1997. Those findings bind the Commissioner of Taxation (the **Commissioner**) for the purposes of the ITAA 1997.

6 On 21 August 2015, the Board decided that Moreton's registered activities for the 2012 to 2014 years were neither "core R&D activities" nor "supporting R&D activities". Following a process of internal review, that decision was confirmed by the Board on 21 December 2015 (the **internal review decision**).

7 Moreton applied to the Administrative Appeals Tribunal (the **Tribunal**) for review of the internal review decision. On 10 September 2018, the Tribunal affirmed the internal review decision. The Tribunal found that many of Moreton's registered activities in relation to the pilot project in the 2012 to 2014 years were excluded from the definition of "core R&D activities" on the basis that they were "activities associated with complying with statutory requirements or standards" (the relevant statutory provisions are set out below). Moreton's alternative submission before the Tribunal was that if any part of the registered "core R&D activities" for the 2012 to 2014 years were, in fact, not "core R&D activities", they were nonetheless "supporting R&D activities" because, among other things, they directly related to "core R&D activities" registered for the year ended 30 June 2010 (the **2010 year**). The registered activities for the 2010 year included activities that constituted or formed part of the pilot project. The Tribunal concluded that the pilot project did not meet the definition of "core R&D activities" because, in summary, it "was testing the application of existing technology at a particular site and nothing more": Tribunal's reasons for decision (the **Reasons**) at [262]. Thus, a critical element of Moreton's alternative submission was rejected by the Tribunal, and the Tribunal may be taken to have implicitly rejected Moreton's alternative submission.

8 Pursuant to s 44 of the *Administrative Appeals Tribunal Act 1975* (Cth) (the **AAT Act**), Moreton 'appeals' to this Court, on a question of law, from the decision of the Tribunal. Moreton does not challenge the Tribunal's conclusion that the registered "core R&D activities" for the 2012 to 2014 years were excluded from the definition of "core R&D activities" on the basis that they were activities associated with complying with statutory requirements or standards. Moreton's appeal focusses on the Tribunal's rejection of its alternative submission.

9 At the forefront of Moreton's submissions on appeal is the contention that the Tribunal erred in its construction of the definition of "core R&D activities" and thus in concluding that the

pilot project did not satisfy that definition. Moreton contends that the Tribunal construed the definition such that it cannot be satisfied by experimental activities whose outcome, while unknown, relates to the application of an existing technology to a specific site and that, in so construing the definition, the Tribunal erred.

10 For the reasons that follow, in our view, the Tribunal erred in its construction of the definition of “core R&D activities”. It follows that the Tribunal’s decision must be set aside.

11 At the appeal hearing, Moreton submitted that, in the event that its submissions were accepted, this Court should itself determine whether the registered “core R&D activities” for the 2012 to 2014 years constituted “supporting R&D activities” on the basis of Moreton’s alternative submission before the Tribunal (outlined in [7] above). We do not consider it appropriate for this Court to undertake this exercise, which would require close examination of factual matters. The appropriate course is for the matter to be remitted to the Tribunal for determination according to law.

The key legislative provisions

12 It is convenient to set out the key legislative provisions before describing the background facts in more detail.

The ITAA 1997

13 The relevant provisions of the ITAA 1997 are contained in Div 355 (Research and Development). Section 355-1 explains that an R&D entity may be entitled to a tax offset for R&D activities; to be entitled to the tax offset, the R&D entity needs one or more notional deductions under the Division. Section 355-1 also explains that there are two kinds of notional deductions: one is for expenditure on R&D activities; the other is for the decline in value of tangible depreciating assets used for R&D activities. A note under s 355-1 states that all of these notional deductions require the R&D entity to be registered for the R&D activities under Pt III of the IR&D Act.

14 The expression “R&D entity” is defined in s 355-35. The definition includes a body corporate incorporated under Australian law. There is no issue that Moreton is such an entity.

15 The object of Div 355 is set out in s 355-5:

355-5 Object

- (1) The object of this Division is to encourage industry to conduct research and development activities that might otherwise not be conducted because of an uncertain return from the activities, in cases where the knowledge gained is likely to benefit the wider Australian economy.
- (2) This object is to be achieved by providing a tax incentive for industry to conduct, in a scientific way, experimental activities for the purpose of generating new knowledge or information in either a general or applied form (including new knowledge in the form of new or improved materials, products, devices, processes or services).

16 The expression “R&D activities” is defined in s 355-20 to mean “core R&D activities” or “supporting R&D activities”. The definitions of these expressions are critical for the purposes of this appeal.

17 “Core R&D activities” are defined in s 355-25:

355-25 Core R&D activities

- (1) **Core R&D activities** are experimental activities:
 - (a) whose outcome cannot be known or determined in advance on the basis of current knowledge, information or experience, but can only be determined by applying a systematic progression of work that:
 - (i) is based on principles of established science; and
 - (ii) proceeds from hypothesis to experiment, observation and evaluation, and leads to logical conclusions; and
 - (b) that are conducted for the purpose of generating new knowledge (including new knowledge in the form of new or improved materials, products, devices, processes or services).
- (2) However, none of the following activities are **core R&D activities**:
 - (a) market research, market testing or market development, or sales promotion (including consumer surveys);
 - (b) prospecting, exploring or drilling for minerals or *petroleum for the purposes of one or more of the following:
 - (i) discovering deposits;
 - (ii) determining more precisely the location of deposits;
 - (iii) determining the size or quality of deposits;
 - (c) management studies or efficiency surveys;
 - (d) research in social sciences, arts or humanities;
 - (e) commercial, legal and administrative aspects of patenting, licensing or other activities;
 - (f) activities associated with complying with statutory requirements or standards, including one or more of the following:
 - (i) maintaining national standards;
 - (ii) calibrating secondary standards;
 - (iii) routine testing and analysis of materials, components, products, processes, soils, atmospheres and other things;
 - (g) any activity related to the reproduction of a commercial product or process:
 - (i) by a physical examination of an existing system; or
 - (ii) from plans, blueprints, detailed specifications or publically

- available information;
- (h) developing, modifying or customising computer software for the dominant purpose of use by any of the following entities for their internal administration (including the internal administration of their business functions):
- (i) the entity (the *developer*) for which the software is developed, modified or customised;
 - (ii) an entity *connected with the developer;
 - (iii) an *affiliate of the developer, or an entity of which the developer is an affiliate.

18 “Supporting R&D activities” are defined in s 355-30:

355-30 Supporting R&D activities

- (1) **Supporting R&D activities** are activities directly related to *core R&D activities.
- (2) However, if an activity:
 - (a) is an activity referred to in subsection 355-25(2); or
 - (b) produces goods or services; or
 - (c) is directly related to producing goods or services;
 the activity is a **supporting R&D activity** only if it is undertaken for the dominant purpose of supporting *core R&D activities.

19 Subdivision 355-D deals with notional deductions for R&D expenditure. In broad terms, the effect of this Subdivision is that an R&D entity can notionally deduct its expenditure on registered R&D activities for which certain conditions are met.

The IR&D Act

20 Section 4 of the IR&D Act provides that the terms “core R&D activities” and “supporting R&D activities” have the same meaning as in the ITAA 1997.

21 Registration of an R&D entity for R&D activities is dealt with in Pt III of the IR&D Act. Under that Part (in particular, Div 2 of that Part):

- (a) the Board may register an R&D entity for R&D activities conducted during an income year;
- (b) the Board may make findings about the nature of an R&D entity’s activities, both before and after registration; and
- (c) such findings bind the Commissioner for the purposes of any entitlement of the R&D entity to a tax offset under Div 355 of the ITAA 1997 for the activities.

22 Section 27A of the IR&D Act deals with registering R&D entities for R&D activities. Section 27F(1) provides that the Board may conduct one or more examinations of all or part

of an R&D entity's registration under s 27A for an income year for the purposes of making one or more findings under s 27J(1) (set out below). The note under s 27F(1) explains that a finding under s 27J(1) will support the entity's registration, or cause the variation of that registration.

23 The key provision of the IR&D Act for present purposes is s 27J:

Findings about a registration

- (1) The Board may make one or more findings to the following effect about an R&D entity's registration under section 27A for an income year (the *registration year*):
- (a) that all or part of a registered activity was a core R&D activity conducted during the registration year;
 - (b) that all or part of a registered activity was not an activity of a kind covered by paragraph (a);
 - (c) that all or part of a registered activity was a supporting R&D activity conducted during the registration year and in relation to:
 - (i) one or more specified registered core R&D activities; or
 - (ii) one or more specified core R&D activities for which the entity has been registered in an earlier income year; or
 - (iii) one or more specified core R&D activities yet to be conducted for which the entity could be registered in the registration year if those activities were conducted during the registration year; or
 - (iv) several specified core R&D activities, each covered by subparagraph (i), (ii) or (iii);
 - (d) that all or part of a registered activity was not an activity of a kind covered by paragraph (c).

Note 1: A finding is reviewable (see Division 5).

Note 2: The Board could make a finding under paragraph (b) if, for example, the Board has insufficient information to make a finding under paragraph (a). Similarly, the Board could make a finding under paragraph (d) if it has insufficient information to make a finding under paragraph (c).

- (2) If the Board makes a finding under subsection (1) in relation to the R&D entity's registration, the Board may specify in the finding the times to which the finding relates.

Example: A finding under paragraph (1)(a) could specify the times during the registration year that a registered activity was a core R&D activity.

- (3) This section has effect subject to section 32B (findings cannot be inconsistent with any earlier findings).

The effect of this provision is that the Board may make findings as described in paragraph (a), (b), (c) or (d) of subsection (1) in respect of registered activities. For example, if an activity is registered for a particular income year, the Board may make a finding pursuant to paragraph (a) that the activity was a "core R&D activity" and that it was conducted during the income year. By way of further example, and relevant for the purposes of Moreton's

alternative submission before the Tribunal (see [7] above), if an activity is registered for a particular income year, the Board may make a finding pursuant to sub-paragraph (c)(ii) that the activity was a “supporting R&D activity” conducted in the income year, in relation to one or more specified “core R&D activities” for which the entity was registered in an earlier income year. There did not appear to be any dispute between the parties on the appeal that if activities were registered as “core R&D activities”, the Board could nevertheless find that they were “supporting R&D activities” pursuant to paragraph (c).

24 Section 27K deals with notice of the Board’s findings, or of decisions refusing to make findings. Section 27L deals with automatic variations so that an R&D entity’s registration is consistent with the Board’s findings.

25 Div 5 of Pt III of the IR&D Act deals with review of decisions of the Board. Section 30D provides for a process of internal review. Section 30E deals with external review by the Tribunal of internal review decisions.

Background facts

26 The following statement of the background facts is substantially based on the findings set out in the Reasons. There was no disagreement before the Tribunal about these matters: see the Reasons at [24].

27 We note that the Reasons contain some findings relating to a facility at Wandoan. It is unnecessary to refer to these for the purposes of the appeal. We also note that it is not necessary for present purposes to set out the facts in as much detail as in the Reasons.

Moreton’s assessment of sites for UCG technology

28 In or about 2006, Moreton (then known as Cougar Energy Ltd) started to access Australian coal deposits that might be suitable for exploitation using UCG technology. In very general terms, UCG is a process involving the in-situ conversion of coal into a gas by means of a combustion process. This is achieved by igniting a coal seam and injecting oxidants, gasifying the coal and bringing the gas to the surface through drilled production wells. The gas is then used as a fuel for power generation, industrial heating and the manufacture of petrochemical products and other chemicals. In or about March 2007, Moreton announced that it had identified a coal resource near Kingaroy and some 160 kilometres northwest of Brisbane in Queensland (**Kingaroy site**) that it considered suitable for a potential UCG project.

The pilot project

29 Moreton went on to plan and develop the pilot project “to test the viability of using UCG technology at the Kingaroy site to produce syngas that is then cleaned and stabilised for production of electricity using gas turbines” (Reasons, [27]). In order to carry out the pilot project, Moreton had to obtain a Mineral Development Licence (**MDL**) under the *Mineral Resources Act 1989* (Qld) (**MR Act**) and an Environmental Authority (**EA**) under the *Environmental Protection Act 1994* (Qld) (**EP Act**).

30 On 30 April 2008, pursuant to s 193 of the EP Act, the EPA issued an EA for a non-code compliant Level 1 Mining Project to Moreton as the Principal Holder and to SE Qld Energy Pty Ltd (**SEQEPL**) as the Joint Holder in respect of the Kingaroy site. The EA took effect from the date on which the mining tenement, MDL No. 385 (**MDL385**), was granted to Moreton and SEQEPL (referred to below).

31 Moreton released a document named the “Kingaroy Pilot UCG Project Front End Engineering Definition” on 27 May 2008 (the **FEED document**). The Tribunal stated at [29] of the Reasons that the primary purpose of the FEED document was to define Moreton’s requirements in relation to the pilot facility. The FEED document, which was quoted by the Tribunal in the Reasons and is referred to in Moreton’s submissions on the appeal, stated that:

To date there are no UCG facilities of this scale in the world, and none utilising a gas turbine to make electricity from the UCG syngas. Once the pilot facility has achieved its aims, the process will be scaled up. Experience with the pilot scale plant and other factors will determine the size and configuration of the first commercial scale gas turbine installed. Options include a nominal 39MW open cycle turbine, a nominal 115MW open cycle turbine or a nominal 176MW combined cycle turbine. Further turbines would be subsequently added as confidence grows in the process.

