EAST END MINE ACTION GROUP INC
Mt Larcom Queensland 4695

SUBMISSION TO PRODUCTIVITY COMMISSION DISCUSSION DRAFT ON

REVIEW OF NATIONAL COMPETITION POLICY REFORMS

8 November 2004

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Review of National Competition Policy Arrangements
Productivity Commission
PO Box 80
BELCONNEN ACT 2616

Dear Sir/Madam,

Thank you for supplying EEMAG with a copy of your draft Report. EEMAG members support the concept and urgency of advancing a comprehensive national Water Reform agenda.

We have received a letter dated 28 October 2004 from the Minister for Natural Resources and Mines in response to the Federally funded $100,000 Mt Larcom Community Restoration Project (CRP) Report of October 2003.

Despite EEMAG's Ministerial contact and follow-up representations in March 2004, the Minister did **not** offer a dispute-resolution process to resolve the nine (9) year old dispute over claims mine dewatering has seriously depleted water supplies in more than 60 sq km of agricultural land, which is a core issue in the CRP Report. The CRP Report's 'Other recommendations that challenge the performance and credibility of Government agencies and officers…' met with no response from the Minister. *(Copy of Mines Minister's letters 28 October 2004 and 7 Jan 2004 Attachment- 1.)*

In the absence of an appeal process or dispute-resolution mechanism to test claims of false benchmarking (as highlighted in the CRP Report) serious technical and administrative issues remain unanswered and uncorrected and may flow on unaltered into Water Reform to undermine its credibility.

NEED FOR AN ACCESSIBLE AND IMPARTIAL APPEALS OR DISPUTE RESOLUTION MECHANISM UNDER WATER REFORM TO BE ATTACHED TO NATIONAL COMPETITION/NATIONAL WATER INITIATIVE PAYMENTS TO THE STATES.

EEMAG members wish to submit further evidence that Water Reform policies/processes are fundamentally inadequate due to the lack of an accessible and impartial appeals and dispute-resolution mechanism, and that this lack facilitates the use of dishonest science and false benchmarking to cheat landholders of their right to a water supply. In such cases, an appeals process is essential to ensuring equity and probity in Water Reform. We respectfully request the Productivity Commission regard this as a priority and, in your Final Report include recommendations for an accessible and impartial appeals and dispute-resolution mechanism to be attached to the process for National Competition Policy payments to the States.

In situations (such as EEMAG's) where the State is in conflict with landholders / community concerning the landholder's or community's access or entitlement, and where there is no appeals process on [Queensland] decisions, the Federal process demonstrably accepts the ruling of the State regardless of the weight of evidence or merit of claims to the contrary. This outcome discriminates against parties who are at risk of becoming permanently disenfranchised.

It is imperative that an appeal process be introduced to test evidence and/or allegations that a decision(s) administered by the State does not comply with the spirit, principles and objectives of Water Reform. Grounds of appeal should constitute valid evidence of official reliance upon bad science, incorrect or inadequate information, false benchmarking and/or decisions lacking in justice. The panel should not pre-occupy themselves with blame apportionment.

The appeal process should be conducted by a panel independent of the State and Commonwealth with powers to produce a finding. The process should be informal with an emphasis on practical and technical evidence rather than legal procedure or argument. Final determination on should rest with the State (in keeping with Constitutional rights) but the **Panel should have the capacity to recommend mediation and withholding of Federal payments** unless matters outstanding are resolved to reasonable satisfaction within an acceptable timeframe.

LEGAL OPINION ON "NATURAL JUSTICE"

Recently obtained legal advice leads us to conclude the term 'Natural Justice' does not ensure probity and/or equity in administrative decisions. A Barrister's opinion (attached confidential) is that, under Judicial Review, the Court would very likely decide the term 'Natural Justice' does **not** require a DNR&M hydrologist (acting as arbiter) to provide a proper and honest evaluation, i.e. a meritorious report of all the relevant information/reports when undertaking an assessment of the mine's impacts on a landholder's water supply - only that the Officer comply with the correct administrative procedures and accept the submitted reports – but not necessarily consider or act on all the reports. *(Barrister's Advice Confidential – Attachment 38.)*

EVIDENCE THAT DNR&M'S ASSESSMENT OF EFFECTS OF MINE DEWATERING ON BRACEWELL IS BASED ON MANIPULATED SCIENCE. DNR&M'S ASSESSMENT IS FUNDAMENTAL TO WATER REFORM PRINCIPLES AND SUSTAINABLE WATER MANAGEMENT.

On 12 August 2004, DNR&M provided an Assessment (attached) of a Bracewell landholder's claim under Special Condition 4 for an alternative water supply from Cement Australia. FOI documentation suggests the Assessment (but not the documents submitted with the application) was peer reviewed by DNR&M and that recommendations for inclusion in the DNR&M assessment were provided by the Head of Hydrology. *(DNR&M Assessment of 12 August 2004 - Attachment 2.)*

Because of the hydrology associated with the Weir 2 connection between Bracewell and East End aquifers, the landholder's application was in essence, a test case for the Bracewell district as the water levels on properties in the highly permeable Bracewell limestone aquifer act in concert rather than in isolation. DNR&M engaged in selective consideration of the available and submitted data. Despite the weight of evidence, including a great deal of expert opinion in the landholder's favour (much of which was not considered nor accorded due regard) DNR&M ruled that mine-induced water depletion has not extended into Bracewell.

This particular judgement affects not only the applicant family but that section of the Bracewell community with properties connected to the alluvium or limestone aquifers. Landholders are reliant on DNR&M's interpretation to differentiate between drought and mine use, to determine landholder entitlement and for sustainable management of the resource. DNR&M are charged with the responsibility to set accurate benchmarks on the level of stress to Bracewell's (and East End's) **surface and groundwater** system. Allegedly the resource has been depleted of storage by unrestrained mine pit pumping over the last 25 years and **Cement Australia's current license of up to 10 megalitre a day amounts to an unsustainable, over-allocation of the resource.** (Pit water has been discharged downstream as surface flow waste since November 1979; the company's only practical use of the water is for dust suppression.)

If the water loss and deterioration of quality that is agreed to exist within the East End and Bracewell limestone aquifer is caused mainly by drought and landholder use (as DNR&M maintains) the aquifer should have/will recover. (Current landholder usage is reduced to about one third of what was sustainable use in 1980.) (Refer Attachment 17 Mt Larcom CRP Report on Irrigation usage attached.) On the other hand, if that agreed loss of level and quality is principally a consequence of artificial drawdown due to mine dewatering, as concluded by independent experts, then the unprecedented failure of the aquifer to recover over the last decade will be perpetuated and the bulk of the district's accessible water resources will be permanently allocated to the mine. *(Copy of Irrigation Usage Report- Attachment 3.)*

There has been long history of allegations against DNR&M, including claims of conflict of interest, unjustified rejection of relevant information, unjustified rejection of five (5) independent technical experts' reports and serious anomalies and inaccuracies in DNR&M's performance. Selective use of data and evidence of numerous inaccuracies in the recent DNR&M's assessment adds weight to these claims.

