

[\[Home\]](#) [\[Databases\]](#) [\[WorldLII\]](#) [\[Search\]](#) [\[Feedback\]](#)

Supreme Court of Queensland – Court of Appeal

You are here: [AustLII](#) >> [Databases](#) >> [Supreme Court of Queensland - Court of Appeal](#)
>> [2010](#) >> [\[2010\] QCA 169](#)

[\[Database Search\]](#) [\[Name Search\]](#) [\[Recent Decisions\]](#) [\[Noteup\]](#)
[\[Download\]](#) [\[Help\]](#)

Unimin Australia Limited v State of Queensland [2010] QCA 169 (2 July 2010)

Last Updated: 2 July 2010

SUPREME COURT OF QUEENSLAND

CITATION: *Unimin Australia Limited v State of Queensland*
[\[2010\] QCA 169](#)

PARTIES: **UNIMIN AUSTRALIA LIMITED**
(applicant/appellant)
v

STATE OF QUEENSLAND

(respondent)

FILE NO/S: Appeal No 14638 of 2009
SC No 9409 of 2009

DIVISION: Court of Appeal
PROCEEDING: General Civil Appeal
ORIGINATING COURT: Supreme Court at Brisbane

DELIVERED ON: 2 July 2010
DELIVERED AT: Brisbane
HEARING DATE: 24 June 2010

JUDGES: Chief Justice and Chesterman JA and Atkinson J
Separate reasons for judgment of each member of the Court
each concurring as to the orders made

ORDER: 1. **Appeal dismissed, with costs including any reserve costs to be assessed.**

CATCHWORDS: STATUTES – ACTS OF PARLIAMENT –
INTERPRETATION – STATUTORY DEFINITION
PROVISIONS GENERALLY – where appellant conducts
sand mining operations on North Stradbroke Island under
four mining leases granted under the [Mineral Resources Act 1989](#) (Qld) – where appellant’s principal interest is to extract
silica sand from sand mined for use in manufacturing glass
where extraction of mined sand also results in extraction of
lower purity silica sand unsuitable for the manufacture of
glass – where lower purity silica sand is sold for use in
specialty white mortar and white renders – where primary
judge held that lower grade silica sand was not a “mineral”
within the meaning of the [Mineral Resources Act 1989](#) (Qld)
– where appellant challenges that conclusion – whether all of
undifferentiated mass of silica sand mined for glass
manufacture is a “mineral” as defined in [s 6 Mineral Resources Act 1989](#) (Qld) – whether primary judge erred in
holding that appellant “mined” lower purity silica sand for
use in mortars or renders – whether use of silica sand in
mortars and renders is “use for chemical properties” as
defined in [s 6 Mineral Resources Act 1989](#) (Qld) – whether
relevant provisions of [Mineral Resources Act 1989](#) (Qld)
should be construed in favour of holders of mining tenement
[Mineral Resources Act 1989](#) (Qld), [s 6](#), [s 6A](#)
[Sustainable Planning Act 2009](#) (Qld)

*Minnesota Mining and Manufacturing Co v Beiersdorf
(Australia) Ltd* (1980) 144 CLR 253; [1980] HCA 9, cited

COUNSEL: J Murdoch SC, with C Arnold, for the appellant
R Douglas SC, with G Sheahan, for the respondent

SOLICITORS: Sparke Helmore for the appellant
Crown Law for the respondent

Introduction

[1] CHIEF JUSTICE: The appellant conducts sand mining operations on North Stradbroke Island under four mining leases granted under the [Mineral Resources Act 1989](#). The appellant is the lessee under one of them (no 1108), and is contractor to the lessee of the other three. The trial and this appeal have principally concerned mining lease 1108, which is the only lease under which mining is currently being undertaken. That lease was originally granted in 1973. With subsequent renewals, it will expire on 1 November 2025. Its purposes include mining for silica sand.

[2] The appellant's principal interest is to extract silica sand from the sand mined, for use in manufacturing glass. That is termed "glass grade silica sand", and it is a "mineral" within the meaning of s 6(1) of the Act. Because that higher purity silica sand is a "mineral", the appellant need not obtain any additional permit for its extraction, and may lawfully sell it without more.