This FEED document is for the Pilot Facility only.

Purpose of the Pilot Facility

The purpose of the pilot facility is to demonstrate:

- that the coal deposit selected produces a UCG gas that can be used to power a commercially available gas turbine
- that the UCG gas can be cleaned up to the requirements of the gas turbine
- that the process can [sic] be operated in a safe and environmentally responsible manner

As part of the operation of the pilot facility a series of trials with extensive monitoring will be carried out on all aspects of the technology associated with the process, particularly the environmental aspects.

Once the pilot facility objectives have been achieved and confidence in the UCG

process has been gained, a larger scale plant can be built.

32 Two options had been considered for the pilot facility operating mode. One was to produce electricity using gas engines fed by UCG gas from the pilot scale facility. That option was ruled out when Moreton's investigations and its discussions with Ergon Electricity (**Ergon**), the electricity distributor for the area, identified capital costs, delivery time and technical problems as issues. This left the second option, which was to flare the UCG gas produced at the pilot scale. The FEED document explained that Moreton:

... proposed to operate the pilot facility for twelve months collecting the operating data and carrying out technical trials necessary to be confident that a power plant could be successfully operated using UCG syngas as a feed. Following the twelve month period, a shutdown process (nominally six months) will be undertaken to halt the process and restore the site.

Preliminary Trial Program

There is a range of activities, trials and process monitoring required to achieve the pilot facility's objectives. They include:

- operating and managing UCG process in standard production mode over a range of injection flows and system backpressures
- linking in new wells
- determining optimum well spacing
- measure the composition of syngas produced for a range of gasifier operating regimes
- measure the composition of the syngas after gas cleanup (to ensure it is suitable for a commercially available gas turbine) Potentially trialling different packing types, depths, tower diameters and liquor rates. Potentially trial different Venturi Scrubber designs and liquor rates.
- establish vapour liquid equilibrium data for contaminants to be scrubbed from the syngas
- establish height of a cooling transfer unit for the scrubber packing
- trial different scrubber cooling rates to establish the optimum condensable vapour removal rate
- measure the composition of the co-product taroil produced and monitor how its composition changes with production rate
- measure the composition of the water produced and monitor how its composition changes with production rate
- trial alternate water treatment technologies
- monitor the impact on air quality of the flared gases
- monitor the impact on groundwater quality
- monitor the impact on groundwater level

- monitor for ground subsidence
- assess process controllability of the UCG wells and gas separation operation
- assess materials of construction for larger plant design
- monitor pipework and equipment fouling
- assess instrumentation in the respective services.

33 On 25 September 2008, Moreton issued a document entitled “Kingaroy Pilot Gasification Plant Project Execution Plan” (**PEP**). The document outlined the project noting that the planned development of the Kingaroy site had resulted from the company’s experience gained from the pilot burn and project plan proposed at a site at Chinchilla in Queensland. It noted that syngas produced from UCG can be utilised for a range of purposes, similar to gas produced from surface gasification processes. These include the manufacture of transport fuels, petrochemicals and use in high efficiency combined cycled gas turbines. Moreton rejected any proposition that it should produce UCG for purposes such as these. The basis for this position was explained in the witness statement of Mr Valeri Melik, Moreton’s General Manager – Project Services, dated 16 June 2016:

Whilst all of these processes are technical[ly] feasible, the technical and financial risks associated with the manufacture of transport fuels and petrochemicals from synthesis gas are high. They require sophisticated gas clean up and conversion technology which is highly capital intensive and would require major process development.

Conditioning UCG gas to the extent required for feeding to a gas turbine is more straightforward. Major gas turbine suppliers have vast experience of running turbines on gas from surface gasifiers. Solids need to be removed from the gas along with some of the condensable vapours and water. This is well established technology and can be done at modest capital cost.

Before investment in electrical generating export capability is made, a pilot facility is recommended. Operation of the facility would demonstrate:

- that the coal deposit selected produces a UCG gas that can be used to power a commercially available gas turbine
- that the UCG gas can be cleaned up to the requirements of the gas turbine
- that the process can be operated in a safe and environmentally responsible manner

This UCG gas produced at the pilot scale could be flared or used to produce electricity in gas engines. Producing electricity using gas engines fed by UCG gas from the pilot scale facility has been ruled out. Investigations highlighted capital cost and delivery time as issues. On this basis, the gas produced at the pilot scale will be flared.

- 34 The EA was amended on 24 October 2008 (**2008 Amended EA**) and again took effect from the date on which MDL385 was granted. The 2008 Amended EA set out the scope of approved activities and provided, amongst other restrictions, that: the pilot UCG plant was to be limited to one hectare; activities had to be located and designed in such a way that the environmental authority holder was able to comply with the conditions of the 2008 Amended EA; and the duration of the UCG trial could not exceed three years.
- 35 The 2008 Amended EA went on to set out a number of other conditions under broad headings representing the EPA's particular interests. These are set out in the Reasons at [36].
- 36 On 3 November 2008, Ergo Exergy Technologies, Inc. (**Ergo**) granted a general licence to Moreton to certain intellectual knowledge it had, and offered services to assist Moreton to undertake research and development required to develop the technical viability of its UCG plant at the Kingaroy site. Ergo had some expertise with regard to the burn process but had no intellectual property in relation to the design, development and operation of the integrated UCG power generation facility incorporating a gas processing plant and power generation using gas turbines.
- 37 GWB Engineering Pty Ltd (**GWB**) wrote that it had been approached by Moreton to assist in the concept and detailed design of the above ground facilities at its proposed pilot UCG plant outside Kingaroy. The above ground facilities were required to treat the hot syngas and remove moisture, ash, coal particles and coal tars.
- 38 On 18 February 2009, the Queensland government issued an "Underground Coal Gasification Policy" (**UCG policy**). A key objective of that policy was to provide an approach allowing serious consideration to be given to the technical, environmental and commercial viability of UCG technology. With that in mind, UCG pilot projects were given the opportunity to demonstrate UCG technology's potential. Three projects, of which Moreton's project was one, were permitted to proceed but no others. That opportunity included demonstration activities related to syngas production and energy production. Subject to deliberations on the outcomes of the UCG pilot phase, the Queensland government would apply the strictest environmental standards to any commercial development of UCG technology in the State.
- 39 On 22 February 2009 and acting under s 186 of the MR Act, the Minister for Mines and Energy for the State of Queensland granted MDL385 to Moreton (51%) and SEQEPL (49%) over land located a short distance south of Kingaroy in Queensland. MDL385 commenced

on 1 March 2009 and expired five years later on 28 February 2014. It was subject to General Conditions, Native Title Special Conditions and, although none were specified, to Special Conditions. Subsequently, on 20 October 2009, SEQEPL subsequently transferred its interest in MDL385 to Moreton, leaving it as the sole owner.

40 MDL385 was issued in relation to activities allowable for the exploration of coal. With effect from 26 August 2009 and under s 208(3) of the MR Act, a delegate of the Minister for Natural Resources, Mines and Energy endorsed MDL385 to add “a product that may be extracted or produced by an underground gasification process for coal or oil shale and another product that may result from carrying out of the process”. The Approved Work Program in Schedule 3 to MDL385 was varied to include “Underground Coal Gasification (UCG) Demonstration Trial”.

41 On 22 September 2009, the EPA further amended the EA (**2009 Amended EA**).

42 On 15 October 2009, the 2009 Amended EA was further amended to permit the UCG trial (**2009 Further Amended EA**). It again took effect from the date on which MDL385 was granted. It imposed additional conditions to those set out in the Reasons at [36], which continued to apply. Moreton was named as the Principal Holder and the activity it authorised was described as:

Mining activity – schedule 6, item 2 (mineral development) investigating the potential development of a mineral resource by large bulk sampling or constructing an exploratory shaft, adit or open pit.

43 The duration of the coal gasification trial was not permitted to exceed three years, excluding activities associated with rehabilitation or ongoing monitoring. As required by the 2008 Amended EA, at least six months before the cessation of the coal gasification trial, Moreton was required to submit to the EPA a shutdown procedure for the UCG pilot plant. The procedure had to detail steps that would be taken to cease combustion/gasification of coal underground and steps that would be completed during and following the shutdown process to: confirm that combustion and/or pyrolysis of coal had ceased; to ensure that the cavity is flushed using proven processes; and to ensure the removal of residual pollutants. That procedure had to be implemented immediately on cessation of the trial or if otherwise requested by the EPA.

44 Golder Associates (**Golder**) prepared a Groundwater Assessment and Impact Study dated 4 March 2010 for the pilot project. The preamble to the study notes that a geological and

hydrological characterisation was required to assist in setting up the proposed pilot and to provide data necessary to satisfy the Department of Environmental and Resource Management's (DERM's) conditions for approval, particularly in relation to the protection of groundwater. The Preamble in the Introduction to the Impact Study referred to Moreton and continued:

A geological and hydrogeological characterisation has been required to assist in setting up the proposed pilot trial stage of the UCG operation and to provide data necessary to satisfy the Queensland DERM conditions for approval of the pilot trial, particularly the conditions for approval of the pilot trial, particularly the conditions relating to the protection of groundwater.

The conditions require that an assessment of groundwater impacts associated with the pilot trial be carried out by 'a suitably qualified person'. Cougar have engaged Golder Associates (Golder) to undertake the hydrogeological characterisation required to provide sufficient data to satisfy the DERM consent conditions. A Golder Principal Hydrogeologist has been involved since January 2008, providing advice to Cougar regarding water quality and water level assessments, aquifer parameter investigations including a program of test pumping, and groundwater model conceptualisation.

45 This was repeated in the statement of the Scope of Work, which stated:

Comprehensive hydrogeological investigations and studies were undertaken to address the viability of the pilot UCG operation at the selected location, to confirm that the selected site is suitable for the proposed use as a pilot UCG trial site, to assess potential risks on nearby environmental values (EVs), primarily groundwater users, and to demonstrate compliance with the DERM conditions. The pilot burn trial has been and/or will be predated by groundwater monitoring and aquifer testing, comprising monitoring well water quality sampling, water level and piezometric head monitoring, packer testing, long term pumping and air injection testing. Data from all tests were collated and evaluated.

46 Moreton had approached Golder to provide an estimation of the likely strata behaviour and possible subsidence effects that may occur as a consequence of the pilot project. Golder submitted its report dated 4 March 2010 and entitled "Overlying Rock Characterisation and the Impact of the Void on Overlying Strata, Kingaroy Gasification Trial" to Mr Andrew Brown, the Technology Manager at Moreton. Golder assessed what it had identified but concluded that:

At this stage the shape of the void that will be created underground is largely unknown and for this reason several possible shapes have been assessed based on the gasification of 5000 tonnes of coal between wells. They include rectangular prisms, vertical cylinders and horizontally lying ellipsoids. The open spans likely to be made by each of these void shapes have been calculated using an assumed tonnage of coal that is planned to be gasified for the pilot trial and using the distance between wells and coal seam thickness as constraints.

...

Whether the void created by gasification at Kingaroy will close due to bulking or be arrested by a strong stratum in the overlying sediments can (and should) be estimated by examining the void after the gasification trial is complete. Alternatively, monitoring by extensometers during the trial may also be used to measure the upward progression of the void.

- 47 By early 2010, Moreton had completed the design and construction of the well necessary for igniting the UCG process as well as the fabrication and construction of the syngas processing plant. The four underground coal gasification wells were connected to the gas processing plant. On 10 March 2010, Moreton started injecting air into well P1 (**P1**) through its own 2” purge point and flow meter. As the desiccant system gave large flow and pressure fluctuations, it tried various means of achieving the flow consistency required. Those means included dropping the desiccant back-pressure valve set point and gagging in the discharge valves, but to no avail. Removal of the desiccant led to fluctuation stabilisation. The desiccant dryer was reintroduced on 11 March 2010 in an attempt to even out the dips still injecting to P1, but no satisfactory result was achieved. Other measures followed over the ensuing days and air was then injected into well P4 (**P4**).

Ignition of the UCG burn process

- 48 At or about 3.30 pm on 15 March 2010, the UCG burn process was ignited in P1 at the Kingaroy pilot plant for the first time for the purpose of testing both its above and below ground facilities. That involved burning newly ignited coal at the base of P1 and injecting high pressure air into the well to expand the fire front. The consequence was that the gas produced, be it called UCG gas or syngas, was directed towards a second borehole or well, which was P4. That was a forward combustion process, which was later reversed so that the syngas was produced from P1. That was a process known as “reverse combustion linking”. It was a process that was followed in order to open up a more permeable link for gas within the coal seam and so reduce the operating pressure of the gasifier. The first syngas was detected within 30 minutes of ignition and was initially of a high quality with a calorific value in the range of 4.8 and 7.1MJ/m³ and a stable gas composition, temperature, pressure and flow rate. The flow, pressure and temperature were recorded at each ten minute interval after flow started and so were the gas chromatography readings of the gas produced.
- 49 Once a permeable link was established between P1 and P4, the injection and production wells were swapped back again to the forward production mode so that P4 was again the production well. That happened on 17 March 2010. On 18 March 2010, however, steam was seen emanating from the base, which was at ground level, of the casing strings of P4. The

forward and reverse combustion processes continued until 20 March 2010, when the casing of P4 was momentarily moved by a few centimetres early one morning. That movement caused the well head gauge to shatter. The air injection was stopped and the associated surface pipework at well P4 was dismantled. Subsequent investigations revealed that there was a solid blockage within P1 at a depth of approximately 132 metres and a casing break in P4 at a depth of approximately 62 metres. Both the blockage and the casing break were believed to have been caused by thermal expansion and poor cementing between inner and outer casings. Moreton shut down the plant.