EEMAG members respectfully request the Commission consider the evidence that DNR&M has set false benchmarks based on serious inaccuracies and manipulated science. We are alleging that these false benchmarks;

(a) fix the basis for State decisions on Water Reform in our district; and
(b) are fundamental to and inseparable from the broader issues of institutional arrangements for administration of Water Reform;
(c) facilitate landholders' water supplies to be largely allocated to a mining company, thus allowing the Company to largely avoid its obligations to affected landholders as a substantial financial benefit to the Company; and
(d) facilitate the company's mine pit dewatering to be inappropriately accorded "Ecologically Sustainable Development" status; and
(e) exempt the Company from any requirement to sustainably manage (i.e. repair or avoid) the mine's cumulative and continuous depletion of the district's ground and surface water resource systems; and
(f) facilitate the curtailment of landholders' access to the essential natural water supplies in an area of more than 60 square kilometres of agricultural land thereby reducing rural productivity, potential for diversity and land values; and
(g) 'cover-up' the overwhelming evidence that the company's dewatering operations have caused widespread "Serious Environmental Harm"; and
(h) are fundamental to EEMAG's claims that Queensland Government's exemption of Cement Australia's pit dewatering of up to 10 megalitres per day (which then becomes surface water) from Water Reform is administratively wrong and contrary to the principles and objectives of Water Reform and Ecologically Sustainable Development; and
(i) emphasises the need for an Appeals Process under National arrangements so that bad science and inappropriate trade-offs are **not** accepted or endorsed for Water Reform as a matter of course.

We understand that the Queensland Government exempted all Special Agreement Act Mines from compliance with Water Reform. However QCL's Special Agreement Act expired on 31 July 1997. FOI confirms EPA received Crown Law advice in 2001 that the project no longer has special agreement act status.

FOI of EPA Memorandum dated 22 October 2001, on Page 2 States, quote:

'5. *Crown Law recently advised that this project **does not** come under a special agreement act, and is therefore subject to the new legislation.…'* End of quote. (My bold.)

(Copy of FOI of EPA Memorandum 22 October 2001 Attachment 4.)

SOME OF DNR&M'S ALLEGED INACCURACIES are;

- **Inaccurately Categorising Limestone Deposits that exhibit classical Karst Type (2) Features as Karst Type (1);**

An honest appraisal of local limestone bodies that exhibit Karst Type (2) features is **a key issue** for proper administration of Water Reform principles and objectives. Measurement of perennial surface stream flow in a Karst (2) system provides an accurate gauge of the health not only of the perennial surface stream flow but also of groundwater as the perennial/sinking streams are interconnected with and sustained by groundwater.

DNR&M's recent Assessment, Section 4.0 Conduit Connection to East End, states in regard to local karst development, quote:

…..'karst may be divided into two groups (1) surficial features that do not extend far below the surface; and (2) karst features that extend well below the surface and affect the circulation of the water below. The karst features at East End and Bracewell **generally fit into type (1) karst.**' (My bold.) and,

'Another obvious karst feature in the area is sinkholes. The sinkholes apparent are generally the surface expression of a vertical shaft. On inspection it is found that most of the sinkholes are terminated by earth floors at fairly shallow depths, usually less than 3 m below the surface.' End of quote *(Copy of DNR&M Assessment- Attachment 2.)*

A proper on-the-ground investigation would confirm that the above DNR&M statement is grossly inaccurate.

Two (2) of Australia's leading limestone/karst hydrologists have visited the district and inspected the sink-holes, recharge sites, sinking streams, caves etc.

There is evidence that DNR&M has declined to [properly] investigate the extent of local karst development type (2), has disregarded the professional assessments of two (2) leading Australian limestone/karst hydrologists, international literature on karst development and additionally the professional assessments of two (2) other independent experts, and refuses to recognise that local limestone deposits exhibit classical features of karst development type (2).

We believe one of the reasons for DNR&M's position is that in 1996 DPI Water Resources (now DNR&M) **required** QCL to develop a groundwater model to assess the East End mine's impacts. (FOI of Record of a preliminary meeting on 21 November 1995 with a dot point list of agreements records on Page 2, quote: '[Brisbane DPI Water Resources Officer] suggested there was sufficient data to enable a regional model of groundwater to be developed….' End of quote. EEMAG delegates who attended the 1996 meeting that determined QCL would undertake a groundwater model reported that the resident hydrologist for QCL from 1975 - 1997, in light of his own experience (including attempts at numerical modelling of the local aquifer) spoke against modelling. *(FOI of Record of preliminary Meeting 21 November 1995- Attachment 5)*

One of Australia's leading limestone hydrologists advised the Mines Minister on 18 October 2002, quote; **'The features of karst aquifers are such that the application of standard modelling techniques and assumptions, as used by the mine owners and their consultants are invalid to assess underground flow rates in such limestones.'** (My bold) *(Copy of Letter dated 18 October 2002 Attachment 6.)*

- **Current International modelling data requirements for Karst is available on the Internet. Although the East End Mine is often described as one of the best monitored mines in Australia, the bulk of the available data requirements listed below are not even remotely available.** *(Copy of Karst modelling information from Internet Attachment 7.)*

In a presentation scheduled for the Denver Annual Meeting (7-10 November 2004) Paper No 10 -13 entitled, "CASE STUDIES FROM A LONG-TERM KARST RESEARCH SITE ILLUSTRATING DATA REQUIREMENTS NECESSARY TO ADEQUATELY CHARACTERISE AND REPRESENT FLOW IN KARST AQUIFERS AT MEANINGFUL SCALES," quote:

'Case studies drawn from more than 10 projects in the Savoy Experimental Watershed (SEW) conducted during the last 7 years provide an understanding of data requirements that are necessary to fully characterize karst ground-water flow systems. Interpretation of test results are increasing our knowledge not only about the detailed hydrology of the SEW, but also provide insight into minimal temporal and spatial data needs necessary to elucidate processes in this and similar settings.'

'The SEW is a long-term field research facility of 1250 hectares owned by the University of Arkansas, and shared with academic, state, and federal researchers. Such a long-term site provides an in-situ field laboratory that generates meaningful data for ground truth at varying scales, as well as recurrent testing for a wide variety of antecedent conditions. Based on work completed thus far, optimum data requirements necessary to adequately characterise karst aquifers include:-

1. continuous monitoring, including input stresses and output responses
2. sampling over the complete hydrologic cycle
3. evaluation and delineation of the entire flow system, including all boundaries, and valdose and epikarst determination
4. determination of flow directions and time of travel
5. water-quality determination
6. geochemical process identification
7. assessment and hydraulic attributes, both in 3-D and temporally
8. accurate water budget determinations.'

'**The list is daunting, yet without these data, we tend to oversimplify our models, with the results that our predictions are not accurate.'** End of quote (My bold) *(Copy of karst modelling information from Internet Attachment 7.)*

PHOTOS, MAPS, DOCUMENTATION AND REPORTS RE LOCAL KARST TYPE (2)

Map from QCL's August 1974 EIS by Oceanics Australia Pty Ltd showing five (5) limestone outcrops with caves. Attached is a copy of a Map of "Vegetation, Habitat and Caves" from the August 1974 Environmental Impact Study for QCL's proposed limestone quarries Mt Larcom-Bracewell Area. (*Map from QCL's 1974 EIS – Attachment 8.)*

Extract from the second Submission to the Mining Warden's Court at Gladstone in November 1975 presented by the University of Queensland Speleological Society regarding conservation of Bracewell caves. Members of the Speleological Society had visited and investigated the caves.

Quote: 'It is felt to be the duty of the University of Queensland Speleological Society to present information for the sake of the conservation of the public interest, particularly on the subjects on which the Society is expert; limestone caves, karst landforms, the limestone 'scrubs', and bats.'

Quote: ' Caves are so scarce to be automatically valuable. The Bracewell Caves are actually the number two area in Central Queensland, after the Rockhampton group, (Mt. Etna, etc.).'

Quote: 'Appendix 3:- Priority of cavernous outcrops for conservation proposals.