[3] The extraction of the mined sand results in the extraction, as well, of a lower purity silica sand unsuitable for the manufacture of glass. This by-product, or tailing, has been termed "B grade" silica sand. The appellant sells that lower grade by-product for use in specialty white mortar and white renders. It is the colour or lack of colour of that lower grade sand which means it is suitable for that use.

[4] The principal issue before the learned primary Judge was whether the lower grade sand is a "mineral" within the meaning of the [Mineral Resources Act](#). If it is then, as with the higher purity sand, it may be extracted without the need for permits and approvals under the [Integrated Planning Act 1997](#) (now the Sustainable Planning Act 2009 (Qld)), and lawfully sold; if not, the contrary position applies.

[5] The learned Judge held that the B grade silica sand is not a mineral, essentially because, in terms of the legislation, it is not "mined for use for its chemical properties": it is mined because its colour renders it saleable, and its colour is not one of its chemical properties, but simply a physical property or characteristic.

[6] The appellant challenges that conclusion, as it does the Judge's anterior

conclusion, that the appellant “mines” B grade sand notwithstanding its presence within what was termed an “undifferentiated mass” of sand in which the appellant’s predominant interest concerns the glass grade silica sand.

Declarations made

[7] His Honour made these declarations:

“1. On the proper construction of [section 6](#) of the [Mineral Resources Act 1989](#), the lower purity B Grade silica sand by-product, that is obtained by the applicant in the course of mining higher purity A Grade silica sand, is not a ‘mineral’ within the meaning of [s 6](#) of the [Mineral Resources Act 1989](#) unless mined ‘for use for its chemical properties’.

1. On the proper construction of [s 6\(3\)](#) of the [Mineral Resources Act 1989](#), the lower purity B Grade silica sand by-product that is mined for use in white mortars and white renders is not mined ‘for use for its chemical properties’ within the meaning of [s 6\(3\)\(b\)](#) of the [Mineral Resources Act 1989](#).”

Declarations sought on appeal

[8] The appellant now seeks declarations that:

“(a) the lower purity B Grade silica sand by-product, mined by the appellant on mineral leases 1108, 1124, 1132 and 7064 in the course of mining higher purity A Grade silica sand, is a ‘mineral’ as defined by the [Mineral Resources Act 1989](#); and

(b) the mining and disposal of lower purity B Grade silica sand by-product, by the appellant on mineral leases 1108, 1124, 1132 and 7064, is permitted by the terms of mining leases 1108, 1124, 1132 and 7064 granted pursuant to the [Mineral Resources Act 1989](#); and

(c) the mining and disposal of lower B Grade silica sand, mined by the appellant on mineral leases 1108, 1124, 1132 and 7064, pursuant to plans of operations and environmental management overview strategies variously dated and environmental authorities No. MIM900220203 and M2884, is authorised by the [Mineral Resources Act 1989](#); and

(d) carrying on the activity of mining and disposal of silica sand by the appellant, comprised in part of lower B Grade silica sand, is lawful and does not require any further approvals under the [Integrated Planning Act 1997](#) and nor a registration certificate issued under the [Environmental Protection Act 1994](#).”

Grounds of appeal

[9] The appellant contends that the primary Judge erred by:

“1) ruling that not all of an undifferentiated mass of silica sand mined for glass manufacture is a ‘mineral’ as defined in [section 6](#) of the [Mineral Resources Act 1989](#), because, on the agreed facts, at the time of mining, the Appellant knew that an unidentifiable portion of that the silica sand would be subsequently graded as unsuitable for the market for glass manufacture;

1. ruling that, because the Appellant knew at the time of mining that an unidentifiable portion of the silica sand unsuitable for the market for glass manufacture (i.e. because of impurities of less than 1%) would probably be used in specialist mortars and specialist renders, the Appellant ‘mined’ the silica sand for use in specialist mortars and specialist renders;
2. ruling that a use of silica sand in specialist mortars and specialist renders is not a ‘use for its chemical properties’ as defined in [section 6](#) of the [Mineral Resources Act 1989](#), on the basis of findings that:
 - (a) ruling that the phrase ‘chemical properties’ in [section 6\(3\)\(b\)](#) of the [Mineral Resources Act 1989](#) should not be defined in accordance with the wide ranging but specific technical meaning and that a narrow definition should instead be obtained from common usage based on simplified definitions contained in high school notes, university lecture notes and Internet searches;
 - (b) ruling that the words ‘chemical properties’ in [section 6\(3\)\(b\)](#) of the [Mineral Resources Act 1989](#) did not include chemical composition, purity and transparency, and treating these attributes as if they were no more than white pigmentation;
 - (c) notwithstanding that speciality glass (e.g. optic fibre cables or halogen