50 From 21 March 2010 until 19 April 2010, Moreton injected air into P4 in order to create an air block. The air block was intended to stop gases, which were still being produced by the UCG generator, from escaping into atmosphere. The air was tested. Injection into P4 stopped when groundwater monitoring bore T5037 (**T5037**), which was located some 270 metres from P4 and used for groundwater sampling, was found to be bubbling air and water to the surface. The same phenomena was not seen at groundwater monitoring bore T5038 (**T5038**) located 15 to 20 metres away, but its standing water level had risen 13.9 metres between 23 March 2010 and 9 April 2010.

51 In April 2010, Moreton installed a network of vibrating wire piezometers (**VWPs**) at various depths in six boreholes. It did that in order to monitor a wider area outside the UCG pilot plant in the direction of the dominant groundwater flow. The drilling and installation of the VWPs was undertaken on the advice of Golder which carried out the work and calibration tests.

Water quality tests and detection of benzene and toluene in ground water

52 On 11 May 2010, Moreton detected trace readings of benzene in T5037 when it was conducting routine water quality sampling. A laboratory report on the sample was issued on 27 May 2010 and subject to a “confirmation test”.

53 On 31 May 2010, the Executive Director of the Department of Mines and Energy (**DME**) advised Moreton that the Associate Director-General of the Department of Employment, Economic Development and Innovation (**DEEDI**) had approved the generation capacity of power plant facilities for demonstration purposes to be limited to 30 MW or less. Generation of electricity would also remain subject to the necessary approval processes and variations to the work programmes relevant to Moreton’s current licences and, specifically, to MDL385.

54 At some time before 15 July 2010 and probably on 13 July 2010, Moreton reported to DERM that water quality tests it had conducted on 29 June 2010 had detected benzene and toluene in a groundwater monitoring bore close to the plant. Moreton advised DERM that the water quality tests had been conducted at T5037 and T5038 as well as plantation bore 127533. DERM conducted its own tests on the water at five of the eight bores and concluded that, in each case, the levels were below the Australian Drinking Water Guideline standards. On 15 July 2010, DERM stated that it would order Moreton to keep the pilot UCG project closed until the government was assured that the groundwater resources were protected.

Moreton required to carry out environmental evaluations of its plants

55 DERM required Moreton and the operators of the other two experimental sites to carry out environmental evaluations of their plants. On or about 15 July 2010, DERM announced that the results of the environmental evaluations would be reviewed by the government's independent expert panel. That panel would assess and report on the technical, environmental and social impacts of the UCG industry and, if it was not satisfied that the projects could resume operations without environmental harm, the three pilot projects, including that undertaken by Moreton, would not be given approval to continue.

Environmental Protection Order and Environmental Evaluation Notice

56 DERM issued an environmental protection order (**EPO**) to Moreton on 17 July 2010 and before it reignited the UCG pilot plant. The EPO referred to Moreton's obligations under the EP Act to do two things. One was to take all reasonable and practicable measures to prevent or minimise environmental harm (**general environmental duty**). The other was to comply with all conditions of the EA issued in relation to the UCG pilot plant under the EP Act. The EPO was issued to secure compliance with the general environmental duty and with the EA, particularly conditions C1-1 and C10-5.

57 The EPO recited the history of the shutdown of the UCG pilot plant and the sampling and analysis of groundwater monitoring bores, other bores and waters. DERM noted that the groundwater monitoring bores from which samples had been taken were T5037, from which sampling had been taken between 35 to 47 metres below ground level, and T5038, from which sampling had been between 64 to 76 metres below ground level and outside Moreton's underground coal gasification working cavity. The presence of contaminants could not be attributed to a release of stormwater runoff in accordance with condition C4-1 as that condition did not allow stormwater contaminated with benzene or toluene to be released.

Moreton had not given notice of any stormwater exceedances. Therefore, any contamination of the groundwaters was not in accordance with condition C1-1. Whether direct or indirect, a likely cause of the contamination was the inner casing break in production well P4 and/or the associated controlled shut down.

58 Among other things, the EPO required Moreton to stop and not commence, or recommence, any burning of underground coal as part of its underground coal gasification activities until further notice from DERM. It required Moreton to sample the groundwaters and to cause those samples to be analysed. Within seven days of being served with the EPO, Moreton was:

... required to repair and seal the damaged production well P4 to prevent the escape of gas or liquids from production well P4 to the groundwater or aquifer

59 Moreton was also required to:

- a. sample (in accordance with the requirements of Australian Standard AS5667.11:1998 Water Quality sampling: Guidance on Sampling Groundwaters) the groundwaters from all known existing bores in the potentially affected area twice per week (with samples taken at least 3 days apart) from the date of service of this order until further notice; and
- b. ensure the samples are analysed by a NATA accredited laboratory for Benzene, Toluene, Ethylbenzene and Xylene (BTEX) and provide all certificates of analysis (for every sample) to the administering authority within 5 calendar days of the sample being taken;
- c. provide the owners and occupiers of all land in the potentially affected area with any and all certificates of analysis that relate to samples taken from bores on land they own or occupy within 3 calendar days of Cougar Energy's receipt of each relevant certificate.

60 On 16 August 2010, DERM also issued an Environmental Evaluation Notice (**EEN**) to Moreton under ss 322 and 324 of the EP Act.

61 In the meantime, Moreton designed and installed new production wells for the UCG burn process with the aim of ensuring that the uncontrolled shut down that had occurred in March 2010 was not repeated. It continued with a pre-feasibility study that it had started in January 2010.

Subsequent events

62 Moreton continued to evaluate its options with regard to its UCG pilot plant.

63 In a report entitled "Kingaroy Power Project Pre-Feasibility Study 201-REP-251", issued on 16 August 2010, Moreton's project team believed that it had evaluated and presented a viable

go-forward option for power generation using UCG syngas. That option would enable Moreton to achieve its vision of being a world leader in UCG, generating clean and low cost energy through efficient resource utilisation. At the same time, the document acknowledged that significant uncertainties remained due to incomplete geological investigation and the need to rely on typical, rather than actual, engineering data.

64 DERM issued two further EENs on or about 16 September 2010. On 24 September 2010, Moreton lodged its first response to the EENs it had been given on 16 August and 16 September 2010. Moreton began investigations to confirm the potential sources of benzene and toluene that had been identified in the groundwater. As part of those investigations, it drilled bore T5061 in October 2010 to investigate the level of benzene, toluene, ethylbenzene and xylenes (**BTEX**) generated as a result of the uncontrolled shutdown. On 1 October 2010, it lodged a case break report in relation to an EEN. This was followed by a T5058 monitoring results report and an interim status report on 11 October 2010. A report regarding risk management plans was lodged on 15 October 2010. A further three reports in response to the EENs were lodged on 10 November 2010: a groundwater monitoring results report; a monthly update of T5037 gas monitoring report; and a monitoring network report. A groundwater monitoring results report was lodged on 17 November 2010.

65 On 10 December 2010, Moreton responded to Requirement 23d of the EEN dated 16 September 2010. The document set out seven potential pathways and sources that could have caused benzene and toluene to be present in T5037 and T5038.

66 On 13 December 2010, Moreton announced that it had done two things. One was to submit the final six reports required by DERM under the EEN issued in September 2010. It described that as the culmination of extensive work it had undertaken over the previous four months that had resulted in the submission of 17 reports and studies. The second was to advise that it had conducted further water sample tests from the new monitoring bores located close to the pilot plant. No benzene or toluene had been detected.

67 The following day, 14 December 2010, Moreton announced that one part per billion of benzene had been found in T5066 located close to the pilot plant but neither benzene nor toluene had been identified in the other bores. Sampling and testing would continue.

68 On 24 January 2011, the Independent Scientific Panel on Underground Coal Gasification (ISP) reported to DEEDI in response to a request from DERM. In its report, the ISP drew together a number of pieces of advice previously given to DERM and to DEEDI but in a form that could be communicated in the public domain should DEEDI choose to do so. The purpose of its report was to provide government with the considerations of the ISP regarding the success or otherwise of each technology based on the pilot trials. ISP noted that the scale, nature and scope of each of the pilot programmes was in line with its purpose as technological trials and were appropriate for that function. It noted:

Cougar Energy [as Moreton was then known] have a stated position that they are not engaged in running a pilot trial of a new technology but a small-scale facility of well-tested technology. Consequently, they assert, they do not need a lot of in-house technical capability and can rely on consultants as required. Consistent with this view, when the ISP interviewed Cougar Energy at their offices a consultant explained, via use of a whiteboard alone, their underground design and operational approach. The ISP prefers the approach adopted by another company of building strong internal technical capacity.

69 ISP's eighth recommendation was:

... that Cougar Energy trial *not* be reignited. ...

It is recommended that Cougar Energy move to decommission the cavity. First, a plan should be submitted for government approval and action taken immediately thereafter. It is an important (critical) part of all of the pilot trials that effective decommissioning can be undertaken and demonstrated not to leave unacceptable legacies in the environment. It is *not* recommended that a 'clean up' approach be adopted. That is, the site should be treated as a pilot trial moving into orderly and planned decommissioning following an unscheduled permanent shutdown.

70 Moreton responded to the ISP's report on 28 February 2011. Moreton's response refuted each of the statements on which the ISP had made its eighth recommendation that its trial not be reignited. Moreton stated that the ISP's report had misstated its position on in-house technical capability but did not elaborate on that statement.

71 Moreton began to investigate the optimal location for a new well for a second UCG burn. That involved preparing, in November 2011, a plotting and burn plan.

72 On 5 July 2011, Moreton received a Complaint and Summons from DERM alleging contraventions of the EA. Moreton indicated that it would contest each count.

73 On 7 July 2011, Moreton's EA was further amended (**2011 Amended EA**). Conditions A8-1 to A8-5 were removed and replaced with a new A8-1 so that the scope of approved activities was limited solely to "decommissioning, rehabilitation, care and maintenance of the site".

- 74 Moreton lodged an application for internal review of the 2011 Amended EA on 2 August 2011. It did so under the EP Act and with the intention of having the amendment removed so that it could proceed with the UCG pilot plant at Kingaroy. Consistent with its intention, Moreton prepared a commissioning and operating budget for restarting the pilot plant in approximately 2011. As part of its request for internal review, Moreton submitted a document dated 16 August 2011 and entitled “Report to Department of Environment and Resource Management: Response to the Revised Environmental Authority dated 7 July 2011 Cougar Energy Pilot Burn at Kingaroy”.
- 75 The report appended a Groundwater Management Plan that had been prepared by GHD Pty Ltd (**GHD**) for Moreton. It was dated August 2011 and recited the issues that had arisen during the trial and DERM’s requirement that Moreton undertake an environmental audit under s 22 of the EP Act to determine the extent of the groundwater contamination associated with the pilot UCG plant. The Introduction stated that the Groundwater Management Plan pertained to Condition C10-1(a) of the draft EA that was to become the 2011 Amended EA. That condition required the preparation of a groundwater management plan meeting certain criteria and GHD noted where the proposed plan differed from the specific requirements in the 2011 Amended EA.
- 76 After analysing concentrations of contaminants, GHD concluded that contamination was attenuating naturally due to processes such as mechanical dispersion and biodegradation. On that basis and in the absence of an ongoing primary source and the fact that the risks to existing beneficial uses were considered low, GHD recommended that Monitored Natural Attenuation (**MNA**) was an appropriate management response to the identified contamination. GHD went on to set out a monitoring plan. It recommended compliance bores on the basis of site specific issues at the site and in consideration of DERM’s recommendations. The basic monitoring strategy was based on the concept of concentric rings of compliance, equivalent to the time of travel of one, five and ten years. A diagram illustrated the concept of concentric rings of compliance based on time of travel for benzene.
- 77 On 17 August 2011, Moreton submitted to DERM a procedure for decommissioning and rehabilitating the underground cavity.
- 78 Moreton’s application for a stay of DERM’s decision to amend the EA and issue the 2011 Amended EA was heard by the Planning and Environment Court (Qld) and, on 21 December

2011, refused: *Cougar Energy Limited v Debbkie Best, Chief Executive under the Environmental Protection Act 1994* [2012] QPELR 370; [2011] QPEC 150.

79 Moreton had asked GHD to provide specific comment and details on the matters raised by DERM in its letters dated 19 September 2011 and 7 October 2011. GHD prepared a draft letter in February 2012 and a further draft in June 2012. The Tribunal stated that it had largely referred to the earlier draft, but there were no differences of substance and the issues raised by DERM were apparent from the response.