(1) Outcrop A- which contains the bat over-wintering site, and substantial cave numbers.
(2) Outcrop D- which contains two large caves, reported to the University of Queensland Speleological Society by the members of the now de-funct Brisbane Cave Group. The E.I.S. underrates the value of this outcrop.
(3) Outcrop B- particularly fine surface karst landforms, and one substantial cave.
(4) Area C- "The Lake" is a unique landform feature in this state. It may be difficult to preserve the hydrological environment from the effects of quarrying. Its outlet cave system could be a subs-tantial one.
(5) Area E' End of quote. (My bold.)

(Note: A farm in **upper Bracewell** that lies between the mine pit and the area of cavernous outcrops 'A' and 'B' lost perennial flow from the creek and lost irrigation supplies in early 1991, shortly after the 1990/91 flood rains ceased.)

(Extract from the Submission presented by the University of Queensland Speleological Society to the Mining Wardens Court at Gladstone in November 1975 – Attachment 9.)

Note: EEMAG members are reliably informed that there have been recent investigations of the Bracewell caves in cavernous outcrops "A" and "B", and that these caves are much more extensive that previously understood.

Photographs

- the somewhat innocuous looking sink-hole used for the May 2002 dye tracing trial accepting a continuous stream of run-off, estimated at 2.5 megalitres input over a 50 hour period during the February 2003 rainfall event. (Note: This sink-hole is about a kilometre from 'Outcrop D' and is within 'Area C' or 'The Lake'. The Bracewell Lake is mentioned in the Groundwater Resources Segment of the Mt Larcom CRP Report, on Page 35.)
- A cave entrance in lower Bracewell, referred to in 'Outcrop D'.
- A classical karst groundwater recharge site in Machine Creek bed referred to by a leading limestone hydrologist in his letter to the Minister for Mines dated 18 October 2002 (*Attachment 18)* documented on Page 10.

(Copy of photographs -Attachment 10.)

Photo of a solution channel at R.L. 20 metres A.H.D. in the QCL mine pit included in a 1988 Report.

Attached is a copy of Page 95 from "The Effect of Geological Structure on Groundwater Flow in a Mine in a Limestone Aquifer - Spring Semester 1988" –a thesis by the [son of QCL's initial groundwater Consultant].

Plate 5.4 **Groundwater Inflow through a Solution Channel shows**, quote:

'View from East End Mine Grid Ref. 4900N, 9570E looking east. Limestone bedding plane; Strike 315^{o}, Dip 85^{o} **Inflow point at R.L. 20 metres A.H.D.' (**My bold**.)**

The text on Page 95 states, quote; 'A pyroclastic bed acted as a barrier and prevented groundwater from flowing into the pit. **Removal of the pyroclastic bed exposed the limestone bedding plane and solution channelling. Groundwater in the aquifers is now free to drain.**' End of quote (My bold) *(Copy of Page 95 from 1988 Report- Attachment 11.)*

ASSESSMENTS OF LOCAL KARST AQUIFERS BY TWO (2) OF AUSTRALIA'S LEADING LIMESTONE HYDROLOGISTS

Mt Larcom CRP Report of October 2003 – The Ground Water Resources Segment by One of Australia's Leading Limestone Hydrologists, now retired from the Centre of Resource and Environmental Studies at The Australian National University.

On Page 28, Section 2.2.2. Limestone Hydrology, General Background states quote:

'All limestone areas are dominated by underground water flow but the presence of fissures of all kinds, enlarged by natural solution of the limestone over long periods of geological time, results in patterns of underground water movement that differ from those in other rock types. The solution action of water in some forms of limestone can lead to the development of 'karstic' features. The term 'karst' comes from a region of northern Yugoslavia where these distinctive features were first described over a century ago. These features include a paucity of surface flow, streams that flow intermittently and which have enlarged fissures present in the stream beds, the presence of sink holes down which flood water flow and, at the extreme, the formation of caves. Caves are evidence of conduit flow in earlier phases of the development of karst features, under present conditions these conduits are often left 'high and dry'. However, conduit flow continues but at depth with the conduits now full of water. It is stressed that conduit flow can occur in solutional fissures of very much smaller dimensions than 'caves' which are generally defined as sufficiently large to allow entry by humans!

The limestone terrain in the Mt Larcom area, and especially in the disputed Bracewell area, exhibits such karstic features in the surface terrain. These include stream flow sinking into fissures in limestone stream beds, the presence of sinkholes that are only activated in times of flood rains and evidence of (now dry) caves that indicate flow in major fissures in earlier times, i.e. before deeper conduits were solutionally enlarged.'

Page 27, Section 2.2.1. Introduction, states; quote:

'Attention is drawn to the shortcomings in the (EPA's Consultant's) Reports prepared for the Environmental Protection Agency of the Queensland Government and especially to the **lack of recognition that limestone aquifers have both slow and fast flow components. The former is amenable to the standard methods used for computer modelling of groundwater and**

the latter is not.' End of quote. **(**My bold.) *(Groundwater Resources Segment of Mt Larcom CRP Report- Attachment 12.)*

"The Karst Conundrum" by One of Australia's Leading Limestone Hydrologists, Published by the School of Anthropology Geography and Environmental Studies, The University of Melbourne

"The Karst Conundrum" (Attached) was authored by a Co-Director, Centre for Environmental Applied Hydrology, at The University of Melbourne. On Page 6, Box 2 documents the differences between a 'Normal' aquifer and a Karst aquifer and then states, quote:

'In the case of karst aquifers, the effect of the mine will depend on which and how many of the solution pipes in the rock are intercepted by the mine. Finding out how the aquifer behaves, and working out the details of the pipe network, is a time-consuming exercise which involves tracing water flow through the pipes. This is usually done using dyes…' (My bold)

On Page 7, the Karst Conundrum continues 'As explained above, dewatering of the mine brought into play another unique feature of karst landscapes, their unusual hydrogeology.'

'Hydrogeologists hired by Queensland Cement and by the government have applied the rules pertaining to 'normal' aquifers to determine the area affected by [the] pumping (or dewatering) of the mine. ……**While the mining company and the government hide behind inappropriate textbook science and standard groundwater models to defend their position,** ….' (My Bold) End of quote. *(Copy of The Karst Conundrum- Attachment 13.)*

Note: We understand that the DNR&M Hydrologist, who has had a long-term involvement in assessing the mine's impacts, is familiar with "The Karst Conundrum" article.

ASSESSMENT OF KARST TYPE (2) FEATURES BY ADDITIONAL TWO (2) INDEPENDENT HYDROLOGISTS

In July 1997 the Hydrologist hired by the East End Mine Community Liaison Group reported mine depletion as affecting more than 60 sq km and causing loss of perennial creek flows.

In his 1997 Report the CLG Hydrologist stated, quote:

'..**that karst activity, in the form of open channels and pipes, can be observed to quite deep levels within the open [mine] pit; within 5-10m of the base of the pit** and well above the pristine water table' End of Quote. (My bold) (A copy of the CLG Hydrologist 1997 Report is available. The above quote is included in the Mt Larcom CRP Report, Groundwater Resources Segment, on Page 30.)*(Copy of Groundwater Resources Segment of the Mt Larcom CRP Report -Attachment 12.)*

In a letter to the Mines Minister dated 25 October 2002, the CLG Hydrologist stated, quote

'In reality, limestone aquifers are composed of:

- hard rock which, for our purposes, can be considered impermeable;
- open, albeit sometimes tortuous, channels which are interconnected by the very nature of karst formation.

It is along these open channels that the groundwater flows occur and the capacity for large flows in limestone bodies has been adequately demonstrated in dam engineering.'