bulbs) can be made without chemical reaction, ruling that ‘...the words “chemical properties” in [section 6\(3\)\(b\)](#) of the [Mineral Resources Act 1989](#) should be understood as connoting properties associated with chemical reactivity or chemical change’;

1. failing to interpret the relevant provisions of the [Mineral Resources Act 1989](#) in favour of subjects in circumstances of ambiguity and long standing practice.”

Statutory provisions

[10] [Section 6](#) of the [Mineral Resources Act](#) relevantly provides:

“6. Meaning of *mineral*

(1) A *mineral* is a substance -

(a) normally occurring naturally as part of the earth’s crust; or

(b) dissolved or suspended in water on or within the earth’s crust; or

(c) that may be extracted from a substance mentioned in paragraph (a) or

(b).

(2) Subject to subsection (3), each of the following is a *mineral* -

(a) any type of clay;

(b) foundry sand;

...

(d) limestone;

...

(j) silica, including silica sand;

...

(3) Despite subsections (1) and (2) -

(a) clay (other than kaolin and bentonite) is only a mineral if it is mined for use for its ceramic properties; and

Examples of uses of clay for its ceramic properties –

- for brick or tile making
- for pottery making

(b) limestone, silica and silica sand is only a mineral if it is mined for use for its chemical properties; and

...

(d) each of the following is not a mineral -

(i) soil, sand, gravel or rock (other than rock mentioned in subsection (2)(k) if it is to be used or to be supplied for use as sand, gravel or rock, whether intact or in broken form; ...”

[11] The term “mine” is defined in the legislation in this way:

“6A Meaning of *mine*

(1) *Mine* means to carry on an operation with a view to, or for the purpose of -

(a) winning mineral from a place where it occurs; or

(b) extracting mineral from its natural state; or

(c) disposing of mineral in connection with, or waste substances resulting from, the winning or extraction.

(2) For subsection (1), extracting includes the physical, chemical, electrical, magnetic or other way of separation of a mineral.

(3) Extracting includes, for example, crushing, grinding, concentrating, screening, washing, jigging, tabling, electro winning, solvent extraction electro winning (SX-EW), heap leaching, flotation, fluidised bedding, carbon-in-leach (CIL) and carbon-in-pulp (CIP) processing.

(4) However, extracting does not include -

(a) a process in a smelter, refinery or anywhere else by which mineral is changed to another substance; or

(b) testing or assaying small quantities of mineral in teaching institutions

or laboratories, other than laboratories situated on a mining lease; or

(c) an activity, prescribed under a regulation, that is not directly associated with winning mineral from a place where it occurs.

(5) For subsection (1), disposing includes, for example, the disposal of tailings and waste rock.

(6) A regulation under subsection (4)(c) may prescribe an activity by reference to the quantities of minerals extracted or to any other specified circumstances.”

Agreed facts

[12] These facts were placed by agreement before His Honour (as taken substantially from his reasons for judgment):

“The [appellant] conducts mining operations on North Stradbroke Island. The mining operations are conducted under mining lease numbers 1108, 1124, 1132 and 7064 (‘the leases’). The leases afforded operate under the [*Mineral Resources Act*](#).”

The [appellant] is the lessee under ML1108, which was:

- originally granted for a term of 10 years commencing 10 November 1973.
- renewed on 25 May 1999 for a term of 21 years commencing 1 November 1983.
- renewed on 23 November 2006 for a term of 21 years commencing 1 November 2004.
- originally granted for the purpose of ‘mining for garnet, ilmenite/leucoxene, monazite, platinum, rutile, tin ore and zircon’.
- amended on 26 November 2003 to include ‘silica sand’.