80 The letter looked at the primary criteria for considering the feasibility of MNA being used as a groundwater management option, as opposed to a remediation option, and concluded that they were essentially the same. Both are contained within the overall context of risk to human and/or environmental health. Although DERM had required the source of the contamination to be removed from the site, GHD noted that MNA guidelines do not require removal of the contamination if MNA can be demonstrated in the context of shrinking sources and/or plumes and/or acceptable health risks.

81 In the June 2012 version of the letter, GHD acknowledged that it was not possible to investigate the actual post-burn chamber itself due to the blockages in the pilot trial bore P1. Moreton had, however, drilled two boreholes – T5058 and T5061 – in close proximity to P1 so that it was possible to evaluate the extent of thermal alteration of the coal seam material within the zone of gasification. T5061 was located approximately 2 metres to the southwest of P1 and T5058 approximately 5 metres in the same direction. Moreton's Consulting Geologist had examined the chips from 132m to 212m. The Kunioon seam was represented in the cuttings from approximately 197m to 212m when the hole was terminated while still in the seam. There was no evidence of heat effects in either the coal or the induration in the classic rocks. The evaluation of contaminant levels in the coal seam in the immediate vicinity of the post-burn chamber was another matter presenting significant difficulties given that it was likely to resemble an upright cylinder and to present as a very small target when viewed from the ground. The interbed of hard (basalt) and soft (clay) material around the chamber would make accurate drilling difficult and especially as boreholes would need to be targeted to 1 metre to 2 metres surrounding the post-burn chamber.

82 Reference was also made to Golder's report dated 4 March 2010, which showed the relative drawdowns in observation bores during the pumping test on T5023. The plot prepared by Golder indicated the head difference between the coal seam and basalt units and the lack of

hydraulic response in the basalt aquifer during the pumping test. Those two features were positive evidence, GHD reported, of the lack of hydraulic connection between the shallow basalt aquifer and the coal seam aquifer.

83 GHD proposed a contingency plan for remediation of the existing hydrocarbons to supplement the MNA process. That involved enhanced in situ biodegradation.

Plan to reignite UCG pilot plant

84 On 13 December 2011, Mr Brown, who was Moreton's General Manager Technology, sent a document entitled "Steps for Gasification of Coal in Restart of Kingaroy Pilot Site" to Mr Melik for him to review. Apart from the title, the only text in the document was the following:

1. Ignite P5 and link P5 to P6 and develop intense gasifier between P5 and P6.
2. Inject air into P2 and link to gasifier between P5 and P6.
3. Inject air into P3 and link to gasifier between P5 and P6.
4. Develop gasifier between P2, P3, P5 and P6.
5. Inject air into P7 and link to gasifier defined by P2, P3, P5 and P6.
6. Complete gasifier development to gasify the coal around P1 and P4.
7. During shutdown of gasifier, stop air injection and slowly reduce gasifier pressure to ensure cavity is swept by steam from incoming groundwater to purge cavity.

DERM (later DEHP) and Monitored Natural Attenuation

85 On 14 February 2012, DERM wrote to Moreton in response to its letters dated 27 January and 2 February 2012 regarding the decommissioning and rehabilitation requirements of the 2011 Amended EA. DERM expressed its concern that Moreton had not yet provided it with a rehabilitation procedure and had been reluctant to commit to specific timeframes. Moreton's estimate of March 2012 did not give DERM confidence that the matter was being progressed as quickly as reasonably possible. Furthermore, condition C10-7 of the 2011 Amended EA required Moreton to submit a rehabilitation procedure meeting particular requirements within certain time limits; the rehabilitation procedure had not been produced and the time frame had not been met.

86 In addition, DERM expressed its concern that Moreton had not identified the issues that it had sent to GHD, had not advised it, DERM, of the final set of data that was required to

enable GHD to “review and process” and had not given any advice regarding the analysis that GHD would conduct.

87 By September 2012, DERM had become the Department of Environment and Heritage Protection (**DEHP**). By letter dated 19 September 2012, DEHP wrote to Moreton’s solicitors. It began by referring to its letter of 17 September 2012 and noted that it was encouraged by Moreton’s approach. DEHP looked forward to a constructive meeting between its consultants and those of Moreton. In consultation with its consultants, Gilbert+Sutherland (**G+S**), DEHP had identified the following key issues for discussion:

1. The proposed rehabilitation procedure of Monitored Natural Attenuation (‘MNA’) requires that the extent of the contamination be plotted. The MNA guideline relied upon in the GHD Report supports this as an appropriate approach. This was also highlighted in the Gilbert+Sutherland Report provided to your client as part of its stay application in the Planning and Environment Court in December last year.
2. Further refinement is required in respect of the investigation of the groundwater flow and direction, particularly in relation to the period of monitoring of contaminants. The assumptions as to groundwater flow and direction in the GHD Report are presently considered too broad to be usefully applied for the purpose of MNA.
3. No measured data is provided in the GHD Report to support the hypotheses about whether absorbed phase chemicals pose any risks of secondary source contamination in either the overburden or underburden.
4. The GHD Report does not document any testing for microbes or the presence of factors which regulate microbial growth and nutrition in the MNA area. The proposed rehabilitation procedure currently relies upon the presence of microbes to facilitate attenuation of the contamination, however further investigation is considered to be required in this respect.

Should your client’s consultants wish to discuss technical standards, data and reports which have been relied upon in identifying these issues, Mr Neil Sutherland of Gilbert+Sutherland has offered to speak to them directly.

88 Further correspondence was exchanged between DEHP and Moreton’s solicitors.

89 On 28 November 2012, GHD presented to Moreton a document entitled “Proposal for Sulphate Based Biostimulation Trial”. It was described as a fee proposal to provide a remediation option to address groundwater contamination at the Kingaroy site. The biostimulation trial, also referred to as enhanced in situ biodegradation (**EISB**), involved dosing groundwater using magnesium sulphate dissolved in solution to a depth of 210 metres and into the coal seam.

90 In December 2012, GHD finalised a draft report entitled “Response to Four Points on Proposed MNA Approach”. The four points had been raised by G+S in relation to the proposed application of MNA to the rehabilitation of the UCG pilot trial wells at Kingaroy. Moreton had asked GHD to provide a response. Representatives of GHD, DEHP and G+S met on 10 December 2012. The minutes of the meeting are signed by all present other than the two representatives from DEHP who left the meeting at 1.30 pm. The meeting continued until 3.00 pm. The minutes state that the meeting had been arranged to assess whether there was common ground with regard to the data collection, analysis and presentation in response to the queries that G+S had raised in relation to Moreton’s use of MNA. Moreton confirmed that, together with GHD, it was looking at means of accelerating benzene reductions by chemical means if it considered it necessary. G+S confirmed that the evaluation of the MNA results, when plotted against those of the predictive model, “could” allow future variation of groundwater and contaminant monitoring under the licence should the results indicate that was appropriate.

91 GHD prepared a report dated February 2013 and entitled “UCG Pilot Trial, Kingaroy Response to DEHP Decommissioning and Rehabilitation Procedure Requirements”. The introduction to the report explained why Moreton had asked GHD to report on issues raised by DEHP regarding the decommissioning and rehabilitation procedure requirements at the pilot UCG project site.

92 In about February or March 2013, Moreton decided to proceed with the proposed biostimulation trial. The decision was made after it had investigated whether it could set up a system to aerate the coal seam at a level approximately 100 metres below the water table. The purpose of aeration was to determine whether it could encourage any aerobic bacteria present in the post burn gasifier within the coal seam to aid in the MNA process to break down benzene molecules.

93 Arrangements for establishing an aeration system had started in November 2012 and continued through to February 2013. Subsequent analysis indicated that there was little or no aerobic bacteria in the post burn chamber. Moreton abandoned the aeration trial in favour of continuing with the biostimulation field trial. By May 2013, Moreton had completed a second round of dosing with magnesium sulphate as part of the biostimulation trial. It appears that Moreton also trialled dosing with low strength sulphuric acid.

New Moreton board engages in settlement discussions

94 Following a request from its members under s 249D of the *Corporations Act 2001* (Cth), Moreton called a general meeting in March 2013. As a consequence, Moreton's board was replaced. In June 2013, the new board of Moreton decided to cease its efforts to reignite the project and to focus on coal. As a result, the pilot project was abandoned.

95 The new board resolved to explore settlement options with DEHP. In an ASX announcement dated 26 July 2013, Moreton advised that it had reached agreement with two defendants in proceedings relating to the Kingaroy project and that the proceedings had been discontinued without payment by any party. The ASX announcement further advised that Moreton would continue to work with DEHP to agree a plan of rehabilitation for the Kingaroy site.

Moreton, DEHP and MNA

96 On 20 June 2013, Mr Melik advised his colleagues at Moreton that he understood that DEHP would be giving a favourable response to the report on MNA and to its request to relax water sampling frequency.

97 From mid-2013, Moreton engaged in planning and implementing rehabilitation of the site at Kingaroy. It prepared a Rehabilitation Plan to meet the requirements of the EA, Land Access Code 2010, *Petroleum and Gas (Production and Safety) Act 2004* (Qld), *Petroleum and Gas (Production and Safety) Regulation 2004* (Qld), Moreton's safety management plan and landholders' specific requirements. Among other activities, the Rehabilitation Plan proposed a rehabilitation and analogue monitoring program to collect data immediately before the commencement of the rehabilitation program in order to determine its starting point.

98 Based on water tests taken from samples drawn from wells P3, 61 and P2, Mr Melik gave instructions for sulphuric acid to be added to well P2 and for magnesium sulphate to be added to well 58, 61 and P2. That was on 28 August 2013.

99 By 9 September 2013, Moreton had received a letter from DEHP accepting MNA and responding to its request to relax the groundwater sampling frequency. Moreton was planning to make a further application requesting relaxation of Condition C10-2, which prescribed the groundwater monitoring program and the bores that Moreton was required to sample. Moreton wanted the relaxation so that it could plug and abandon those bores.

100 Further results obtained in September 2013 showed a reduction in benzene in all wells except for well 61. Based on the amounts of sulphate, Mr Melik recommended repeating the cycles

of sulphuric acid and magnesium sulphate dosing into wells 58 and 61 while leaving wells P2 and P3 as they were. Further instructions to dose well P3 with acid and magnesium sulphate and wells 58 and 61 with a double dose of sulphate were given on 30 October 2013 and 27 November 2013.

Decommissioning UCG pilot plant and rehabilitation of Kingaroy site

101 Before rehabilitation commenced, the UCG pilot plant had to be decommissioned. Plans were made for that work to start in the latter half of 2013 but negotiations with the landholder meant that it did not start until 2014. As part of the rehabilitation, Moreton prepared two specific documents: Moreton Resources Land Rehabilitation Project and Moreton Resources Boreholes Rehabilitation Project. It entered into a contract with Global Engineering and Construction Ltd to carry out rehabilitation of the dam, rehabilitation of the site road, removal and rehabilitation of fencing, rehabilitation of wells, re-seeding of rehabilitated areas and reporting.

102 On 13 February 2014, Moreton asked DEHP to amend its EA. When DEHP asked for information, Moreton asked GHD to prepare responses specifically related to provisions under C-10 (Protection of Groundwater) contained in the EA. The key objective of the response was to demonstrate that groundwater quality listed in Schedule C, Table 2 of the EA in the nominated monitoring bores complied with the background water conditions in (C10-9). If that could be established, then GHD understood that amendments sought for (C10-1), (C10-2) and (C10-7) would be likely to be granted.

Underground coal gasification banned in Queensland

103 On 18 April 2016, the Queensland government announced that it had looked at the evidence from the pilot operation of UCG and the compatibility of current technologies with Queensland's environmental and economic needs. The potential risks to Queensland's environment and valuable agricultural industries, it concluded, far outweighed any potential economic benefits. The Queensland government, therefore, decided to ban UCG because of its environmental impact.