Page 2 continued:

'Further confirmation that the subject limestone bodies at Mt Larcom are rapid response aquifers comes from reports of two storm events in 1980-81, by [QCL's Consultant]. These storms produced upward kinks in the water table monitoring at the mine site, within a few days of the events.' End of quote. *(Copy of letter of 25 October 2002 - Attachment 14.)*

Technical Critique of recent DNR&M Assessment by former CLG Hydrologist dated 21 October 2004.

Quote from Summary:
'The Arbitration Review by [DNR&M Hydrologist] (undated) is remarkable for its selectivity of data and for its reliance on conjecture, casuistry and even misrepresentation when dealing with quantitative evidence of depletion of the Bracewell aquifer, as a result of the mining operations (pumping from open pit) at East End. **One is forced to conclude that the Arbitration reviewer is either incompetent or has written the document under political duress. In either event, one is further forced to conclude that the Queensland Government is involved in a conspiracy to defraud many landholders of the East End and Bracewell districts of the compensation entitlements owing to them under Special Lease condition 4, for the loss of a natural resource imposed on the environment by the East End mining operations.'** End of quote. (My bold) *(Copy of Technical Critique - Attachment 15.)*

Head of Department of Civil Engineering, The University of Queensland, Interim Conclusion from Proposed Study into Groundwater Impacts at Bracewell of August 1998

In the Interim Conclusions in the UniQuest August 1998 Report for EEMAG, the then Head of Civil Engineering at The University of Queensland concluded, quote:

'On the basis of the available evidence, it cannot be concluded that there is no effect of mine dewatering on the Bracewell aquifer, for the following reasons.'

1. Some connectivity between the aquifers in the vicinity of Weir 2 appears likely as indicated by the permeable material exposed by the excavation in early 1998.
2. In such a complicated aquifer system there is a distinct possibility of channels of relatively more permeable material linking the aquifers and **acting as confined flow conduits.'** (My bold.) End of quote.

The Professor has since confirmed his reference was to **karst** conduit flow in limestone.

(A copy of the UniQuest Report of August 1998 is available. The Interim Conclusion is quoted in the Groundwater Resources Segment of the Mt Larcom CRP Report on Page 31. *Groundwater Resources Segment of CRP Report is Attachment 12.)*

DYE TRACING TRIAL

- **DNR& M dismissed the of results of a dye-tracing trial at Bracewell that indicated a sink-hole/conduit link between Bracewell and the mine pit, and DNR&M subsequently refused to participate in or to support dye-tracing trials to identify connections between stressed water supplies and the mine pit. (Dye tracing trial results submitted, but ignored by the Arbiter, in application for Assessment of an alternative water supply.)**

On 9 May 2002, (under the direction of one of Australia's leading limestone hydrologists and international experts on dye tracing) 260 mls of Rhodamine WT dye was introduced into a sinkhole at the then dry Bracewell Lake, upstream of Weir 2. A water sample collected from the mine pit (about 5 kms from the injection site) by QCL staff on the 17th June 2002 (38 days later) was independently tested to show a concentration of Rhodamine of 20ppb, with later testing of the same day back-up sample also recording positive. This result was interpreted as indicating a direct underground link from the sink-hole to the mine. *(Copy of Dye Trial Report Attachment 16.)*

In response to this result, on 7 October 2002 the Mines Minister advised, "Regarding the dye test, I am informed that there are good reasons to believe that, while the tracing technique is well accepted, there are experimental flaws and possible sampling errors in the test, which invalidate your conclusion that there is a direct link between the Bracewell limestone aquifer and the mine.' *(Copy of Minister's letter dated 7 October 2002 - Attachment 17.)*

The leading limestone hydrologist wrote to the Minister on 18 October 2002, explaining karstic limestone flow and on Page 3 suggesting, 'I would be delighted if QCL or your Department, or a combination of both, would be willing to arrange with EEMAG and myself a repeat of this trace. **Alternatively a trace in Machine Creek where under current conditions of relatively high flow the dye would be injected at the location at which the stream now disappears into limestone bedrock in the stream bed.'** (My bold) *(Copy of limestone hydrologist's letter dated 18 October 2002- Attachment 18.)*

On 25 Nov 2002 the Minister responded, 'Most of the sinkholes in the area are choked off by silt and clay deposits a short distance from ground level. The evidence to date indicates that large conduit systems do not exist. **There are no significant cave systems developed in this area.'** (My bold)

And on Page 3, 'Having regard for the geology and the hydrology of the area in question it is unlikely that dye testing will add value to the weight of evidence that currently prevails. **Therefore your kind suggestion for my Department to participate in a co-operative tracer experiment which includes the East End Mine Action Group, Queensland Cement Limited and yourself is declined.'** (My Bold) End of quote. *(Copy of Minister's letter dated 25 Nov 2002 Attachment 19.)*

The limestone hydrologist in responding to the Mines Minister on 10 December 2002 stated 'I find your comment re 'engaging an independent professional organisation to conduct [any further] dye testing' to be out of place and bordering on the offensive. I say that because I was the consultant and **I would suggest that I have more experience in conducting such dye tests than anyone else in Australia.'** (My bold)

On Page 2 the independent consultant advised that he planned to meet with the DNR&M Hydrologist to discuss technical matters with which he disagreed [conduit flow in local

limestone bodies] during on his visit to Mt Larcom on 14-17 December, 2002 (prior to publication of the Mt Larcom CRP Report of October 2003) and 'that neither QCL nor your letters make any reference to worldwide literature or experience on this matter.'

On Page 3 he stated, '**Given your acknowledgement that modelling does not account for local effects can I ask you to reconsider your decision not to proceed with tracing. The local area associated with Weir 2 is likely the critical local point of concern.'**

and on Page 4 **'I remain surprised by the lack of any reference in the various reports from [EPA's consultant] to groundwater water movement and likely depletion of groundwater reserves in relation to other limestone quarries either in Australia or worldwide. This same deficiency appears to apply to the appropriate officers in your department. As stated above I hope to provide some of the relevant literature for [the DNR&M Hydrologist].'** (My bold) *(Copy of limestone hydrologist's letter dated 10 December 2002 Attachment 20.)*

DNR&M'S ALLEGED REFUSAL TO PROPERLY INVESTIGATE AND/OR LOG VIABLE SINK-HOLES

- **EEMAG alleges that DNR&M has consistently refused to properly investigate/recognise the real extent of local karst development type (2),**

On 6th April 1998 EEMAG wrote to the then Mines Minister claiming geological mapping of the extent of limestone deposits was inadequate and stated 'Locations of the many limestone-based sink holes with potential to deliver large quantities of runoff directly to groundwater recharge are very important and should be officially recorded.' *(Copy of letter 6 April 1998 - Attachment 21.)*

The Minister's response on 13 May 1998 agreed to our request but after a change in Government, DME quashed the arrangement. *(Copy of Minister's letter 13 May 1998- Attachment 22.)*

On receipt of a copy of the Mines Minister's letter dated 25 Nov 2002, (*Attachment 19*) to one of Australia's leading limestone hydrologists, EEMAG wrote to the Regional Mining Registrar on 29 November 2002, stating we were shocked by the Department's lack of comprehension of the district's cavitous areas and sink holes, and that the Department had ignored the cave systems described in QCL's August 1974 EIS. We claimed there were serious inadequacies in their information on local karst features, that it is authoritatively recognised that limestone/karst deposits in valleys are usually interconnected/continuous beneath the hills, and that no ground truthing has been carried out to prove or disprove DNR&M's assumption that limestone is not continuous between East End and Bracewell. We asked what process would DNR&M undertake to ensure due diligence in the interpretation of hydrogeological information. DNR&M did not reply to our letter. *(Copy of letter of 29 November 2002 - Attachment 23.)*

DNR&M'S 2001 GRAPH OF DISTRICT WATER LEVEL PROFILES

- **A graph in the DNR&M hydrology report "Groundwater East End Bracewell 2001" prepared for the Land Court hearing of objections against an increase in unimproved values omitted to include the 30 metres fall in levels from Bore 96-20 to the mine pit floor, thus concealing the steep draw-down cone. (Report used for Assessment of a landholder's entitlement under Condition 4 in 2004.)**

Attached is a copy of Figure K from DNR&M Report -Groundwater East End Bracewell 2001.

