

Case study of the Donnybrook sand mine

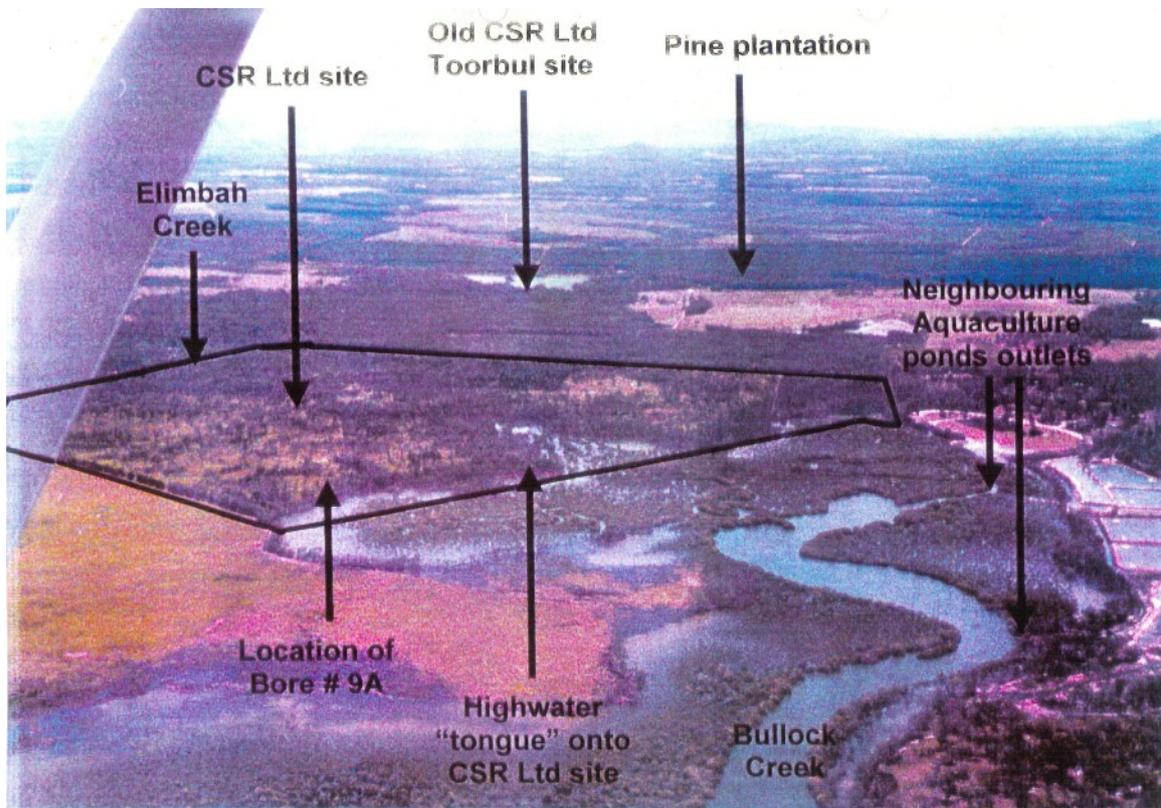
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Introduction

The Donnybrook sand mine provides an example of a developer appeal in the Queensland Planning and Environment Court and a referral under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). The court case involving the sand mine is reported as *CSR Ltd v Caboolture Shire Council & Ors* [2001] QPE 013; [2001] QPELR 398.¹

The case involved a large sand mine on a coastal floodplain in South East Queensland adjacent to the Moreton Bay Ramsar Wetland. The rough dimensions of the excavation for the sand mine were 1km long by 400m wide by 18m deep. It was originally proposed by CSR Ltd and expected to operate for 30 years. Two lakes, surrounded by bund walls of 2m, will eventually be formed between which a floodway will be constructed to permit flood waters to pass across the site. Aerial photographs and maps of the site are shown on the following pages.