ACI Operations Pty Ltd is the lessee of ML1124, ML1132 and ML7064. ACI has contracted for the appellant to conduct mining operations on those leases.

ML1124 was granted for the purpose of ‘mining for silica sand’. ML1124 was originally granted for a term of 13 years, commencing on 1 May 1975.

It was subsequently renewed on 17 March 1988 for a term of 21 years commencing on 1 May 1990.

ML1132 was granted for the purposes of ‘mining for silica, rutile, zircon and ilmenite’. ML1132 was initially granted for a term of 15 years commencing on 1 May 1975. It was subsequently renewed on 17 March 1998 for a term of 21 years commencing on 1 May 1990.

ML7064 was granted for the purposes of ‘mining for leucoxene, rutile, silica sand and zircon’. It was granted for a term of 10 years commencing on 1 June 2001.

Mining is currently undertaken on ML1108 and ML7064. ML1124 and ML1132 are not producing.

The mining process adopted by [the appellant] consists of the following:

- topsoil is removed.
- machines excavate the leached A2 horizon of low iron sand to its base.
- this sand is generally identified by its high aluminium iron compact form (described as the indurate layer).
- dry mining operation, no mining occurring below the water table.
- excavated sand is loaded into a mobile feed hopper via a grizzly to remove large objects such as tree roots.
- water is added to the sand in a pump box forming slurry.
- the slurry then enters a trammel where more organic and oversized material is removed.
- the slurry is then pumped to the processing plant located on ML1124.
- at the processing plant, the sand undergoes gravity separation through a series of spirals to remove heavy minerals, fine silica and clays.
- silica sand is then stockpiled by radial stackers.
- the heavy minerals, primarily ilmenite, rutile and zircon, separated and concentrated as part of this process, are pumped to a heavy metal stockpiling area.
- the reject material consisting of fine silica sand and clay is pumped away with wash water and settled in a settling dam.
- once settled, the solids are used as backfill for rehabilitation on ML1108 and ML7064.

The principal purpose of mining and treating the sand is to extract silica

sand for use in glass manufacturing. There is also extracted in the treatment process a by-product or tailing in the form of lower purity silica sand which [the appellant] refers to as ‘B Grade’ silica sand. B Grade silica sand has always been produced as a direct consequence of the production of Glass Grade silica sand.

[The appellant] had sold and wishes to continue selling B Grade silica sand for use in the construction industry in specialty white mortar and white renders.

The higher purity Glass Grade silica sand is a mineral within the meaning of [s 6\(1\)](#) of the [Mineral Resources Act](#). The Glass Grade silica sand may be lawfully sold.

There is no requirement for a permit for extraction or other permits and approvals under the [Integrated Planning Act](#) in respect of the mining, treatment and sale of Glass Grade silica sand.

Should the Court rule the B Grade silica sand is a ‘mineral’ within the meaning of [s 6](#) of the [Mineral Resources Act](#), and may be lawfully sold, there is no requirement for a permit for extraction or other permits and approvals under the [Integrated Planning Act](#) in respect of the mining, treatment and sale of B Grade silica sand.”

The primary Judge’s reasoning

Whether the B grade sand is “mined for use for its chemical properties” : the “undifferentiated mass” issue.

[13] On this issue the Judge concluded

“that the principal purpose for which the undifferentiated mass of silica sand is mined, namely for use in glass manufacturing, does not mean that all of the silica sand, including the by-product or B Grade silica sand that is not suitable for glass manufacturing, is a mineral. The B Grade silica sand that is stockpiled at the end of the applicant’s mining operation will be a ‘mineral’ if it is mined for use for its chemical properties and if [s 6\(3\)\(d\)\(i\)](#) does not apply to it. It does not qualify as a mineral because earlier in the mining operation it formed part of an undifferentiated mass

of silica sand that included Glass Grade silica sand.”

Whether the B grade sand is mined for use “for its chemical properties”

[14] There is no suggestion the term “chemical properties” has any accepted technical meaning. The parties nevertheless adduced a substantial body of evidence from mining and industrial experts on whether chemical composition is a chemical “property”, whether the colour is such a property, and whether such a characteristic depends on reactivity. Although he comprehensively covered it in his reasons, the Judge ultimately found that body of evidence of limited utility.