EEMAG members allege that Figure K grossly misrepresents the water level profiles since the graph prematurely terminates and omits the 30 odd metres fall to the mine pit floor and mine sump an additional 5 metres deeper. **When the 30 metres fall to the mine pit floor is factored in, the graph shows that the steep gradient in water levels from the nearby Bore 96-20 and the mine pit is similar to, but greater than, the gradient between the Bracewell / East End aquifer at Weir 2.** *(Copy of Figure K from DNR&M Report -Groundwater East End Bracewell 2001- (Yellow highlighting and hand-written comments included by EEMAG)- Attachment 24.)*

An underground gradient within the East End aquifer to Bore 96-20 near the mine exists for a distance of some 8 kilometres north of the mine. The East End aquifer gradient (Sept 2004) is fairly flat at around 35m AHD but declines to 31.34 AHD at Bore 96-20 on the cusp of an approximate 500 m steep drawdown cone around the mine to a base pit level of 0 AHD.) Between East End and Bracewell, around the Weir 2 / Machine Creek connection (about 4.5 kilometres from the mine) East End's 35 m AHD level's rises to about 68 AHD in Lower Bracewell where an equivalent flat gradient also exists from Lower Bracewell to the Weir. The presence of a "constriction" and steep gradient at Weir 2 / Machine Creek therefore bears a striking resemblance to the flat gradient approaching Bore 96-20 with a corresponding "constriction" and steep gradient to the mine.

In August 1995 mine consultant hydrologist and water monitoring operator from 1976-1997 C R Dudgeon presented a report basically stating the 500 m drawdown cone represented the extent of the company's impacts. (Refer Attachment 7 from our submission on 1 June 2004) This argument however, could not be sustained in the face of subsequent hydrology reports that found water level losses approaching 20 metres well outside of this zone. Although controversy still occurs as to what water loss should be attributed to drought, no one any longer argues against the proposition that the storage/ and or recharge from within the East End aquifer is drawn down by the mine.

- **DNR&M's alleged misinterpretation that loss of water levels due to mine dewatering decrease downstream of Weir 2 (Used in Assessment of a landholder's entitlement under Condition 4 in 2004.)**

DNR&M reference on [un-numbered] Page 6, quote '**Water level declines are greatest close to the mine and decrease to the north-east following the trend of the limestone. By the time the impact zone near reaches Williamson's / Armstrong's boundary (near Bore 111133- Fig 2) downstream of WR2 the impacts are negligible etc**.' (My bold) *(DNR&M Assessment- Attachment 2.)*

The closest monitoring point **in limestone** down-valley from Bore 111133 is Bore 105 about 850 metres diagonally east (at Armstrong's house). Bore 105 is about 1.3 kilometre down-

valley from Weir 2. This landholder's bore was drilled in **limestone** in 1983 with a Standing Water Level (SWL) of 8 metres. **Water Monitoring data shows SWL at Bore 105 on the 4 June 2004 was 26.97 metres – a loss of 18.97 metres** since 1983. The bore is typical and representative of depleted East End aquifer levels while the water source in Bore 111133 is in alluvium within the Weir 2 "constriction" that now has a much steeper gradient than formerly so that discharge at the proximate downstream end of the constriction has increased despite reduction of depth to its cross sectional flow.

The steeper gradient bought about by a massive water loss in limestone at B105 below Bore 111133 invalidates DNR&M's statement that mine impacts decrease to become "negligible" at the Williamson / Armstrong boundary etc. (Water monitoring data available.)

- **DNR&M's alleged misrepresentation of the water source of Borehole 97931 (local number 98/1) as 'volcaniclastic'. (Used in DNR&M's assessment of a landholder entitlement under Condition 4 in 2004.)**

DNR&M's 2004 stance is an apparent repeat of the DNR&M Hydrologist's evidence at a Land Court Hearing in August 2001 when he inaccurately stated Bore 98-1's water supplies were drawn from limestone/ volcaniclastic rock. On the following day after examining the bore log overnight he resumed his testimony and apologised to the Court, stating he was in error and acknowledged that Borehole Log 98-1 showed the water source was located in alluvium/colluvium. *(Copy of Pages 90 and 97 from Land Court Hearing- Attachment 25.)*

The official Bore Log for 98-1 shows its source of water is alluvium/colluvium. Even more importantly, private monitoring undertaken by EEMAG (often on a daily basis) proves that the bore's behaviour conforms with the alluvium aquifer and that the pattern of behaviour is quite distinct from that of the limestone aquifer.

FOI of the Head DNR&M hydrolgist's comments on peer review of the DNR&M Assessment on Page 242 states quote: 'The main strength to the analysis [Assessment] is the data from bore 97931. (98-1)' *(Copy of extract from FOI email - Attachment 26.)*

In **Appendix B** of his 2004 Assessment the DNR&M hydrologist **inaccurately** portrays data from bore RN97931 (or 98/1) as "In log, supply from 10m on in **volcaniclastics" This is misleading and deceptive since the Bore Log shows <u>the source of water</u> as alluvium/ colluvium between 8 -10metres** *(Bore log for 97931 – local number 98/1 Attachment 27.)*

The alleged misinformation on Bore 97931 (98/1) enabled the DNR&M hydrologist to inaccurately state in Section 5 – Alluvium Connection between Bracewell and East End quote; 'the available information indicates that the permeable gravels are restricted in occurrence and probably lie in a narrow channel close to Machine Creek.' **<u>The factual circumstances relating to Bore RN 97931 (98/1) which is approx three quarters of a kilometre from Machine Creek refutes this assertion.</u>**

On Page 6 of the DNR&M assessment (pages not numbered) DNR&M inappropriately compares Bore RN 97931 (which is in alluvium/colluvium) above Weir 2 with Bore RN57105 which is in limestone upstream of Weir 2 in Lower Bracewell, to claim little or no mine impacts propagate upstream of Weir 2. *(DNR&M Assessment- Attachment 2.)*

DNR&M, QCL's modelling Consultant and EPA's consultant have all routinely produced gradients from the Lower Bracewell limestone aquifer to bore RN 97931 in alluvium. The comparison is misleading and unjustifiable since the bores are in different aquifers. i.e. RN 97931 is in alluvium and recovers rapidly with heavy rainfall while permanently depleted limestone bores recharge much more slowly and since becoming mine affected for more than a decade, stage only partial recovery after prolonged heavy rainfall.

- **DNR&M's alleged inappropriate disregarding of results of sophisticated streamflow modelling of Machine Creek flows at Weir 2 (undertaken at the Australian National University) that shows loss of Creek flow due to mining markedly worsened in October 1992. (for DNR&M's Assessment under Condition 4 in 2004.)**

DNR&M's [and the company's] long term position has been to deny mine impacts upon Machine Creek and its tributary [and upon Scrub and Hut Creeks and their tributaries].