Aerial photograph of Donnybrook sand mine site, Bullock Creek and neighbouring catchment at high tide on 30/1/2002²

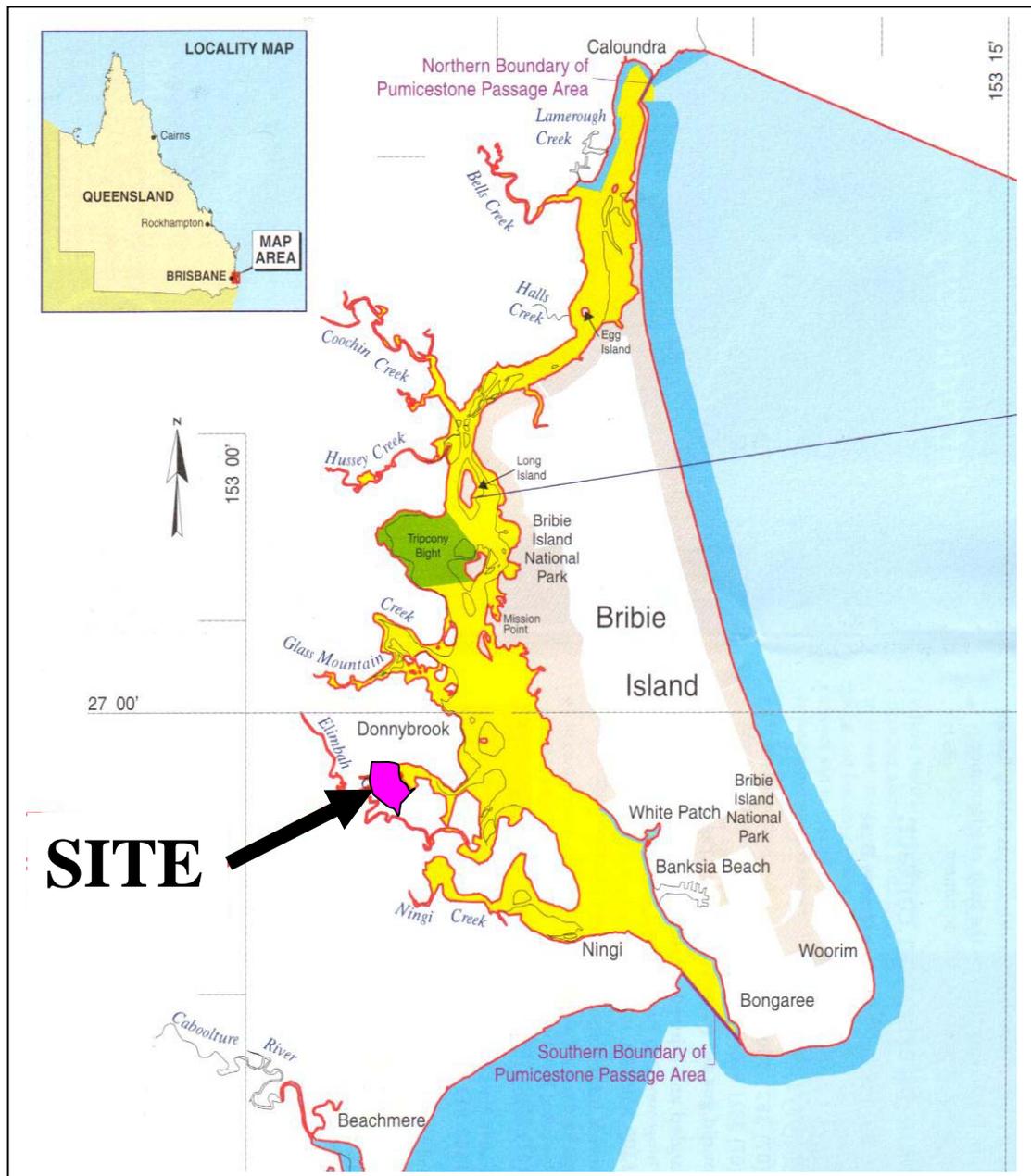


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¹ Available at <http://www.courts.qld.gov.au/qjudgment/QPE%202001/pe01-013.pdf> (viewed 20/1/06). The author was the counsel for a community group opposed to the mine in this case.

² Photograph by Rob King, 30/1/2002 (used with permission).