The registered activities

104 We now set out the details of the registered activities for the 2010 year and the 2012 to 2014 years.

105 In relation to the 2010 year, Moreton applied (pursuant to earlier provisions of the IR&D Act) for registration of the following activities (as set out in the application form at AB Pt C tab 84):

Activities to be registered in 2009-10	Start	End
Design of a gas processing plant including the piping connecting the wells, the gas processing facility and storage of liquid wastes.	July	November
Drilling of additional processing wells – three adjacent boreholes were drilled into the coal seam.	July	July
Air linkage trials involving injecting air under pressure into process wells for the first time so that it establishes a path through the coal ... the extraction of the syngas. The air linkage trials also provide evidence of successful installation of the process wells.	July	August
Drilling of additional (fourth) production hole P4 to be in a close proximity (10m) from the first production well P1	July	September
Environmental monitoring including: - installation and monitoring of pressure sensors installed underground to ensure underground cavity remains at a lower pressure than surrounding coal to mitigate possibility of water contamination, and - sampling water from boreholes (performed approx. monthly) to ensure water is not being contaminated by the UCG process.	July	May
Connection of power to the site.	July	February
Construction and commissioning of gas processing pilot plant.	September	February
UCG gas pilot burn / ignition.	March	March
Investigation into well blockage at P1 / P4	March	June
Design and develop a new well casing structure for all future wells.	May	June
Install two new production wells (P5 and P6) using newly designed casing structure.	June	June
Trial new drilling equipment and drilling methodologies, including trial of new high-alumina cement.	May	June
Ongoing testing and evaluation of gas production and plant performance to test the viability of the coal seam used and to ensure environmental standards are met.	January	June
Ramp up of the gasification process to undertake a series of trials to test both underground and surface operations under a range of conditions.	March	June
Collection of data for inclusion in pre-feasibility study.	March	June
Conduct pre-feasibility study for construction of 400MW Gas Fired Power Station.	February	June

Drill at Wandoan to define the extent of the resource (including casing and grouting of wells as required). This also included undertaking various hydrological and geotechnical studies (including geological modelling of the deposit) to determine the overlying geological conditions at the site and to determine whether there is enough coal at the site to support commercial syngas production.	July	March
Power connection study to supply the Wandoan pilot plant with electricity.	October	June
Power connection study to generate and offload up to 400MW of power into the national grid at Wandoan.	November	June

106 These activities were registered by the Board. Although Moreton's activities for the 2010 year were registered under former s 39J of the IR&D Act at a time when former s 73B of the *Income Tax Assessment Act 1936* (Cth) (the **ITAA 1936**) operated, the note to item 16 of Pt 4 of Sch 4 to the *Tax Laws Amendment (Research and Development) Act 2011* (Cth) provides that the activity registered under former s 39J will nonetheless need to be a "core R&D activity" within the meaning of the amendments made by that Act. Accordingly, for the purposes of considering Moreton's alternative submissions (see [7] above) in respect of the registered activities for the 2012 to 2014 years, the definition of "core R&D activities" in s 355-25 of the ITAA 1997 applies to the activities registered for the 2010 year.

107 In relation to the 2012 year, Moreton applied for registration (AB Pt C tab 92) of activities in relation to two projects: Kingaroy (project 1) and Wandoan (project 2). In relation to project 1, an overview of the project was provided in the application form. There followed a description of activity 1.1 (a core activity) and activity 1.1.1 (a supporting activity). The descriptions were as follows:

1.1 – Kingaroy

...

Core R&D activity title: Kingaroy

Core R&D activity description*

The overall technical objective at Kingaroy is to design and develop a UCG generated syngas cleaning and power generation pilot plant by integrating known technologies for the first time.

Environmental monitoring including the installation and monitoring of pressure sensors installed underground to ensure underground cavity remains at a lower pressure than surrounding coal to mitigate possibility of water contamination.

Design and verify a procedure for rehabilitation of the underground cavity consistent

with environmental guidelines of the MNA [monitored natural attenuation]. There is no documented knowledge regarding the rehabilitation of underground coal gasification sites. Cougar Energy is undertaking work in relation to the theoretical understanding of processes and monitoring of chemical attenuation around the Kingaroy site.

Investigate the cause of a blockage in the P4 extraction well. Investigations will determine whether the well is to be rehabilitated or blocked off completely. Note investigations concluded that a failure had occurred in the metal well casing. Extensive testing revealed that G cement (found only in P4) caused the blockage within the metal well casing. This resulted in Cougar Energy having to redesign the well casing for future wells. It was determined that P4 casing could not be replaced and the well was irretrievable. Research was required to determine the best way of sealing P4 to prevent future gas escape, to be monitored using a nearby monitoring bore which was drilled for this purpose.

Testing and evaluation of gas production and plant performance to test the viability of the coal seam and to ensure environmental standards can be met. Investigation of ground water movement and extent of plume in upper and lower aquifers.

1.1.1 - Supporting

...

Supporting activity title: Supporting

Supporting activity description:

Undertake ongoing water monitoring activities in water bearing layers above the coal seam which recorded transitory levels of benzene of up to 2 parts per billion. This included the drilling and monitoring of boreholes at various locations around the UCG production site. This monitoring arose out of the failure of the P1/P4 well casings and required research into the hydrogeographical mechanisms which potentially allow the movement of contaminants towards the monitoring bores.

Undertake ongoing water monitoring activities in the coal seam immediately surrounding, and also remote from, the UCG production site. Levels of benzene and toluene were recorded in four monitoring bores up to 25m from the gasification zone, while a further four bores from 95m to 120m from the gasification zones recorded no benzene or toluene. Understanding the mechanisms for the magnitude and distribution of these chemicals is crucial to the definition of practical 'working gasification cavity'. Whether the results from ground water monitoring and underground pressure sensor locations meet the requirements of the relevant environmental authorities.

Conduct Environmental Impact Assessment for DERM.

Undertake preliminary economic analysis of power plants of various sizes to determine power pricing requirements to enable a commercially viable project to be developed.

Data collection for pre-feasibility study: commercial scale power plant.

Pre-feasibility study: commercial scale power plant

In support of the R&D work undertaken by Cougar Energy, the Company has submitted over 600 pages of reports to Queensland Government containing both technical data and conclusions relevant to the UCG project at Kingaroy.

108 These activities were registered by the Board.

109 In relation to the 2013 year, Moreton again applied for registration (AB Pt C tab 93) of activities in relation to two projects: Kingaroy (project 1) and Wandoan (project 2). In relation to project 1, following an overview of the project, the descriptions of activity 1.1 (a core activity) and activity 1.1.1 (a supporting activity) were as follows:

1.1 – Experimentation with UCG process within the pilot plant

...

Core R&D activity title* Experimentation with UCG process within the pilot plant

Start year of core activity* Month Year July 2009

End year of core activity* Month Year June 2014

Describe the core activity (i.e. experiment/s) carried out in the income year covered by this application.

...

This R&D activity looks to investigate the overall technical objective to design and develop a UCG generated syngas cleaning and power generation pilot plant. This objective represents a world's first in relation to integrating known technologies surrounding UCG generated syngas cleaning and power generation.

A dedicated pilot plant was constructed and used solely for the purpose of conducting the R&D activities. This included the R&D activities of initial stage design and development of the UCG process, to experimentation with the process in the pilot plant to determine the success of the gasification process. Extensive experimental activities from project commencement to the current financial year have been conducted within the pilot plant. It was the pilot plant that has been used to test the hypotheses proposed and gain the new knowledge.

The success of the process hinged on numerous technical factors ranging from the ability to produce gas to whether the process adversely impacted on the environment. The pilot plant was also responsible for monitoring and assessing all these factors during and following the experimental activities. For example, the monitoring and controlling system for assessing the impact of the process on the environment was an integrated part of the pilot plant. The sensors used for monitoring were fully integrated with the underground pressure and temperature monitoring systems of the pilot plant. It was as a result of information gathered by the pilot plant that the company could make assessments as to whether the activities were meeting the necessary technical objectives.

Key components of the pilot plant activity include:

- Environmental monitoring including the installation and monitoring of pressure sensors installed underground and above ground.

This also includes monitoring of other environmental factors including ground water movement and extent of plume in relevant upper and lower aquifers.

- Design and verify a procedure for rehabilitation of the underground cavity including investigations that help to understand the chemical attenuation

around the pilot plant as a result of the pilot plant trials.

- Investigate the cause of blockages in the extraction wells to understand how the process has failed
- Testing and evaluation of gas production and performance of the pilot plant to understand the success of the gasification process
- Investigations and development of processes to decommission the pilot plant ensuring that the environment is returned to its original condition, including building a conceptual model of the natural attenuation of benzene, and modelling/testing the actual results against this model.

1.1.1 – Project management and administration

Supporting activity title* Project management and administration

Describe the supporting activity carried out in the income year covered by this application ...

To enable the conduct of the core R&D activities, supporting project management and administration activities were conducted. These activities included planning and scoping of activities as well as project documentation and organisation.

110 These activities were registered.

111 In relation to the 2014 year, Moreton applied for registration (AB Pt C tab 95) of activities in relation to one project, referred to as “Development of a conceptual water model and rehabilitation plan following UCG pilot plant experimentation”. Following an overview of the project, the descriptions of activity 1.1 (a core activity) and activities 1.1.1 and 1.1.2 (supporting activities) were as follows:

1.1 – Development of a conceptual water

...

Core R&D activity title* Development of a conceptual water model

Start year of core activity* Month Year March Year 2010

End year of core activity* Month Year June Year 2015

Describe the core activity (i.e. experiment/s) carried out in the income year covered by this application.

...

Hypothesis:

The development of a conceptual water model will determine the natural attenuation of benzene and toluene at Kingaroy.

Experimental activities:

- Development of a conceptual model of the natural attenuation of benzene, and modelling/testing the actual results against this model.

- Develop a procedure for rehabilitation of the underground cavity including investigations that help to understand the chemical attenuation around the pilot plant as a result of the pilot plant [trials].

Results:

Results in water bearing layers above the coal seam recorded transitory levels of benzene of up to 2 parts per billion. Levels of benzene and toluene were recorded in four monitoring bores up to 25m from the gasification zone, while a further four bores from 95m to 120m from the gasification zones recorded no benzene or toluene. These results showed that the conceptual water model could be used with reasonable accuracy to determine the attenuation of benzene and toluene.

1.1.1 – Project management and administration

...

Supporting activity title* Project management and administration

Describe the supporting activity carried out in the income year covered by this application...

...

To enable the conduct of the core R&D activities, supporting project management and administration activities were conducted. These activities included planning and scoping of activities as well as project documentation and organisation.

...

1.1.2 – Environmental rehabilitation and planning

...

Supporting activity title* Environmental rehabilitation and planning

Describe the supporting activity carried out in the income year covered by this application...

...

Failure of the core activity (experimentation with the pilot plant) has [brought] about an increased requirement to successfully rehabilitate the site of the experimental activities. As such, Moreton is developing a rehabilitation process to achieve the following:

- Final landform safe to humans and wildlife.
- Site non-polluting.
- Final landform stable.
- Site able to sustain productive land use.
- Adequate vegetation cover and established to minimise erosion.
- Established specified self-sustaining natural vegetation or habitat.

This supporting activity is directly related to the core R&D activity as it outlines the rehabilitation necessary activities required to meet the overall environmental objectives, including improvements to water quality.

112 These activities were registered.

The initial decision and the internal review decision

113 In a letter dated 14 May 2015, the Board advised that it would commence an examination of Moreton's R&D tax incentive registrations for the 2012 to 2014 years. The examination was to be conducted pursuant to s 27F of the IR&D Act for the purpose of making one or more findings under s 27J.

114 On 21 August 2015, the Board made findings pursuant to s 27J of the IR&D Act that activity 1.1 for the 2012 year, activity 1.1 for the 2013 year and activity 1.1 for the 2014 were not "core R&D activities". The Board also decided that activity 1.1.1 for the 2012 year, activity 1.1.1 for the 2013 year and activities 1.1.1 and 1.1.2 for the 2014 year were not "supporting R&D activities".

115 Moreton sought internal review of that decision.

116 By letter dated 21 December 2015, the Board notified Moreton of a delegate's decision on the internal review. The delegate confirmed the decision of 21 August 2015 in relation to each of the activities for the 2012 to 2014 years referred to above.

The Tribunal's decision

117 Moreton applied to the Tribunal for review of the internal review decision.

118 A three day hearing took place before the Tribunal. Both Moreton and the Board were represented by counsel and solicitors.

119 On 10 September 2018, the Tribunal affirmed the internal review decision.

120 In the first part of the Reasons, the Tribunal set out the legislative framework and the background facts. The Tribunal then considered, at [183]-[205], the meaning of the expression "experimental activities", which is used in the opening line of the definition of "core R&D activities" in s 355-25 of the ITAA 1997. The Tribunal set out dictionary definitions of the words "experimental" and "experiment" at [184] and [185]. The Tribunal stated at [186] that, on the basis of the definitions in the dictionaries other than the Oxford dictionary, the expression "experimental activities" would "include actions, deeds or pursuits that seek to discover something previously unknown or that are carried out to test a theory or supposition". The Tribunal then discussed the Oxford dictionary's definition, which included an "action or procedure undertaken to ... demonstrate a known fact". The Tribunal, at [187]-

[188], considered that the notion of “experimental activities” in s 355-25 did not cover activities that are conducted for the purpose of demonstrating a known fact.

121 At [189], the Tribunal quoted a passage from [1.15] of the explanatory memorandum to the Tax Laws Amendment (Research and Development) Bill 2010 (Cth) (the **Explanatory Memorandum**). The Explanatory Memorandum compared the proposed definition of “core R&D activities” with the definition of “research and development activities” in s 73B(1) of the ITAA 1936. The Explanatory Memorandum stated at [1.15]:

The definition of ‘core R&D activities’ in this Bill uses clearer language instead of relying on terms such as ‘considerable (or appreciable) novelty’ and ‘high levels of technical risk’ and the overlapping tests that were associated with these terms. In essence, this new definition recognises that the taxpayer needs new information (to solve a problem, develop a new product or improve a process) and needs to do an experiment to discover that knowledge.