The DNR 1998 Position Paper neglected to consider if the loss of perennial stream flows in the 22 sq km Figure 10 area DNR ruled as mine-depleted was caused by mine dewatering, despite the fact perennial stream flows are sustained by groundwater. About 5 km of Machine Creek and its tributary Wards Creek is no longer perennial within the DNR 1998 22 sq km area and the Kalf/QCL 2000 33 sq km mine impacted area (Kalf/QCL 2000 33 sq km mine impacted area Map supplied as Item 4 in our Submission dated 1 June 2004.)

The Minutes for Agenda Item 8 iv from the East End Mine Community Liaison Group (CLG) Meeting on 21 February 2002,) "Loss of base flows / water holes in Machine Creek and tributary – issue of perennial stream flows being sustained by Groundwater. 5 Farms in DNR Map 10 affected" records that the DNR delegate/hydrologist (**and arbiter of the DNR&M 2004 assessment**) stated, quote:

'Machine Creek and Wards Creek going dry was **not** caused by depletion from the mine. Machine Creek is not part of the recharge of the East End Aquifer. **If Machine Creek was affected it would mean Bracewell is affected.** Upstream of Weir 2 is not affected.' (My bold) (This quote is included in the Mt Larcom CRP Report, in Attachment 8, Page 5.) *(Copy of CLG Minutes 21 February 2002- Attachment 28.)*

As part of the Mt Larcom CRP Report of October 2003, a sophisticated streamflow modelling analysis using rainfall and Weir 2 runoff for the period November 1978 to February 1997 was undertaken at the Australian National University using already digitally processed Weir 2 stream flow water monitoring data. The streamflow modelling shows stream flow over time at Weir 2 for similar rainfall events progressively and massively decreased. Although rainfall was shown to be less, the reduction to flow was disproportionate to rainfall and in the absence of any explanatory landholder consumption the impact was attributed to mining. Weir 2 is approx 5 km from the mine and upstream of the 33 sq km area Kalf for QCL conceded in 2000 as mine impacted.

The results of the streamflow modelling are reported in the main Mt Larcom CRP Report, beginning on page 40, and Figures 4, 5 and 6 illustrate that the reduction in flow due to mine effects on Machine Creek worsened markedly in October 1992.

This timing of the marked increase in loss of streamflow identified by the modelling coincides with the company progressively deepening the mine pit to RL 45 or 0 m AHD by 1993. Water

monitoring data shows widespread and rapid loss of water levels in 1992 – including lower Bracewell – a relatively short time after the December 1990 January February 1991 flood rains totalling 885 mm had fully recharged the Bracewell aquifer.

We allege that the DNR&M hydrologist inappropriately disregarded the Mt Larcom CRP Streamflow modelling which substantiates the various independent experts' findings and landholders' claims that mine dewatering has caused loss of perennial stream flows upstream of the mine and that mine depletion of groundwater extends upstream of Weir 2 into Bracewell. (A CD of the Mt Larcom CRP Report that includes a separate volume on the full details of Statistical Data Rainfall Analysis and Streamflow Modelling work was provided as Attachment 1 in our Submission on 1 June 2004. The results of 'An analysis of stream flow at Weir 2' in included in the Groundwater Resources Segment of the Mt Larcom CRP Report beginning on page 40, and illustrated by Figures 4, 5 and 6. – refer *Attachment 12.*)

- **DNR&M's alleged deliberate inaccuracy that drought has occurred over the life of the mine, and/or disregarding that flood rains in 1990/91 fully recharged the Bracewell aquifer. EEMAG alleges that this is a strategy to inaccurately explain the unprecedented high rate of water level decline in most of the water monitoring area in 1992 that coincided with QCL deepening their mine pit to RL 45 ^{or} 0 m AHD in 1992/93.**

Attached is a copy of a DNR&M's Attachment 4, Mount Larcom – Yearly Rainfall Analysis 'Cumulative from the Mean' Graph received from the Queensland Ombudsman. The graph [without the comments written on it as an interpretation for the Ombudsman] is included in DNR's February 1998 Position Paper on End Mine and Environs. *(DNR Graph Mount Larcom – Yearly Rainfall Analysis - Attachment 29.)*

The comments on the graph state "Drought phase commences at about 1979", and later "This line shows the deepening drought conditions." with an arrow showing that drought conditions deepened in late 1991 and thus that drought has cumulatively occurred over the life of the mine.

This interpretation can only be arrived at by disregarding the prolonged 1989-91 recovery and the 1990/91 local (and regional) flood rains (Dec 1990- 412 mm, Jan 1991- 291 mm and Feb 1991- 182 mm – basically a year's rainfall in three months) which resulted in prolonged and widespread flooding that the Bureau of Meteorology recorded as "the third highest flood on record since readings began in about 1860." *(Rainfall records and Bureau of Meteorology report- Attachment 30.)*

EPA's consultant in his draft Addendum Report of May 2001, on pages 6 and 7 also interpreted an uninterrupted cumulative rainfall deficit of nearly 2,000 mm, equivalent to more than 2 years of average annual rainfall. The EPA consultant could only have reached his interpretation by disregarding the 1989-91 recovery and the 1990/91 flood rains. (The EPA Consultant's Reports were used as a reference in the recent DNR&M assessment)

Conclusion

Bore log data from the water monitoring programme shows widespread and rapid loss of water levels in 1992 including Bracewell. Prior to mining such loss of water levels was unprecedented.

QCL deepened their mine to RL 45 - 0 m AHD in 1992/93 and this coincided with the extremely high rate of water level decline. This trend was detected in the results of the Streamflow modelling of Machine Creek at Weir 2 that show loss of creek flow due to mining markedly worsened in October 1992, fully published in the Mt Larcom CRP Report. (Bore charts available)

ALLEGED INACCURACIES IN REPORTS BY EPA "INDEPENDENT" CONSULTANT USED AS REFERENCES BY DNR&M FOR LANDHOLDER ASSESSMENT AND FUNDAMENTAL TO WATER REFORM DECISIONS.

There was no process available to EEMAG members for correction of errors in the EPA Consultant's Reports dated May 2001 and April 2002.

The Groundwater Resources Segment of the Mt Larcom CRP Report, authored by one of Australia's leading limestone hydrologists, strongly criticized the work of EPA's "Independent" Consultant. Example on Page 37, quote:

'It is interesting to note that a year earlier the [EPA consultant] report of May 2001 (p.18) commented:

> "Mine abstraction (surface water plus groundwater) are monitored but the data have not been interpreted to provide a clear interpretation showing the amount of groundwater pumped. A mine water balance approach would be useful to provide a transparent process by which a justified estimate of the amount of groundwater pumped by the mine could be provided to the stakeholders"

That such a statement could be made by the EPA consultants and then not acted upon in the 'consolidated review' of April 2002 requires some kind of explanation.' End of Quote.

Example, beginning on Page 41; quote

'The [EPA Consultants] Report of May 2001, Addendum (p. 7-8) attempts some explanations to this problem. Leaving aside mine de-watering, they list:

- (a) 'clearance of forest and scrub vegetation since the pre-war years, resulting in more rapid runoff (and less vegetation to intercept light rain, which can have prevented recharge under some conditions then).
- (b) loss of soil structure in grazed areas reducing infiltration and causing more rapid runoff
- (c) the local effects of irrigation'

The first of these explanations (a) is completely at variance with the views held by the majority of surface water hydrologists in Australia and elsewhere. The accepted view is that clearing of trees and shrubs enhances groundwater recharge.' …..continued Page 42

Quote from Page 42: 'Loss of soil structure can cause more runoff especially under heavy rainfall conditions. Thus for heavy rainfall some of the flow into the creeks, including Machine Creek, will be from direct surface runoff. However, the analysis of the discharge at Weir 2 shows the opposite to be the case, ie. For comparable rainfall events there is decreasing runoff with time.'