**Location map of the Donnybrook sand mine adjacent to the
Moreton Bay Marine Park and Ramsar Wetland³**



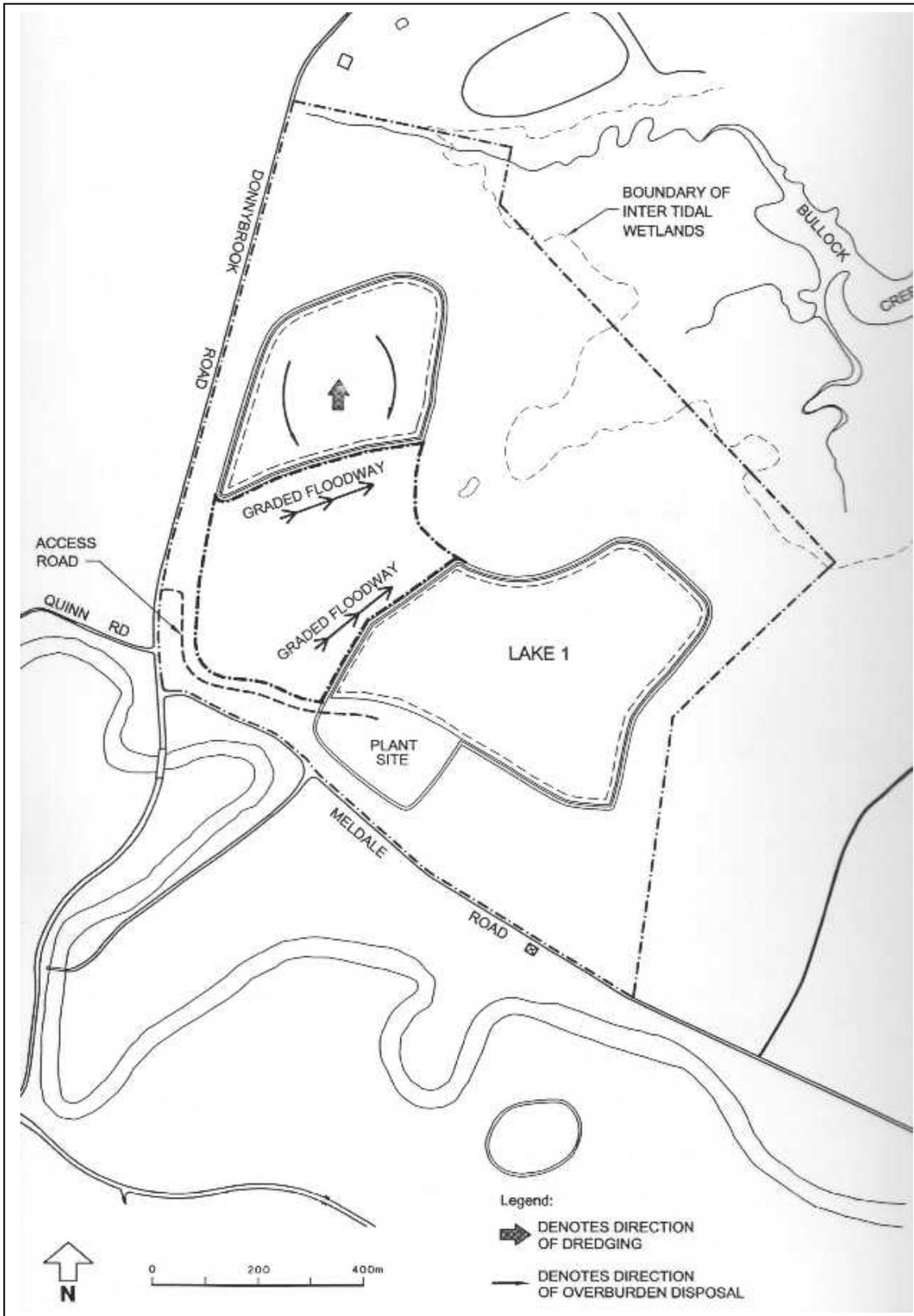
³ Queensland Parks and Wildlife Service, *Moreton Bay Marine Park - Introductory Guide* (QPWS, Brisbane, August 1998). The red line on the map indicates the high water mark, which forms the boundary of the marine park and Ramsar wetland.

Aerial photograph of Donnybrook sand mine and adjacent wetland area⁴



⁴ Brown & Root, *Proposed Extractive Industry Operations at Donnybrook – Acid Sulphate Soil Management Plan* (unpublished report, 6 September 2000), Figure 2.5. Note: both creeks shown, Bullock Creek and Elimbah Creek, are part of the Moreton Bay Ramsar Wetland.

Map of Donnybrook sand mine showing limit of extraction and floodway⁵



⁵ Brown & Root, n 4, Figure 3.6.

Development application refused by local government

In 1994 CSR Ltd applied for planning consent for the sand mine under the *Local Government (Planning and Environment) Act 1990* (Qld). It was publicly advertised and 230 objections and a petition signed by 3319 local residents were received against the proposal. On 3 August 1999 the Caboolture Shire Council refused the application in a 6:0 vote of councillors.