122 After further discussion, the Tribunal stated at [196]-[198]:

196. It follows that I do not accept the proposition that activities will be experimental activities provided they are a test or trial undertaken for the purpose of discovering something unknown or for testing a principle. The proposition would place more emphasis upon the outcome and the purpose of conducting them at the expense of any consideration of the nature of the experimental activities themselves. “*Core R&D activities are experimental activities*” that are of the sort described in s 355-25(1)(a) and conducted for the purpose described in s 355-25(1)(b). They are not “*activities*” that are of that sort and conducted for that purpose. The proposition would have me overlook the adjective “*experimental*” that precedes the word “*activities*” in the opening words of s 355-25(1). I am aware that the rules of statutory interpretation permit me to read legislation as if certain words were omitted or even added but it is a somewhat controversial area of the law. The judgment of the majority of the High Court in *Taylor v Owners-Strata Plan No 11564* is a recent distillation of the principles that apply. ...

197. Having regard to the statutory scheme established by the IRD Act and Division 355 of Part 3-45 of ITAA97, there is no reason to omit the adjective “*experimental*” when it qualifies the noun “*activities*” in s 355-25(1). That qualification requires an examination of the activities themselves to determine whether they are properly characterised as experimental activities. The pool of activities determined to be experimental activities is then narrowed by reference to the specific characteristics prescribed in by s 355-25(1) and by the activities specifically excluded by s 355-25(2). This interpretation is consistent with the general tenor of the words used in s 355-25 and with the statement in the Explanatory Memorandum to the IRD Amendment Bill that, when compared with the definition of “*research and development activities*” in s 73B(1) of ITAA36:

The definition of ‘core R&D activities’ in this Bill uses clearer language ... In essence, this new definition recognises that the taxpayer needs new information (to solve a problem, develop a new product or improve a process) **and needs to do an experiment to**

discover that knowledge. (Emphasis added [by Tribunal])

198. It is an interpretation that would not characterise the action of measuring the length of a piece of string with a ruler, the temperature with a thermometer or the weight of an object with a scale as an experimental activity. True it is that the length of the piece of string may not be known to the person holding it but the person knows that it has a length and knows that the length can be readily ascertained by using a standard measuring device such as a ruler or a tape measure. Measuring the piece of string reveals what is already known to another person who has a good eye for such things or who has already used a tried and tested means of measuring it. It is a process of revelation of what is otherwise known or can become known to the person holding it. Even if measurement were an experimental activity, it would not be an experimental activity whose outcome could not be known or determined in advance on the basis of current knowledge, information or experience and so would not come within the terms of s 355-25(1)(a).

(Footnotes omitted)

123 In the next section of the Reasons, the Tribunal considered the exclusion in s 355-25(2)(f), relating to complying with statutory requirements. No issue is raised on appeal in relation to the Tribunal's conclusions relating to that exclusion.

124 After a discussion of the standard of proof (at [239]-[247]), the Tribunal commenced its direct consideration of the registered activities for the 2012 to 2014 years at [248] of the Reasons. The structure of the balance of the Reasons is as follows. The Tribunal first considered the registered "core R&D activities" for the 2012 year. The Tribunal then considered the registered "core R&D activities" for the 2013 year and the registered "core R&D activities" for the 2014 year. The Tribunal then dealt globally with the registered "supporting R&D activities".

125 In relation to the registered "core R&D activities" for the 2012 year, the Tribunal considered separately the different activities forming part of activity 1.1 for the 2012 year, referring to these as "components".

126 The first component of the registered activities for the 2012 year was identified as: "to design and develop a UCG generated syngas cleaning and power generation pilot plant". In the context of considering this first component, the Tribunal considered, at [249]-[262], whether the pilot project met the definition of "core R&D activities".

127 The Tribunal referred to expert evidence relied on by Moreton at the hearing before the Tribunal. In the last sentence of [255], the Tribunal stated that the "purpose of the pilot UCG project was set out in the FEED document". In its written submissions for the appeal, Moreton submitted that this amounted to a finding by the Tribunal that the purpose of the

pilot facility was as set out in the FEED document (quoted at [31] above). However, at the hearing of the appeal, Moreton withdrew that submission. Read in context, the last sentence of [255] was merely descriptive of the evidence of Mr Melik, discussed in the preceding sentences.

128 The Tribunal concluded that the activities constituting the project as a whole (i.e. the pilot project as a whole) were not “experimental activities” (and thus did not meet the definition of “core R&D activities”). The key passage of the Reasons is as follows:

257. On the evidence that I have been given, there is material explaining the known technology that is the UCG process. The FEED document itself does that. The requirements of the UCG process and variables were known and the risks such as rock shear causing casing shear were also known. This entailed research on matters such as the geological and hydrological characterisation of the site and the collection of data in order to facilitate geomechanical modelling of the site. Testing and data collection remained crucial at all times to ensure that, for example, the pressure in the underground cavity remained at a lower pressure than its surrounds, to chart movement and record temperature as well as sample and analyse groundwater to ensure that it was not contaminated by BTEX. Contamination of the groundwater was a known risk and **I do not understand the project as described to have been undertaken to, in part, demonstrate that UCG as a process could be undertaken in an environmentally friendly manner. Rather, the project was undertaken to demonstrate that UCG could occur at the particular site.** The conditions on the EA and on its amended versions were intended to ensure that it was operated within parameters that were environmentally acceptable.

258. On the evidence, I accept that the how the UCG process will proceed in any particular location will depend on the particular characteristics of the site and the way in which the burn process affects that site. **In the ordinary meaning of an “experimental activity”, the pilot UCG project can be regarded as such an activity. It was undertaken in order to determine whether it would produce syngas at an appropriate rate and quality to drive a gas turbine and so produce electricity. Therefore, it was a test or trial undertaken for the purpose of discovering what would be produced from the site when known technology was implemented.**

259. **Beyond that site specific knowledge that would be generated, however, I do not accept that the pilot UCG project was undertaken for the purpose of generating new knowledge. It was not undertaken to develop UCG technology itself and nor was it undertaken to develop any new form of, for example, pilot plant, devices or processes.** Ms Baker drew my attention to the article entitled *Industry Engineering Chemical Research*, to which I have referred at [253] above. The authors of that article expressed the opinion in 2009 that the UCG process had areas of “*potential improvement*”. As I understand the article, that was in addition to any customisation that was required to suit local conditions. In the case of the pilot UCG plant, though, I do not find that there has been any work that can be regarded as directed to improving or altering the existing UCG technology as it was applied to the local site. This statement is consistent with Moreton

Resources' own statements that it was using known technology and integrating known technologies. What was meant by "integration of" known technologies is not explained further.

260. The ISP observed in its report that it understood Moreton Resources to have told it that it had not been engaged in running a pilot trial of a new technology but in developing a small-scale facility of well-tested technology. For that reason, Moreton Resources had told ISP that it did not need a lot of in-house technical capability and could rely on consultants as required. Moreton Resources stated that the ISP's report had misstated its position on in-house technical capability, it did not elaborate on what had been misstated. Without elaboration, it does not dissuade me from the conclusion I have reached which is that, if Moreton Resources was engaged in an experimental activity, it was experimental only to the extent that the outcome of the application of the technology to the specific site at Kingaroy could be predicted but not known until implementation of the technology.
261. Had the pilot UCG project been successful and led to a commercial operation producing syngas for use in electricity generation, work may have been required for the development of a highly bespoke and customised design allowing the gas turbine to operate first by an alternate fuel such as diesel or natural gas until a stable operation was achieved. That was the view expressed by GE Power & Water. That may have generated new knowledge but GE Power & Water expressed its view in October 2015 in response to Mr Melik's request. It was not a matter that was actively in mind in developing the pilot UCG project. The FEED document stated that there were no UCG facilities in the world utilising a gas turbine to make electricity from the UCG syngas but the size and configuration of any commercial scale gas turbine was a matter to be determined in the future. The FEED document related only to the pilot facility, its authors stated.
262. It follows that Moreton Resources' work in undertaking the project as a whole would not have been regarded as an experimental activity **because it was not an activity that it needed to do in order to solve a problem, develop a new product or improve a process. It was testing the application of existing technology at a particular site and nothing more.**

(Emphasis added.)

- 129 The Tribunal, at [263]-[266], considered more directly whether the activities forming part of the first component of activity 1.1 for the 2012 year, and that were actually undertaken during that year, were "core R&D activities". The Tribunal found that there were only two activities that occurred during the 2012 year that could be regarded as falling within the description of "design and develop a UCG generated syngas cleaning and power generation pilot plant". Those activities were the preparation of two documents and the pumping of water in evaporative ponds: Reasons, [263]-[265]. The Tribunal found that the two documents were merely statements of intention and the latter were not experimental activities: Reasons, [264], [266]. These findings are not challenged on appeal.

130 The Tribunal then considered each of the other components of activity 1.1 for the 2012 year, concluding that they were not “core R&D activities” (Reasons, [267]-[322]). At [321], the Tribunal dealt with the last paragraph of the description of activity 1.1 for the 2012 year, namely “[t]esting and evaluation of gas production and plant performance to test the viability of the coal seam and to ensure environmental standards can be met”. The Tribunal stated:

On the evidence, the pilot UCG plant had been shut down in March 2010 but I accept that Moreton Resources continued to plan for the time when it was permitted to re-ignite the pilot UCG project. That time never came but that does not determine the matter. What does determine the matter is that the activities in which Moreton Resources engaged were no different in their character from those that they undertook in relation to establishing the pilot UCG project before its shutdown. For the reasons that those activities were not core R&D activities, those undertaken in 2011-2012 in relation to re-ignition and including testing and evaluation of gas production and plant performance are also not core R&D activities.

131 The Tribunal then considered the registered “core R&D activities” for the 2013 year (at [323]-[324]) and the registered “core R&D activities” for the 2014 year (at [325]-[327]). In each case, the Tribunal concluded that they were not “core R&D activities”.

132 The Tribunal then dealt globally with the registered “supporting R&D activities” at [328]:

In view of my findings and conclusions, there are no supporting R&D activities because none of the activities claimed to come within that category is an activity directly related to a core R&D activity because there are no core R&D activities.

133 The Tribunal did not directly consider whether or not the registered activities for the 2010 year fell within the definition of “core R&D activities”. However, in the context of considering the registered “core R&D activities” for the 2012 year, the Tribunal considered (at [249]-[262]) whether the activities constituting the pilot project were “core R&D activities”, concluding that they were not. This reasoning would apply equally to the registered activities for the 2010 year constituting the pilot project, such that a critical element of Moreton’s alternative submission before the Tribunal (summarised in [7] above) was, in effect, rejected by the Tribunal. Thus, while the Tribunal did not directly consider Moreton’s alternative submission, it may be taken to have implicitly rejected that submission. However, it should be noted that the Tribunal did not determine: (a) whether or not the registered activities for 2010 were conducted; (b) whether the registered “core R&D activities” for the 2012 to 2014 years were “directly related” to the registered activities for 2010 (see s 355-30(1)); or (c) whether or not the registered “core R&D activities” for the 2012 to 2014 years were undertaken for the “dominant purpose” of supporting the registered activities for 2010 (see s 355-30(2)).

134 We note for completeness that Moreton conceded before the Tribunal that some of the registered activities for the 2012 to 2014 years were not conducted in the year of registration.

The appeal on a question of law

135 Moreton appeals to this Court on a question of law from the whole of the decision of the Tribunal. Moreton's amended notice of appeal contains 10 questions of law and 20 grounds of appeal.

136 Question of law 10 and grounds 18-20 concern a finding by the Tribunal (at [61] of the Reasons) that Moreton "withdrew" its application for the registration of R&D activities for the 2010 year. Moreton submits that the material before the Tribunal shows that Moreton did not withdraw its registration for the 2010 year, but rather purported to submit an amended application for that year at the Board's request. Moreton submits, as it did before the Tribunal, that: the purported amended application lodged by Moreton was of no effect; there was, at the time, no statutory basis to either withdraw or amend the registration in the circumstances; rather, registration was deemed to be irrevocable by former s 39J(5) of the IR&D Act; and the Board treated Moreton's notice as a statement of intention not to claim the R&D concession for that year, which it then undertook to communicate to the Commissioner. The Board does not dispute that legally it was not possible for Moreton to withdraw its registration for the 2010 year. The Board submits that the Tribunal's statement at [61] is not material to the appeal. In light of the parties' submissions, we accept that Moreton did not withdraw its application for the registration of R&D activities for the 2010 year. It is, therefore, unnecessary to consider further question of law 10 and grounds 18-20.

137 Questions of law 1 to 9 are as follows:

1. Whether the Tribunal misconstrued s 355-25(1)(a) when deciding that the provision did not extend to experimental activities whose outcome, whilst unknown, related to the application of an existing technology to a specific site.
2. Whether the Tribunal misapplied s 355-25(1)(a) by mischaracterising the 'outcome' of the experimental activities as being the outcome of applying an existing technology to a specific site.
3. Whether the Tribunal misapplied s 355-25(1)(a) by limiting its consideration to the 'outcome' of particular experimental activities rather than the 'outcome' of the overall experimental activities.
4. Whether the Tribunal misconstrued s 355-25(1)(a) when deciding that its central focus is 'the experimental activities themselves ... and the way they are conducted'.