[15] On the question whether the colour of the B grade sand is a chemical property of that sand, His Honour expressed these conclusions:

“...the evidence is that the B Grade silica sand is used because of its colour, and its colour is a function of its chemical composition and purity...the features of chemical composition and chemical purity are not themselves ‘chemical properties’ within the meaning of s 6(3)(b). In any case, B Grade silica sand is not mined for use for these properties but for the property they produce, namely colour. ...colour being a function of the chemical composition of, and the level of impurities in, silica sand, is a physical property. In simple terms, the substance’s colour is a function of the physical mixture of silica and small quantities of minerals. This physical mixture gives the sand its colour, being a physical property. The sand is used in white mortars and white renders because of this physical property.

...

the colour of B Grade silica sand is not one of its ‘chemical properties’ within the meaning of ‘chemical properties’ in the context of s 6(3)(b) of the *MR Act*.”

[16] As to reactivity, His Honour acknowledged the view that “reactivity is an important manifestation of the chemical properties of a substance”. There is no material chemical reactivity between B grade silica sand and the other components of mortars and renders. In that composition, the sand amounts to what may be termed an “inert filler”.

[17] His Honour confronted and rejected a contention that that lack of chemical reactivity was itself a “chemical property” for which the B grade material was used. His approach to that issue has not been challenged on the appeal.

[18] I turn now to the grounds of appeal.

Ground 1: the Judge’s differential assessment of mining of the “undifferentiated mass”

[19] Counsel for the appellant submitted:

“...an unidentifiable portion of the ‘undifferentiated mass’ of silica sand mined for use in glass manufacturing does not lose its status as a ‘*mineral*’ under the [Mineral Resources Act 1989](#) simply because, after it is extracted and processed, it fails to meet the minimum standard for its use in glass manufacturing. Rather, the Appellant contends that B Grade silica sand retains its status as a ‘*mineral*’ by virtue of the fact that at the time of mining, it formed part of an ‘undifferentiated mass’ of sand mined for use for its chemical properties in the manufacture of glass.”

[20] All of the sand, embracing the glass grade sand and the B grade sand, is “mined” within the meaning of [s 6A](#), because it is won or extracted from the place where it occurs. The question the primary Judge answered in the negative was: is the component of B grade sand mined for its chemical properties?

[21] On the basis of the facts agreed before His Honour, the appellant knows that it is mining both glass grade and B grade sand. It must mine the latter in order to recover the former. It then turns the latter to a worthwhile commercial use.

[22] While the separation of the B grade from the glass grade occurs subsequently to the “dry mining” operation, it is not right to say that at the earlier time the appellant intends all of the sand to be used in the manufacture of glass. At that time, the appellant knows that a portion of the sand won will not be used in the manufacture of glass, but in the production of mortars and renders.

[23] That the B grade sand is only subsequently separated out does not mean, in terms of the “use” [\(s 6\(3\)\(b\)\)](#) intended at the time of extraction, all of the sand must be treated in the same way.

[24] In any case, the mining operation, as defined by s 6A of the Act, extends to the separation of the two grades of material. Sub-section (2) provides that the extraction includes the “separation of a mineral”: on His Honour’s approach the separation of the glass grade silica sand from the B grade silica sand and other material.

[25] The first ground of appeal is not sustainable.

Ground 2: that the Judge erred in holding the appellant “mined” the B grade sand for use in mortars and renders

[26] Counsel for the appellant characterized the recovery of the B grade sand as “unintended but inevitable”, and submitted that “[the appellant’s] knowledge that an unidentifiable portion of the silica sand might be used in white mortars and white renders is irrelevant, as such use is merely incidental to the appellant’s mining operation, which is primarily concerned with the production of glass grade silica sand”.

[27] The statement of facts agreed before His Honour states:

“The principal purpose of mining and treating the sand is to extract silica sand for use in glass manufacturing.

There is also extracted in the treatment process a by-product or tailing in the form of lower purity silica sand which Unimin refers to as “B Grade” silica sand.

B grade silica sand has always been produced as a direct consequence of the production of glass grade silica sand.

Unimin has sold and wishes to continue selling B Grade silica sand for use in the construction industry in specialty white mortar and white renders.”