'As regards point (c), this is addressed in Section 3.2 of this report. This clearly shows that irrigation has markedly declined over the last twenty years and this is accepted as the case in [EPA Consultant] (May 2001).'

'These comments from [EPA Consultants] on surface water hydrology and the effects on recharge are clearly wrong as any text book on hydrology in Australia will confirm.' End of quote.

EEMAG members respectfully request the Productivity Commission to consider in full Segment 2.2 GROUNDWATER RESOURCES of the Mt Larcom CRP Report,
Segment 2.3 CONFLICT IN WATER RESOURCE MEDIATION,

2.3.1 The Local Conflict Situation.
2.3.2 Background to Lack of Trust between Government, Mining Companies and the People and
2.3.3 The Ethical Elements of the Mt Larcom Situation.

(Copy of Segment 2.2 Groundwater Resources and Segment 2.3 Conflict in Water Resource Mediation from CRP Report- Attachment 12.)

EEMAG report on inaccuracies in graphs in Appendix 1 of EPA "Independent" Consultant's Addendum Report May 2001

- **EEMAG considers that these inaccuracies were used to overstate drought effects in Bore Graphs No 1, 2 and 3 (supposed to be for Scrubby Creek which exhibited minimal drought impacts and no apparent mining impacts) and that in this way the bore graphs were manipulated so as to show losses of water levels at Scrubby Creek similar to water levels in bore graphs in the mine impacted area.**

Rainfall mass graphs were first introduced into local bore level interpretation by QCL's modeling Consultant in 1997. Interpretation relies upon comparison of two overlaid graphs, one representing rainfall the other water levels of a bore or well. When the water level falls below and out of sync with rainfall then artificial impacts may be indicated. The method is imprecise and demonstrated to be error-prone where comparisons are not valid and alternative explanations or circumstances are not canvassed or disregarded.

Since Scrubby Creek Catchment exhibited minimal drought and no apparent mining impacts, local landholders requested EPA's "Independent" Consultant's Review of Hydrology – East End Mine – Addendum Report dated May 2001 to include comparisons between Scrubby Creek and the areas that the independent experts assessed as affected by mine dewatering.

The EPA consultant chose to employ the rainfall mass graph technique for comparison purposes. For reasons he did not explain, five (5) hydrographs regarded as representative of Scrubby Creek catchment were **not** used and the EPA Consultant settled upon just three (3) hydrographs.

Of these three hydrographs, Figures 2 and 3 lie within the Bracewell catchment, at a much higher AHD levels and are therefore unrepresentative of Scrubby Creek.

Figure 1 is within the Scrubby Creek catchment (note the much lower AHD reference point) However the three hydrographs also allegedly contain deliberate inaccuracies - the black-green line added by the EPA consultant does not accurately reflect the official water monitoring measurements or represent the factual circumstances.

We request the Productivity Commission view the attached Study Paper by EEMAG's President. Copies of all the graphs are included. The green line highlights the EPA's Consultant's alleged inaccuracies, while the red line represents the correct measurements from official water monitoring data. (Copy of official water monitoring data available.)*(EEMAG's Study Paper re errors in graphs -Attachment 31.)*

EEMAG members are concerned that such inaccuracies form part of the reference base for EPA and DNR&M for assessments that influence decision making regarding individual entitlements and the Calliope River Draft Water Resources Plan (WRP).

THE NEED TO ENSURE ACCURACY OF DATA AND RELIABLE SCIENCE IN WATER REFORM

EEMAG members believe there is a crucial need to ensure accuracy [transparency and accountability] of agency/consultants/industry data and findings. Outcomes would be enhanced through the provision of an accessible and impartial appeals or dispute resolution mechanism.

There is a broad perception that consultants are often reluctant to produce findings that are contrary to the wishes/decisions of their main employer group - government/industry.

During the presentation of the Mt Larcom CRP Report by the Independent Team Leader in Gladstone on 31 October 2003, this **perception that consultants/ bureaucrats often lacked 'accountability' due to the need for 'repeat contracts', due to fear of making 'career limiting statements' and due to the need to obtain funding,** was canvassed and widely recognised by the meeting. No person among the approx 100 attendees sought to deny that this problem exists, despite the Independent Team Leader, on a number of occasions, inviting people who may have disagreed to have their say.

A letter from the Independent Project Leader for the Mt Larcom CRP Report dated 28 November 2003 to respondents of the Report stated, 'It is important that all stakeholders appreciate that the present team is neither anti-development nor politically motivated. **What makes this team different is that for a number of reasons each of its members have been willing to state honest opinions unimpeded by potential repercussions from influential respondents.'** (Copy of letter of 28 November 2003 included with Attachment 1 in our Submission of 1 June 2004.)

ALLEGED INACCURACY OF PRE-MINING BENCHMARKS USED BY EPA (AND DNR&M) REGARDING WATER SUPPLIES AND PERENNIAL CREEKS IN WATER MONITORING AREA.

- **There is evidence that in 2001 EPA used a 1960 Mt Larcom & District Chamber of Commerce letter (related to Mt Larcom <u>Township</u> seeking a reticulated water supply) as a pre-mining benchmark for water supplies in outlying farming districts that contained 83 dairy farms in 1960, and which are now in the East End Mine project area. A statement by the Minister indicates that on the basis of the letter, landholders' loss of water supplies is <u>not</u> due to East End Mine dewatering.**

We allege the 1960's letter has been improperly used so as to justify;

1. EPA's 22 October 2001 decision that QCL's 'EIS conducted in 1996 …….. information still valid' as the basis for QCL's 2002 EMOS and Environmental Authority for mining lease renewal in 2003,

2. EPA treating as irrelevant;
    a) the CLG Hydrologist's July 1997 Report that determined mine depletion as affecting more than 60 sq km including draining of perennial creeks;
    b) DNR's February 1998 Report ruling 22 sq km was mine affected;
    c) The then Head of Engineering at The University of Queensland August 1998 Interim Conclusion that basically supported the CLG Hydrologist's July 1997 finding that more than 60 sq km is mine depleted;
    d) QCL's Consultant's 2000 Map showing a mine impacted area of 33 sq km;
    e) EPA's "Independent" Consultant May 2001 Reports that supported QCL's modeling work that assessed 33 sq km as mine impacted.
3. EPA granting QCL's environmental approvals in 2002, based on QCL's 1996 IAS/EIS findings that mine depletion extends only 500 metres from the pit, and which allowed mine pit discharges to be increased from up to 6 megalitres per day to up to10 megalitres per day; (QCL's 2002 EA is included in Attachment 18 of the Mt Larcom CRP Report.)
4. exemption of QCL from compliance with the Environmental Protection Act 1994 and the EPOLA Bill 2000 (**and DNR&M' exemption of QCL from compliance with the Water Act 2000 with flow on exemption from the CoAG Agreements on Water Reform and ESD.)**

The purpose of the Chamber of Commerce' 1960 letter was to scope a reticulated water supply for **Mt Larcom township.** Outlying farming districts were not included in the proposal. In the 1960's there were approx eighty-three (83) dairy farms (approx 7 with irrigation) in the farming districts that are now in the East End mine project area.