Appeal succeeds in the Planning and Environment Court

CSR Ltd appealed the decision to refuse the sand mine to the Planning and Environment Court. The appeal was heard by Quirk DCJ in September 2000.

Under the relevant local government planning scheme, the land on which the mine was proposed was included in the Rural Zone in which an extractive industry was a permissible use subject to having acceptable environmental impacts. The site was adjacent to Pumicestone Passage which was part of the Moreton Bay Ramsar Wetland and protected as a fish habitat area and marine park under the *Fisheries Act 1994* (Qld) and *Marine Parks Act 1982* (Qld).

A principal issue in the court case was the potential environmental impacts of the mine. The soil chemistry of the site, containing acid sulphate soils and heavy metals such as iron, and the complex hydrology of the area created a cocktail of potential ecological impacts. Because of the need to continue allowing for flood waters to pass across the mine site, the proposal involved the construction of a floodway across the excavated mine pit. The floodway is shown on the site map on the preceding page. The floodway was proposed to be constructed of the waste slurry from the mine.

In allowing the proposed sand mine to proceed, Quirk DCJ said:

[13] The importance of protecting water quality in Pumicestone Passage and adjoining waterways was not an issue in the case. Various treaties, Commonwealth and State legislation and references in the [local government's] relevant planning documents confirm this importance. These measures are not however support for any unjustified embargo on development of privately owned land which otherwise conforms with relevant planning provisions. However it was accepted at the outset that the [developer] carried an onus of showing, on the balance of probabilities, that the proposal would not result in any unreasonable impact on the water quality in question.

Quirk DCJ summarised the environmental and civil engineering evidence presented in the case at [15]-[59]. This passage is too extensive to quote in full. His Honour's approach to the evidence of the threat to the area's waterways is sufficient to show how he assessed the potential environmental impacts of the proposed action:

Threat to area's waterways

...

[15] An appropriately qualified expert, Dr Thorogood, made a detailed assessment of the relevant characteristics of the adjacent waterways on the appellant's behalf. He concluded that the proposed development was unlikely to result in any change to the flora and fauna of the adjacent inter-tidal lands of Bullock Creek and the Pummicestone Passage, or to effect the livestock of the Donnybrook Prawn Farm (which is a relatively short distance to the north across Bullock Creek) in any way.

[16] He also concluded that the endangered species such as dugong and green turtle and critical RAMSAR habitat would not be threatened by the proposed development and recreational commercial fisheries would not be affected. It has to be said that Dr Thorogood assumed that ... the proposal could be controlled in the manner detailed by

experts in other fields. The results of his work are found in Exhibit 19 and he pointed out that we are dealing here with an estuarine system with a saline environment. For reasons which he explained, these systems have a level of resilience greater than fresh water systems and this provides an added safeguard

[17] An important feature of this case is that the proposal will not itself introduce contaminants onto the site. The matters of concern to which the respondents' experts drew attention relate to the potential for the release of acidic runoff (as a result of exposure of acid sulphate soils) and metallic ions. These are presently there in an insoluble form that has the potential to convert to solutes which would be capable of movement from the site via surface or ground water runoff.

[18] The importance of the containment of these materials was recognised by all and was the subject of extensive evidence in the appeal. Dr Pillsworth (a consultant to the council) did not really make a direct attack on the views expressed by Dr Thorogood. His concerns appeared to follow a lack of confidence in the views expressed by other experts called by the appellant.

[19] An important element of the proposal is that soluble potential contaminants will be contained in the ponds that will be the working areas for the extractive process and will remain on completion of the operation. It was therefore important in the case to explore ways in which these contaminants, in solution, might possibly escape the confines of the ponds and their bunding. ...

Quirk DCJ considered other potential environmental impacts of the sand mine in a similar way and rejected the potential for adverse impacts based on the scientific evidence presented to him.⁶ After dealing with the town planning issues and question of need for the development, his Honour concluded:

[78] The matter was difficult and complex in a technical sense. However the appellant's case was thoroughly prepared and carefully presented. On the whole of the evidence I am satisfied that the onus of showing that the application was one that should be approved has been discharged. The appeal will be allowed but, at this point, adjourned to allow formulation of appropriate conditions for approval against the background of the evidence given at the hearing.

Referral under the EPBC Act

After its approval by the Queensland Planning and Environment Court, the sand mine was referred under the EPBC Act (EPBC 2001/239). The mine was determined to be a controlled action and its complex hydrological impacts were subject to four years of assessment under the EPBC Act (from 2001 until 2005).