[28] This ground, which is related to ground 1, ignores the reality that the appellant knows, when winning or extracting the sand, that some of it is B grade material. Its intention to use that sand, once it has been separated

out, in mortar and renders, is current throughout the mining operation, from the “dry mining” through to the separation process. It follows that at the time of the mining operation, the use intended, for so much of the sand as eventually will be identified as B grade, is in mortar and renders.

[29] The flaw in the appellant’s submission, as extracted above, is betrayed by its use of the word “primarily”.

Ground 3: challenge to Judge’s ruling that use in mortar and renders is not use for “chemical properties”

[30] Before coming to sub-grounds (a)-(c), I mention the appellant’s Counsel’s challenge to the Judge’s observation that much of the expert evidence was of limited usefulness, because of “the inclination of some of the experts to go beyond the proper province of expert opinion and to venture their own conclusion as to the meaning of ‘chemical properties’ in s 6(3)(b).”

[31] Counsel question the Judge’s deference to the principle that an expert witness should not venture an opinion on “a fact in issue or an ultimate issue”, and they referred to reports from some law reform commissions.

[32] Proceeding in a completely orthodox way, the Judge referred to *Minnesota Mining and Manufacturing Co v Beiersdorf (Australia) Ltd* [1980] HCA 9; (1980) 144 CLR 253, where Aickin J said (p 270):

“The court expert should not be asked questions which can only be decided by the court itself. For example it would be improper to ask a court expert to construe the specification or to state what he understood to be the meaning of particular words, unless they were in the view of the court used in an accepted technical meaning in a particular branch of science. In such a case the court expert if properly qualified would be able to include in his answers what he regarded as the technical meaning.”

[33] But in any event, as pointed out by Counsel for the respondent, the Judge did not express that limitation by reference to the evidence of any particular witness, and in his comprehensive reasons for judgment, the Judge gave extensive consideration to the evidence of the mining and industrial experts. There is no basis for concluding that he either ignored

relevant parts of that evidence, or took an unduly blinkered approach to it.

Sub-ground (a): the meaning of “chemical properties” under 6(3)(b)

[34] Counsel for the appellant challenged His Honour’s “interpreting ‘chemical properties’ in its statutory context as connoting something more than chemical composition, and suggestive of properties associated with reactivity and chemical change accords with the use of that term”, and the Judge’s reliance on “the usages and definitions referred to in appendix 2 to Dr Wilson’s report”.

[35] Dr Wilson is Senior Director, Technical Operations Branch, Department of Environment and Resource Management. He is a geologist and mining expert. Appendix 2 to his report is a collection of definitions of the term “chemical properties” drawn from a wide range of popularly accessible sources, including student textbooks, dictionaries and the Internet.

[36] While the appellant acknowledges that there is no “universally agreed” scientific definition of the term “chemical properties”, it contends, in effect, that the Judge was constrained to accept the views of experts called by it, which were to the effect that “chemical properties” include chemical composition, purity and transparency. Notwithstanding criticism of His Honour’s recourse to the material in appendix 2 to Dr Wilson’s report, the appellant relies itself on a Macquarie Dictionary definition: that “chemical property” includes “a statement of (the) composition” of a substance – apropos His Honour’s conclusion that colour is a function of chemical composition.

[37] Counsel refer to comments by other witnesses (Professor Frost and Mr Haig) about the rather “simplistic” and “very basic” definitions offered by Dr Wilson; engage in a comparison of the various witnesses’ qualifications; and criticize His Honour’s reasons for not sufficiently articulating why he rejected the opinion of the more qualified of them.

[38] A careful reading of the reasons for judgment shows that the Judge did not “accept” or “reject” any of the supposedly expert witnesses’ definitions. He was concerned to emphasize that because there is no accepted technical meaning for the term “chemical property”, the view of

an expert on the ultimate issue he had to confront, the meaning of the term in the statute, was irrelevant and inadmissible, although the expert reports could serve “as vehicles to debate” the question. And that is precisely how the Judge used the views of those witnesses, that is, to prompt or spark his own comprehensive consideration of what the term should be taken to mean when used in the statute.