The Minister for Environment in a letter dated 12 Nov 2001 stated, quote:

'…….. As long ago as September 1960, the then Honorary Secretary of the Mount Larcom and District Chamber of Commerce wrote to the **Irrigation and Water Supply Commission,** seeking advice concerning underground supplies in this area (copy enclosed). The letter said in part:

"This area, as you probably know, is subject to long dry spells during which surface water supplies become almost non-existent. Existing underground supplies do little to overcome this recurring problem as the water from these shallow level bores is unsuitable for general use, irrigation purposes and in some parts for stock watering."

'This local description of the water issues in this area was given well before the beginning of the East End Mine operations.'

'EEMAG has sought to focus attention on the impact of the East End Mine as the significant contributing factor in depletion of water in the regional groundwater system.' End of quote. (My Bold) **Note: The Irrigation and Water Supply Commission is now DNR&M.**

(Copy of Environment Minister's letter dated 12 Nov 2001 and Mt Larcom and District Chamber of Commerce letter of September 1960 -Attachment 32.)

EEMAG alleges that the Mt Larcom & District Chamber of Commerce letter has been used as justification to dismiss pre-mining benchmarks established by QCL's Water Monitoring Programme that began in 1977 and documented by the UNSW Water Research Laboratory: Bracewell-East End Groundwater Monitoring Review of First

Three Years' Results by QCL's Consultant dated April 1980 (80/4) which documented Machine, Hut and Scrub Creeks as perennial. The WRL report was omitted from QCL's 1996 IAS/EIS references and is apparently disregarded by EPA, DNR&M and the company. (Copy of WRL 80/4 report available.)

EVIDENCE OF INADEQUACIES IN QCL'S MODELLING DATA – MODEL USED AS REFERENCE BY DNR&M.

On the 31 May 1999 the then Minister for Natural Resources agreed to conduct an "Open Technical Meeting or Forum" with **all** parties to simultaneously provide their **full information** for circulation at least four (4) weeks before the Forum. EEMAG's key issue in the agreement was for QCL to fully and frankly disclose the details of their model for circulation to all parties before the Forum. On 5 January 2000 the Minister wrote to EEMAG, quote '**Queensland Cement Limited will be providing the complete details of [QCL's modelling consultant's] groundwater modelling work** as part of its documentation for the Open Technical Forum. *(Copy of Minister's letter of 5 January 2000- Attachment 33.)*

On 20 April 2000, EPA faxed all participants for the Forum advising 'I have received the additional material which **supplements and completes the groundwater modeling** work…' and set the date for the Forum as 24-26 May inclusive. *(Copy of front page of fax 20 April 2000- Attachment 34.)*

It was obvious even to EEMAG members as lay people that QCL's modelling information was not fully disclosed. EEMAG had hired the then Head of Engineering at the University of Queensland as our modelling consultant. Full access to the model's details in advance of the Forum for his consideration was essential to his meaningful and effective participation.

On 22 May 2000 EEMAG faxed to EPA (and all proposed Forum participants) our modelling consultant's list of additional information required on QCL groundwater model which was necessary to enable his effective participation, with a covering letter. His list is quoted here in full.

'Additional information required on QCL groundwater model'

'1. Actual layer depths, hydraulic conductivities or transmissivities, and storativities.

Some information on elevations of top and bottom of layers is given in Table 1 of (QCL's modeling consultants) [1].
Similarly ranges for permeability are given in section 4.1 of [1] as are values of storativity for different rock types. However, the boundaries in both the horizontal and vertical directions of the rock types are not given. In order to appreciate more precisely how the model represents the system, actual parameters for each cell of each layer are required. For example, these details are required for strata in the vicinity of Weir 2 in order to understand exactly what has been modeled. While it is appreciated that the authors consider the model to be sufficiently calibrated, it needs to be appreciated that calibration does not result in exact solutions for model parameters and it is possible that a different set of parameters may give adequate agreement with measured results. In order to ascertain whether there are reasonable alternative configurations, details of what has been adopted are required.

2. Actual recharge values in space and time

Again the recharge has been given in a general way in section 4.4 of [1] but then in section 4.5 on evapotranspiration it is stated that:
'This component removes a large proportion of rainfall recharge over the monitoring area, …'
Hence, the information provided does not allow detailed consideration of how net recharge to the groundwater system has been assumed to vary in space and time. Full details of the net recharge values are required for a proper appreciation and analysis of the consequences of the assumptions made in developing the model.

3. Pumping rates and durations for bores and wells

There are no values given in [1] for discharges assumed for bores or wells in the area of the model. It is impossible to assess the implications for groundwater behaviour is no values are given.

4. Values of pit discharge indirectly simulated

It is recognized that, as discussed in section 4.3 of [1], the pit was not represented as a pumping well with pumping assigned. However comparison of actual pump discharge from the mine pit with what is effectively predicted by the model is a valuable tool for judging the performance of the model in this area. Presumably mine pit discharges consistent with the simulated mining sequence can be ascertained from the model and these should be provided.

5. Transmissivity and storativity values used in sensitivity runs and the corresponding results obtained

The full import of the results of the sensitivity runs cannot be appreciated without more complete information on the model parameters for these runs.

Reference

1. (QCL's modelling consultant) QCL Groundwater Flow Model: Background, Hydrogeology, Model Description and Current Findings – Summary Document, (undated).

[Head of Engineering Department]
The University of Queensland' End of quote:

(Copy of EEMAG letter 22 May 2000 and 'Additional Information required on QCL Groundwater Model Attachment 35.)

On 22 May 2000 EPA postponed the Forum and it was subsequently cancelled when the Minister advised on 21 Jun 2000 that he had asked EPA to commission an Independent technical assessment instead. (Copy of correspondence available.) EPA's "Independent" Technical Assessment is consistently criticised in Segment 2.2 GROUNDWATER RESOURCES from the Mt Larcom CRP Report (Attachment 12) with some of the criticisms documented in "ALLEGED INACCURACIES IN REPORTS BY EPA "INDEPENDENT" CONSULTANT" etc beginning on Page 16.

SOLUTION TO CONFLICT USING WATER RESOURCES PLAN SUGGESTED IN THE MT LARCOM CRP REPORT

A process for resolving the conflict under Water Reform principles and objectives using a Water Resources Plan was suggested in the Mt Larcom CRP Report Attachment 19 "Willingness to Pay – Survey of Water Users", authored by the Director of and a member of the Water Policy and Law Group of the University of South Australia. At this point it appears that the inappropriate trade-off of local landholders' entitlements may be legitimised by Water Reform processes instead. *(CRP Report Attachment 19: Willingness to Pay – Survey of Water Users- Attachment 36.)*

The proposed mechanism for resolving the conflict is further examined in **"Groundwater Conflicts: How WAMPS Can Help"** extracted from Water December 2003 authored by a member of and the Director of the Water Policy and Law Group, University of South Australia. *(Copy of Groundwater Conflicts: How WAMPS Can Help - Attachment 37.)*

SUMMARY

EEMAG members consider that this submission presents valid evidence that our community is being disadvantaged by dishonest science and false benchmarking on local water resource matters, and that the reference material selectively favoured by DNR&M is not appropriate for evaluation of Water Reform issues or for the equitable distribution of entitlements.

There is **no** accessible and impartial appeals process (or any other remedy) for EEMAG members where we can take the evidence we are submitting to the Productivity Commission to have it fairly and properly evaluated. Thus Queensland DNR&M's decisions are the ultimate authority on local landholders' access to individual entitlements and for implementation of Water Reform principles and objectives.

An accessible and impartial appeal or dispute-resolution mechanism, administered under Water Reform, is essential to the accountability of Water Reform arrangements.

Heather Lucke
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