The scientific complexity of potential impacts of the sand mine on groundwater led to the Commonwealth (DEH) engaging two independent consultants to review the information supplied by the proponent. The second review, by Dr Trevor Ward, summarised the information provided by the proponent as follows:⁷

Overall, I consider that many of the statements in the assessment documentation convey an impression of certainty surrounding the groundwater issue, but these are not well supported. The possibility of pond groundwater reaching the creek or the wetland, the dependency of the risk from the operation on pond water quality management, and the modeling uncertainties should be better recognised.

⁶ Flooding was considered at [20]-[24]; geotechnical stability of the floodway at [25]-[30]; acid sulphate soils at [31]-[33]; surface water quality at [33]-[36]; groundwater at [37]-[50]; the Precautionary Principle at [51]-[57]; and the threat to local fauna at [58]-[59].

⁷ Ward TJ, "Reviewer's Report: Review of Environment Assessment: Donnybrook Sand Extraction Operation, Donnybrook, Queensland (EPBC 2001/329)" (unpublished report by Greenward Consulting, Perth, 2 November 2004), p 7.

The soil chemistry of the site has high concentrations of iron and one of the most significant potential impacts of the sand mine is the release of that iron through the groundwater into the adjacent wetland. The availability of iron has been linked to toxic blooms of the cyanobacterium *Lyngbya majuscula* in the Moreton Bay Ramsar Wetland, which have increased in frequency and severity over the past decade with serious ecological consequences.⁸ Dr Ward described the uncertainty associated with this impact from the sand mine as follows:⁹

Elevated Iron Levels

This is an area of considerable uncertainty, in the context of the movement of groundwater and the predictions about lack of impacts on Bullock Creek. Given the complexities of the site and the operations combined with the lack of predictive capacity for factors controlling *Lyngbya* blooms, I consider that this is an area of credible risk for the wetlands. ...

Dr Ward summarised his opinion and recommendations as follows:¹⁰

... The behaviour and interactions of the groundwater on the site, at various stages of the operation, have not been adequately considered by the proponent. Hence, impacts on the water quality that may reduce the ecological value of the adjacent wetlands for migratory waders are not comprehensively assessed and adequately predicted. ...

I conclude that there is a credible and more than negligible risk of impacts from the proposed development on the Ramsar wetlands and matters of national environmental significance (NES). These risks can probably be managed and controlled by the proponent, with appropriate safeguards, and I make a series of specific recommendations that are intended to ensure that such risks are appropriately management, and are supplemented with a system of fail-safe monitoring to protect the NES values of the adjacent wetlands. The recommendations build on the conditions imposed in the Queensland government development approval ... which is weak in several important areas. ...

Overall, I conclude that if the recommendations [I have made] are implemented, the proposed operation would be able to acceptably maintain a low risk to the Ramsar wetlands and the values of NES. Therefore, I consider that the Department may approve the proposal subject to these matters being satisfactorily addressed.

The Commonwealth Environment Minister accepted Dr Ward's recommendations and allowed the mine to proceed subject to considerably stricter monitoring conditions than imposed under the Queensland legislation.¹¹

Conclusion

This case study demonstrates that a major question for courts and government decision-makers is not necessarily what the environmental values of an area might be or whether they should be protected, but whether the development in question will cause any impact on those values. Development can be approved provided the potential for harm is regarded as sufficiently small to warrant approval being granted.

⁸ See Ahern KS, Udy JW and Pointon SM, "Investigating the potential for groundwater from different vegetation, soil and landuses to stimulate blooms of the cyanobacterium, *Lyngbya majuscula*, in coastal waters" (2006) *57 Marine and Freshwater Research* 177-186; Ahern KS, O'Neil JM, Udy JW and Albert S, "Effects of iron additions on filament growth and productivity of the cyanobacterium *Lyngbya majuscula*, in coastal waters" (2006) *57 Marine and Freshwater Research* 167-176; Garcia R and Johnstone RW, "Effects of *Lyngbya majuscula* (Cyanophyceae) blooms on sediment nutrients and meiofaunal assemblages in seagrass beds in Moreton Bay, Australia" (2006) *57 Marine and Freshwater Research* 155-165.

⁹ Ward, n 7, pp 8-9.

¹⁰ Ward, n 7, p 4.

¹¹ For details of the approval see the EPBC Act website at: <http://www.deh.gov.au/cgi-bin/epbc/> and follow links to Public Notices section, then search for EPBC 2001/329 (viewed 20/3/06).