5. Whether the Tribunal otherwise erred in concluding, on the basis of facts fully found, that none of, and no part of, the activities constituting the pilot underground coal gasification project, including those registered for the years ended 30 June 2009, 30 June 2010 and 30 June 2011, answered the description in s 355-25(1)(a) of the ITAA 1997.
6. Whether the Tribunal misconstrued s 355-25(1)(b) by deciding that ‘new knowledge’ was limited to knowledge of a certain kind, which excluded knowledge obtained with respect to the application of an existing technology to a new site.
7. Whether the Tribunal misapplied s 355-25(1)(b) by mischaracterising the ‘new knowledge’ to be generated from the experimental activities as knowledge about what would be produced from the application of an existing technology to a new site.
8. Whether the Tribunal misapplied s 355-25(1)(b) by limiting its consideration to ‘new knowledge’ to be generated from particular experimental activities rather than the ‘new knowledge’ to be generated from the overall experimental activities.
9. Whether the Tribunal otherwise erred in concluding, on the basis of facts fully found, that none of, and no part of, the activities constituting the pilot UCG project, including those registered for the years ended 30 June 2009, 30 June 2010 and 30 June 2011, were ‘conducted for the purpose of generating new knowledge’ within the meaning of s 355-25(1)(b) of the ITAA 1997.

138 The grounds of appeal relating to these questions of law appear sufficiently from the summary of Moreton’s submissions, set out below.

139 The Board filed a notice of contention. However, this is not pressed on the basis that Moreton has now withdrawn a particular submission in its outline of submissions in reply.

Consideration

140 There is a substantial overlap between questions of law 1 to 9. Similarly, the grounds of appeal substantially overlap. In these circumstances, it will be convenient to deal with the questions of law (and grounds) together rather than separately. In summary, the issue is whether the Tribunal erred in its construction of the definition of “core R&D activities” in s 355-25(1) of the ITAA 1997 or in the application of that construction to the activities constituting the pilot project.

141 Moreton’s submissions (based on its written submissions) can be summarised as follows:

- (a) In relation to s 355-25(1)(a), the Tribunal erred in finding that the requirement that the “outcome” of the experimental activities “cannot be known or determined in advance” will not be satisfied by experimental activities whose outcome, whilst unknown,

relates to the application of an existing technology to a specific site: Reasons, [258]-[259], [262]. There is nothing in the statutory text to suggest that activities should be excluded if the unknown outcome relates to the application of an existing technology to a specific site. Nor is there anything in the context, including the legislative history and extrinsic materials, to suggest that such a limitation should be read into s 355-25: *Federal Commissioner of Taxation v Consolidated Media Holdings Ltd* (2012) 250 CLR 503 at [39]; see also [2.13] of the Explanatory Memorandum.

- (b) Further and in any event, the Tribunal erred by mischaracterising the “outcome” at which Moreton’s activities were directed for the purposes of s 355-25(1)(a). It did so in two significant ways. First, as the Tribunal found elsewhere, the pilot project was undertaken in order to determine whether the syngas produced by the application of the UCG process to the site could be treated and used to drive a gas turbine so as to produce electricity: Reasons, [27], [258]. That was something that had never been done before in the world: Reasons, [261]. The activities included work in designing and developing a syngas clean up plant to determine whether the gas could be cleaned to a point where its chemical composition could be used for gas turbines to generate electricity. By focussing only on the application of the UCG technology to the particular site, the Tribunal took an unduly narrow (and incorrect) view of the “outcome” at which the experimental activities were directed for the purposes of s 355-25(1)(a). The reference in s 355-25 to “core R&D activities” in the plural form, in contrast to the reference in s 27J of the IR&D Act to “all or part of a registered activity”, permits a set of related experimental activities considered in combination to be evaluated against the statutory criteria. Applying the criteria to individual activities or components of the overall activities in isolation is apt to lead to error. A consequence of viewing a related set of activities as a whole is that, if the carrying out of those activities is cut short (as they were in the present case) it should not deny eligibility under the legislation in respect of the activities actually carried out.
- (c) Secondly, in expressing an understanding that the project was not undertaken to, in part, demonstrate that UCG as a process could be undertaken in an environmentally friendly manner (Reasons, [257]), the Tribunal foreclosed any consideration of that demonstration (or failure to demonstrate) as an outcome of the activities. The expressed understanding was directly at odds with the FEED document, which stated that one of the outcomes sought was to “demonstrate ... that the process [can] be

operated in a safe and environmentally responsible manner”, and that there would be a series of trials with extensive monitoring carried out on all aspects of the technology associated with the process, “particularly the environmental aspects”. Indeed, as is evident from the facts as set out in the Reasons, the environmental aspects dominated the pilot project (particularly in the years in question) and the outcome was that the UCG process could not be undertaken in an environmentally friendly manner. It was for that reason that the Queensland government ultimately banned the technology.

- (d) On a proper construction and application of s 355-25(1)(a), the “outcome” at which the experimental activities were directed was determining whether syngas produced from the application of the UCG process could, after processing, drive a gas turbine and that the process could be operated in an environmentally responsible manner. These matters were unknown and could not be determined in advance on the basis of current knowledge, information or experience, but could only be determined by applying a systematic progression of work of the kind described in subparagraphs (i) and (ii) of s 355-25(1)(a). There is no basis for reading down the provision, or characterising the outcome, in such a way as to deny eligibility on the basis that the outcome was “site specific”.
- (e) In relation to s 355-25(1)(b), there is nothing in the text of this provision that suggests that what constitutes “new knowledge” should be narrowly defined. To the contrary, the words in parenthesis support an expansive interpretation of those words. So too does the text of the objects clause in s 355-5. Reading down the type of new knowledge that can satisfy s 355-25(1)(b) by reference to the extrinsic materials is contrary to established principles of statutory construction. As a result, the Tribunal misconstrued the type of knowledge that is capable of satisfying the purpose requirement in s 355-25(1)(b).
- (f) Although a purpose of generating new knowledge that may be site-specific is sufficient to satisfy s 355-25(1)(b), the Tribunal in any event mischaracterised Moreton’s purpose by limiting it to “testing the application of existing technology at a particular site and nothing more”: Reasons, [262]. To the extent this was an inference drawn from facts found, Moreton contends it was not reasonably open: see *Minister for Immigration & Multicultural Affairs v Al-Miahi* (2001) 65 ALD 141; [2001] FCA 744 at [34]. Moreover, it fails to take into account that knowledge of whether the

UCG process could be carried out in an environmentally responsible manner is “new knowledge” for the purposes of s 355-25(1)(b).

142 In oral submissions, senior counsel for Moreton challenged the Tribunal’s construction of the words “experimental activities” in the opening line of s 355-25. It was submitted that there was nothing in the text of the legislation to exclude activities directed at site specific knowledge (assuming this is the correct characterisation of the activities), that the words “experimental activities” bear their ordinary meaning, and that the Tribunal erred in law in departing from that ordinary meaning. It was further submitted that, by focussing on the acquisition of site specific knowledge, the Tribunal had mischaracterised the purpose of the activities (namely, to demonstrate the technical and environmental viability of the UCG technology, including integrating the technology with a gas turbine).

143 The Board’s submissions in response can be summarised as follows:

- (a) The Tribunal was correct to conclude at [196] of the Reasons that activities will not be experimental activities merely because “they are a test or trial undertaken for the purpose of discovering something unknown or for testing a principle”. As the Tribunal reasoned, such a construction would, in effect, omit the adjective “experimental” from the definition in s 355-25(1). As the text of s 355-25(1)(a)(ii) confirms, there is an important difference between observation – observing or measuring the results of some established process, procedure or phenomenon – and conducting an experiment. An experiment involves the testing of a hypothesis, not merely observing some process or phenomenon. In light of the context provided by s 355-25(1), “experimental activities” excludes the measurement or observation of some unknown quantity by known methods and techniques.
- (b) In the present case, the Tribunal found that the pilot project involved the application of known and “old” technology to a particular geological site: Reasons, [256]-[257]. Because the UCG process is site specific, how the process would proceed would depend on the characteristics of the site: Reasons, [258]. The Tribunal reasoned that the pilot plant could be described as “experimental” only to the extent that the application of the known technology at the specific site could be predicted but not known until implemented: Reasons, [261]. However, consistently with the distinction drawn between observation and experiment, such activities cannot be regarded as “experimental activities”. As the Tribunal found at [262], Moreton was not carrying

out the project “to solve a problem, develop a new product or improve a process”. It was testing or observing the results of applying an existing technology at a particular site and nothing more.

- (c) The question for the Tribunal (and this Court) is whether “all or part of a registered activity” was a core R&D activity or supporting R&D activity conducted during the year of registration: see IR&D Act, s 27J. The fact that “core R&D activities” is defined in the plural is irrelevant. As s 27J makes plain, it is not enough that the registration describes an activity that is an R&D activity; it is essential for Moreton to demonstrate that what was actually done in a relevant year corresponds with the relevant registration, and further that the activities carried out satisfy the relevant definitions of R&D activities.
- (d) The Tribunal applied the definition of “core R&D activities” both to the activities registered during the relevant years as well as to the pilot project as a whole. Whether particular activities can legitimately be categorised as part of a broader “project level” activity is a question of fact. In some circumstances, it may be appropriate for the definition of “core R&D activities” to be applied to a number of aggregated registered activities which, on proper characterisation, are components of a single experimental activity.
- (e) Contrary to Moreton’s submissions, the text of s 355-25 is not focused merely on the “outcome” of experimental activities. The opening words of s 355-25(1) make clear that the hinge about which the section turns is the “experimental activities” themselves. This is confirmed by the exclusions in s 355-25(2).
- (f) The Tribunal did not accept that the UCG project was undertaken for the purpose of demonstrating that UCG as a process could be undertaken in an environmentally friendly manner. Rather, the Tribunal found, the project was undertaken to demonstrate that UCG could occur at the particular site: Reasons, [257]. Those are findings of primary fact that are not open to challenge.
- (g) Further, whether the registered activities were carried out for the purpose of generating new knowledge was a question of fact for the Tribunal. The Tribunal’s findings of fact were reasonably open. Merely because a process may incidentally generate new knowledge does not mean that the process is undertaken for the purpose of generating new knowledge: see *Re DBTL and Innovation Australia* (2013) 137 ALD 88 at [184].

- (h) Further, contrary to Moreton's submissions, the text, context (including relevant extrinsic materials) and purpose of the ITAA 1997 deny that knowledge obtained by applying known technology to a new location constitutes "new knowledge". First, s 355-25(1)(b) refers to "new knowledge". The adjective "new" is capable of more than one construction. It could refer broadly to knowledge that is "new" in the sense of covering anything not previously known. It could also be narrower and only refer to knowledge that is "new" in the sense that the knowledge was not previously capable of being known or determined. The former would include facts that, although not known, are capable of being discovered using established techniques; e.g. the determination of the concentration of oxygen in a particular sample of gas. The latter narrower interpretation would exclude such facts from the concept of "new knowledge".
- (i) Secondly, the latter construction is supported by the immediate context. The reference in s 355-25(1)(a) to an activity whose "outcome cannot be known **or determined** in advance" suggests that knowledge about a specific location that can be ascertained by applying pre-existing technology is not new knowledge.
- (j) Thirdly, the object in s 355-5(1) informs the construction of "new knowledge". The object of Div 355 is to encourage "industry to conduct research and development activities that might otherwise not be conducted because of an uncertain return from the activities, **in cases where the knowledge gained is likely to benefit the wider Australian economy**". That object tends against permitting a tax incentive for knowledge that is highly specific to a particular context or location and is unlikely to provide any broader public benefit.
- (k) Fourthly, the Explanatory Memorandum indicates that "new knowledge" must go beyond "validating a simple progression from what is already known and beyond merely implementing existing knowledge in a different context or location": at [2.18]. While an explanatory memorandum cannot alter the meaning of unambiguous statutory language, it may assist in resolving a constructional choice presented by the statutory text.

144 In our view, for the reasons that follow, the Tribunal erred in its construction of the definition of "core R&D activities" in s 355-25(1) of the ITAA 1997 (in particular, the words "experimental activities" in the opening line of the subsection).

145 The Tribunal’s approach to the words “experimental activities” in the opening line of s 355-25(1) was as follows. Having noted (at [177]) that both parties agreed that the words “experimental activities” should be given their ordinary meaning, the Tribunal set out various dictionary definitions of “experimental” and “experiment” at [184] and [185]. The Tribunal did not, however, adopt a construction of “experimental activities” that reflected the dictionary definitions. At [196] of the Reasons (set out above) the Tribunal stated that it did “not accept the proposition that activities will be experimental activities provided they are a test or trial undertaken for the purpose of discovering something unknown or for testing a principle”. This indicates a departure from at least some of the dictionary definitions set out earlier in the Reasons. (One of the dictionary definitions of “experiment” was “a test or trial; ... an act or operation for the purpose of discovering something unknown or testing a principle”.) Further, and significantly, the Tribunal stated at [258] that, on the ordinary meaning of an “experimental activity”, the pilot project “can be regarded as such an activity”. (Read in context, this would appear to be a reference to the ordinary meaning of the words according to the dictionary definitions set out earlier in the Reasons.) Nevertheless, the Tribunal concluded at [262] that the pilot project as a whole was *not* an “experimental activity”. The conclusion at [262] demonstrates that the Tribunal adopted a construction of the words “experimental activities” that departed from the dictionary definitions.