[39] These features seem to have influenced His Honour’s consideration substantially and critically:

- “an expansive view of “chemical properties” as including chemical composition has the consequence that a wide range of physical properties, including colour, purity and grain size, are “chemical properties”;
- an expansive interpretation of “chemical properties” so as to include chemical composition, colour and degree of reactivity would come close to making the word “chemical” in s 6(3)(b) redundant;
- the term “chemical properties” was used rather than “chemical composition”, “physical properties” or “properties”; and
- the argument that “use for its chemical properties” connotes chemical reactivity or change has much to commend it.”

But it should be clear that I have selected those few from a discussion in the reasons for judgment which extends to as many as 16 foolscap pages. The extent of the Judge’s consideration is commensurate with the carefulness he apparently brought to bear.

[40] As I have said, the appellant contends that the Judge was constrained to adopt the definition proffered by its experts. That flies in the face of the acknowledgement that there is no accepted technical meaning for the term. His Honour made reasonable use of the evidence, while rightly excluding it as a determinant of the relevant meaning. He used it simply to inform his own independent determination of what the legislature meant by its use of the term in the statute.

[41] The Judge’s ultimate conclusion was that “chemical properties” within the meaning of s 6(3) are properties which contribute at least to the reactivity of the material with other materials, not extending to purely physical characteristics such as colour – albeit colour is a function of chemical composition. That is a reasonable construction of the term,

reached by orthodox means.

Sub-ground (b): whether “chemical properties” includes chemical composition, purity and transparency

[42] Counsel for the appellant first challenged His Honour’s failure to adopt the definitions proffered by the appellant’s experts, a matter covered above.

[43] Counsel additionally submitted that His Honour erred in concluding that the purity of the sand is not a chemical property: because the only difference between glass grade silica sand, which is a “mineral” within the meaning of the Act, and B grade silica sand, rests in their comparative purity, they should be approached similarly.

[44] His Honour said this:

“It is difficult to regard the sand’s purity as a ‘chemical property’ for the purpose of s 6(3)(b). The minerals or other substances that might be described as impurities, and which may affect its colour if present in large quantities, are capable of being separated physically from the silica without the need for a reaction. Their presence affects the purity of the silica sand, or what Professor Frost refers to as its ‘chemical purity’. According to his definition of ‘chemical purity’, the presence (or absence) of these impurities is a physical property. This would also seem to accord with ordinary usage of such terms.

It seems improbable that whether or not silica sand is a mineral should depend on the purity or chemical purity of the sand. Such an approach begs questions such as whether a sand deposit that is mined and found to have a 98% purity qualifies as a mineral, whereas one with 95% would not. Purity in this context is a relative concept, and it is unlikely that the classification of silica sand as a mineral should depend on its having a certain percentage purity. The statute contains no such quantitative qualification, and whether or not silica sand qualifies as a mineral under s 6(3)(b) should not depend on whether a particular deposit, once mined, or after processing, has a certain percentage purity.

In circumstances in which the chemical composition of silica sand can be

altered by the removal of minerals through ‘benefication processes’, its chemical composition is related to its chemical purity. For the same reasons that silica sand with a certain purity does not thereby qualify as a mineral, silica sand with a certain ‘chemical composition’ should not thereby qualify as a mineral, whether it consists of 99% silica or some lesser percentage. Qualification as a mineral depends on use for its chemical properties, not the possession of a certain level of purity.”

[45] It is not correct to say that the only relevant difference between the two grades of sand concerns purity. The relevant difference for present purposes concerns usability. The higher grade sand can be used in the production of glass, a process ordinarily involving chemical reactions. (His Honour referred to evidence from an industrial chemist, Mr Robertson, that “The North Stradbroke Island silica sand is chemically reactive in glass making and chemically unreactive in cement based white mortars”. See also para 38 of Dr Wilson’s report of 27 March 2008.) The lower grade sand can be used only as an inert additive in producing mortar and renders. The former grade of sand is used for its chemical properties, whereas the latter is used for its mere physical property, being its colour.

[46] His Honour’s reasoning was in my respectful view correct.

Sub-ground (c): whether “chemical properties” in s 6(3) are properties which must contribute to reactivity or change

[47] Counsel for the appellant tie their challenge to His Honour’s view, to evidence from the appellant’s expert Mr Haig that “A Grade Silica Sand could conceivably be processed to produce glass” in a way which would not involve a chemical reaction.