146 It is convenient to refer at this point to cases that discuss the role of dictionary definitions in the process of statutory construction. In *Federal Commissioner of Taxation v Cooling* (1990) 22 FCR 42 at 68, Hill J observed that “the process of statutory construction does not consist merely of ascertaining the meaning of words used aided, if necessary, by a dictionary”. See also *Thiess v Collector of Customs* (2014) 250 CLR 664 at [23]. While the Tribunal was mindful of these principles (see the Reasons at [183]), the initial resort to dictionary meanings (albeit subsequently departed from) was perhaps the wrong starting point.

147 The effect of the Tribunal’s construction was that the word “experimental” in the opening line of s 355-25(1) narrowed the types of activities that could qualify as “core R&D activities” beyond the requirements of paragraphs (a) and (b). In other words, on the Tribunal’s approach, to determine whether activities are “core R&D activities” one first considers whether the relevant activities are “experimental” activities. If they are not, they cannot qualify as “core R&D activities”. If they are, then it is necessary to consider whether they also satisfy the descriptions in paragraphs (a) and (b). That the Tribunal took this approach is evident from, in particular, [196], [197] and [257]-[262]. Thus, on the Tribunal’s

approach, the words “experimental activities” in the opening line of the provision have real work to do; they do not merely refer to activities of the type described in paragraphs (a) and (b).

148 In our respectful opinion, the words “experimental activities” in the opening line of s 355-25(1) have very little, if any, work to do beyond reflecting the type of activities described in paragraphs (a) and (b) of the subsection. Paragraphs (a) and (b) contain a detailed description of activities. Activities must meet the descriptions in both paragraphs to satisfy the defined expression “core R&D activities”. The word “experiment” is used in paragraph (a): this paragraph refers to an outcome that can only be determined by applying a systematic progression of work that, among other things, “proceeds from hypothesis to experiment, observation and evaluation, and leads to logical conclusions”. Given the detail and content of the description in paragraphs (a) and (b), it is difficult to envisage activities that would meet the description in paragraphs (a) and (b) but would not be considered “experimental activities”. This is not to say that the word “experimental” in the opening line of the subsection is wholly superfluous. It is, at least, descriptive of the types of activities that are described in paragraphs (a) and (b).

149 Notwithstanding the matters discussed in the preceding paragraphs, it seems that the Tribunal’s construction of the words “experimental activities” in s 355-25(1) was influenced by the terms of paragraph (b), which states that the activities are conducted for the purpose of generating “new knowledge (including new knowledge in the form of new or improved materials, products, devices, processes or services)”. The Tribunal referred to paragraph (b) in the course of its discussion of the meaning of “experimental activities” (at [188]). The Tribunal then quoted a paragraph from the Explanatory Memorandum ([1.15]) that stated that the new definition recognised that the taxpayer needed “new information” and needed “to do an experiment to discover that knowledge” (at [189]). Further, the Tribunal’s reasoning at [259] (in the context of whether the pilot project was an “experimental activity”) reflected the language of paragraph (b).

150 In essence, the Tribunal construed the words “experimental activities” as not covering activities having the purpose of generating new knowledge with respect to the application of an existing technology at a new site. In the core section of the Tribunal’s reasoning on the pilot project, after acknowledging that, on the ordinary meaning of “experimental activity”, the pilot project could be regarded as such an activity (at [258]), the Tribunal stated that,

beyond the site specific knowledge that would be generated, it did not accept that the pilot project was undertaken “for the purpose of generating new knowledge” (at [259]). The Tribunal concluded, at [262], that the pilot project was not an “experimental activity”. In reaching this conclusion, the Tribunal was significantly influenced by its view that, beyond the site specific information that would be generated, the pilot project was not undertaken for the purpose of generating new knowledge. In explaining its conclusion, at [262], the Tribunal stated that the pilot project involved “testing the application of existing technology at a particular site and nothing more”.

151 In our respectful opinion, the Tribunal misconstrued the words “experimental activities” in the opening line of s 355-25(1) by treating these words as not covering activities having the purpose of generating new knowledge with respect to the application of an existing technology at a new site (at least in circumstances such as those of the present case). The Tribunal’s construction is not supported by the text, context or purpose of the provision: see *Federal Commissioner of Taxation v Consolidated Media Holdings Ltd* (2012) 250 CLR 503 at [39] per French CJ, Hayne, Crennan, Bell and Gageler JJ; *Thiess v Collector of Customs* (2014) 250 CLR 664 at [22]-[23] per French CJ, Hayne, Kiefel, Gageler and Keane JJ; and *Regional Express Holdings Ltd v Australian Federation of Air Pilots* (2017) 262 CLR 456 at [19] per Kiefel CJ, Keane, Nettle, Gordon and Edelman JJ. The text of the provision, whether one looks at the words “experimental activities” or the text of paragraph (b), does not impose any such limitation. Paragraph (b) refers to experimental activities “that are conducted for the purpose of generating new knowledge (including new knowledge in the form of new or improved materials, products, devices, processes or services)”. These words are capable of applying, depending on the circumstances, to activities that are conducted for the purpose of generating new knowledge with respect to the application of an existing technology at a new site. Further, the exceptions to the definition of “core R&D activities” set out in subsection (2) of s 355-25 do not support the Tribunal’s construction.

152 The context of the provision, including the extrinsic materials, also does not support the Tribunal’s construction. The Explanatory Memorandum is of limited, if any, assistance. It stated at [1.15] that the new definition of “core R&D activities” used “clearer language” than the earlier provision. It also stated that the new definition “recognises that the taxpayer needs new information (to solve a problem, develop a new product or improve a process) and needs to do an experiment to discover that knowledge”. These words cannot be treated as substitutes for the statutory language. In any event, they are capable of applying to activities

that have the purpose of generating new knowledge with respect to the application of an existing technology at a new site (at least in circumstances such as those of the present case). We note for completeness that in [2.18] of the Explanatory Memorandum it is stated that the knowledge being sought must go beyond “merely implementing existing knowledge in a different context or location”. To the extent that regard may be had to this statement, it is not inconsistent with the proposition that, depending on the circumstances, activities that have the purpose of generating new knowledge with respect to the application of an existing technology at a new site may fall within the statutory definition.

153 Further, the purpose of the research and development provisions does not support the Tribunal’s construction. The object of Div 355 of the ITAA 1997 is to encourage industry to conduct research and development activities that might otherwise not be conducted because of an uncertain return from the activities, in cases where the knowledge gained is likely to benefit the wider Australian economy (s 355-5(1), set out above). The object is to be achieved by providing a tax incentive for industry to conduct, in a scientific way, experimental activities for the purpose of generating new knowledge or information “in either a general or applied form (including new knowledge in the form of new or improved materials, products, devices, processes or services)” (s 355-5(2)). At least in circumstances such as those of the present case, this object is capable of being served by activities that have the purpose of generating new knowledge with respect to the application of an existing technology at a new site.

154 Although the Tribunal’s reasoning in relation to the pilot project focussed on the words “experimental activities” in the opening line of s 355-25(1), it might be said that the Tribunal implicitly also relied on paragraph (b) of that subsection. If and to the extent that the Tribunal relied on paragraph (b), the same reasoning as set out above applies. In summary, depending on the circumstances, paragraph (b) is capable of applying to activities having the purpose of generating new knowledge with respect to the application of an existing technology at a new site.

155 While not dispositive of the appeal, we also consider the Tribunal’s statement at [196] of the Reasons – that it did “not accept the proposition that activities will be experimental activities provided they are a test or trial undertaken for the purpose of discovering something unknown or for testing a principle” – to be open to doubt. In our view, activities of this

nature may, depending on the circumstances, constitute experimental activities. Such activities may fall within the description in paragraphs (a) and (b) of s 355-25(1).

156 In light of the conclusions expressed above, it is not necessary to deal separately with each of the questions of law and each of the grounds of appeal. For the reasons set out above, we consider that the Tribunal erred in its construction of the definition of “core R&D activities”.

157 It follows that the decision of the Tribunal must be set aside.

158 Although it is not necessary for our decision, we also consider that the Tribunal appears to have mischaracterised the activities constituting the pilot project. The Tribunal stated, at [257], that it did “not understand the project as described to have been undertaken to, in part, demonstrate that UCG as a process could be undertaken in an environmentally friendly manner”. It is difficult to reconcile this statement with the FEED document, which stated that the purpose of the pilot facility was to demonstrate (among other things) “that the process [can] be operated in a safe and environmentally responsible manner”. The Reasons do not explain why the Tribunal expressed the view that it did at [257] notwithstanding the statement of purpose in the FEED document.

159 Further, while it is true that, as the Tribunal noted at [259], some of Moreton’s documents described the pilot project as using known technology, the Tribunal in the core section of its reasoning did not acknowledge that the pilot facility would be the first UCG facility in the world to utilise a gas turbine to make electricity from syngas (as stated in the FEED document) or that the pilot project was taking place under the auspices and strict control of the Queensland government and its agencies to test the environmental impact of the process. (Ultimately, as set out above, the Queensland government decided to ban UCG because of its environmental impact.) In light of these matters, the Tribunal’s characterisation of the pilot project at [262] of the Reasons (e.g. “testing the application of existing technology at a particular site and nothing more”) is open to question.

Remission to the Tribunal

160 At the appeal hearing, Moreton submitted that, in the event that its submissions were accepted, this Court should itself determine whether the registered “core R&D activities” for the 2012 to 2014 years constituted “supporting R&D activities” on the basis of Moreton’s alternative submission before the Tribunal. According to that submission, as outlined in [7] above, even if any part of the registered “core R&D activities” for the 2012 to 2014 years

were not “core R&D activities”, they were nonetheless “supporting R&D activities” because, among other things, they directly related to “core R&D activities” registered for the 2010 year.

161 In support of this submission Moreton submits, in summary, that: had the Tribunal not made the findings that it did in relation to the pilot project as a whole, it would have been required to examine more closely the activities registered for the 2010 year; those activities included “UCG gas pilot burn/ignition” and “ongoing testing and evaluation of gas production and plant performance to test the viability of the coal seam used and to ensure environmental standards are met”; to the extent that any of the registered “core R&D activities” for the 2012 to 2014 years were not “core R&D activities”, they were directly related to, and undertaken for the dominant purpose of supporting, the activities registered for the 2010 year. Moreton submits that the connection between the activities arises from, among other things, the terms of the EA that applied to the pilot project, pursuant to which Moreton was required to carry out the remediation activities in the years in question and the fact the activities constituting the pilot project were interrelated. During the hearing of the appeal, we were taken to a substantial number of documents in the Appeal Book in support of these submissions.

162 In response to a question from the Court, Moreton prepared and handed up during the appeal hearing a note setting out the basis upon which it contends that the registered activities for the 2010 year (or at least some of them) met the definition of “core R&D activities”. Moreton relies in the note on facts set out in the “Background” section of the Reasons and documents to which the Tribunal referred.

163 In our view, having regard to the matters referred to in s 44(7) of the AAT Act, it is not appropriate for this Court to determine whether the registered “core R&D activities” for the 2012 to 2014 years were “supporting R&D activities” on the basis of Moreton’s alternative submission before the Tribunal. Determining this issue would be a factually intensive exercise. Among other things, it would require consideration of whether the some or all of the registered activities for the 2010 year were “core R&D activities”. If that issue were determined favourably to Moreton, it would be necessary to determine whether the registered “core R&D activities” for the 2012 to 2014 years were directly related to, and undertaken for the dominant purpose of supporting, the core R&D activities for the 2010 year. (Moreton accepts that it needs to satisfy subsection (2) in addition to subsection (1) of s 355-30.) It would also be necessary to determine whether the relevant activities were *conducted* during

the registration year, to the extent that this has not already been determined (see s 27J of the IR&D Act). In the circumstances, it is preferable for the matter to be remitted to the Tribunal.

Conclusion

164 For the reasons set out above, the decision of the Tribunal is to be set aside and the matter remitted to the Tribunal for determination according to law. Moreton sought the opportunity to make submissions as to the form of the orders in the event that the matter was to be remitted. We will provide a period of time for the parties to file any agreed minute of proposed orders (including as to costs). In the absence of agreement, each party is to file its minute of proposed orders and a short submission in support of those proposed orders.

165 In relation to costs, we note that, while Moreton has been successful in the overall outcome of the appeal, it has not been successful in its contention that this Court should itself determine whether the registered “core R&D activities” for the 2012 to 2014 years constituted “supporting R&D activities” on the basis of Moreton’s alternative submission before the Tribunal. That contention occupied a considerable amount of time on the hearing of the appeal (probably extending the appeal from one day to two). This would appear to be a relevant consideration in relation to costs.

I certify that the preceding one hundred and sixty-five (165) numbered paragraphs are a true copy of the Reasons for Judgment herein of the Honourable Justices Davies, Moshinsky and Steward.

Associate:

Dated: 25 July 2019