[48] In one of his reports, Mr Haig said:

“A Grade Silica Sand could be conceivably be processed to produce glass in two ways.

The first, used to manufacture soda glass, Pyrex and similar silicate glasses involves reaction with sodium carbonate and other substances depending on the formulation to be achieved. The second involves no chemical reaction but involves melting at high temperature to produce fused silica

glass. Fused silica glass is used in such critical industries as telecommunications where it is used as the optical fibre in cables, in lighting as the glass for quartz halogen bulbs, in UV transparent optical components in microscopes and other instruments used in pathology and biology labs, and in specialty high temperature components in steelmaking and the chemical industries.”

[49] The facts placed by agreement before the primary Judge do not limit the appellant’s intended use of extracted A grade silica sand to production of “fused silica glass”. The contemplated use is use generally in the production of glass, which ordinarily involves chemical reaction. Hence the intended use is use for the chemical properties of the higher grade sand.

Ground 4: an unduly expansive construction of an ambiguous term?

[50] Counsel for the appellant submitted that the term “chemical properties”, as used in s6(3), is ambiguous, and that it should therefore be construed favourably to “those who are to benefit from the legislation”, namely, the holders of mining tenements. They submitted that a construction which will facilitate, rather than limit, incentives to mine should be adopted, presumably on the basis that the need to secure environmental permits, authorities and the like amounts to a disincentive.

[51] As to whether ambiguity attends the term “chemical properties” where used in s6(3), difficulty in construction does not necessarily evidence ambiguity. Notwithstanding His Honour’s extensive precedent analysis, his ultimate conclusion that “chemical properties” in s 6(3) connotes reactivity and not purely physical characteristics such as colour, is at once compelling.

[52] In any case, the intended beneficiaries of this legislation are not confined to miners. That may be gathered from the statement of its principal objectives, in s 2:

“2 Objectives of Act

The principal objectives of this Act are to –

- (a) encourage and facilitate prospecting and exploring for and mining of minerals;
- (b) enhance knowledge of the mineral resources of the State;
- (c) minimise land use conflict with respect to prospecting, exploring and mining;
- (d) encourage environmental responsibility in prospecting, exploring and mining;
- (e) ensure an appropriate financial return to the State from mining;
- (f) provide an administrative framework to expedite and regulate prospecting and exploring for and mining of minerals;
- (g) encourage responsible land care management in prospecting, exploring and mining.”

[53] While paragraphs (a) and (f) favour the appellant’s contention, paragraphs (d), (e) and (g) tend the other way.

[54] This ground of appeal cannot be sustained.

Appellant’s written submissions in reply

[55] Counsel for the appellant refer here to the environmental authority issued by the respondent in relation to mining lease 1108, which imposes conditions for the protection of the environment, an authority which does not restrict which minerals can be mined.

[56] That does not bear on how the term “mineral” should be construed where it appears in this legislation. Neither does the absence of evidence, referred to in the submissions, of any breach of the authority or any environmental harm, matters impermissibly first agitated on appeal.

[57] Counsel also refer to the content of an “environmental compliance audit report”, prepared for the respondent in relation to the operation of the appellant’s predecessor, which says:

“ACI Operations Pty Ltd will mine in accordance with all statutory requirements applicable to the Project leases.

ACI produces some silica sand for specialised cement manufacture in the construction industry. This material is regarded as a mineral under the [Mineral Resources Act](#) and ACI does not require an Extractive Industry Permit (from Redland Shire Council) or Environmental Authority ([Environmental Protection Act](#)) for production and sale of this material.”

That expression of opinion is likewise irrelevant to the question how this statute should be construed.

[58] Counsel referred, finally, to the respondent’s acceptance of royalty payments in respect of both grades of sand. Royalties may be collected in respect of “minerals”. Any such inconsistency is irrelevant to the true construction of the legislation.

Orders

[59] None of the grounds of appeal has been established.

[60] The appeal should be dismissed, with costs including any reserved costs to be assessed.

[61] CHESTERMAN JA: I agree with the Chief Justice.

[62] ATKINSON J: I agree with the orders proposed by the Chief Justice and with his Honour’s reasons.