

LAND COURT,

BRISBANE

17th December, 1992

**Re:** Appeal against the decision of  
the Commission of Water Resources  
to grant Waterworks Licences to  
T & K Borg and M De Maria.

RL and GJ Goebel and Others

v.

The Commissioner of Water Resources

(A92 - 38/39/40/41)

(Hearing at Innisfail)

## DECISION

Applications for three Waterworks Licences for certain drainage works within the ETTY Bay (or Bulguru) Swamp near Mourilyan were advertised on 22nd February, 1992, with objections closing on 6th March, 1992. Thirty-two (32) objections were lodged.

The Commissioner of Water Resources (the Commissioner) decided to grant the licences as from 5th August, 1992, expiring 31st January, 1996 (subject to terms and special conditions) as set out hereunder:

### **Waterworks Licence A 50857**

#### **Name of Applicants:**

Thomas Borg

Kevin Borg

Mario De Maria

#### **Details of Application:**

A diversion drain within the ETTY Bay Swamp with the following dimensions:

Length - 450 metres

Depth - 1.5 metres

Width of base - 3 metres

Width at top - 6 metres

The drain is to be located within Crown Land Lot 12 VCL35617, Parish of Mourilyan  
County of Nares.

**Terms:**

1. The licensee shall complete the work for which the licence is granted within two (2) years from the date of grant of the licence.
2. The licensee shall make use of the work to the satisfaction of the Commissioner and shall give effect to any directions which the Commissioner may consider necessary.
3. The licensee shall notify the Commissioner immediately of any change or divestment of interest in the land whereon the licensed work is constructed or proposed to be constructed or on which the water is used or proposed to be used.
4. The holder of this licence shall pay such fees and charges as are determined by the Commissioner from time to time. Such fees and charges being payable at any place specified by the Commissioner on the due date and must be paid within 30 days of the date of issue of the invoice.

**Special Conditions**

1. The water level in the swamp is to be controlled by means of the drop board control structure located on the ETTY Bay Road and is not to be drained to below 1.85 m AHD.
2. The drain shall be located in accordance with the Commission's general arrangement plan attached hereto.
3. The licensee shall obtain permission from the Department of Lands, or other authority which at the time the control of Lot 12 VCL35617 is vested, to ingress and egress upon the said land for the purpose of constructing and maintaining the works authorised under this licence.
4. The licensee shall be responsible for the operation of the drop board control structure located on the ETTY Bay Road culverts in accordance with the following conditions.

- Drop boards shall be in place to maintain a control level of not less than 1.85 m AHD at all times when the water level prevailing in the swamp is less than or equal to 1.90 m AHD.
- Drop boards shall be in place to maintain a control level of not less than 1.40 m AHD (i.e. three 100mm drop boards) at all times when the water level prevailing in the swamp is greater than 1.90 m AHD but less than or equal to 2.00 m AHD.
- All drop boards may be removed when the water level prevailing in the swamp is greater than 2.00 m AHD.

The prevailing swamp water level referred to shall be as indicated by the Commission's gauge board located within Lot 2 RP744251.

5. The spoil resulting from the excavation of the drain shall be disposed of to the satisfaction of the Commissioner.
6. All areas disturbed during the construction of the drain shall be rehabilitated to the satisfaction of the Commissioner.
7. Work on the construction of the drain shall not commence until such time that;
  - a. Following the conclusion of the mandatory 30 day period for the lodgement of appeal to the Land Court by objectors to the licence applications, written notification is provided by the Commission that no appeal against the Commission's decision has been lodged.or,
  - b. The matter is adjudicated upon by the Land Court and the Commission's decision to issue the licences is upheld.

**2. Waterworks Licence A50858**

**Name of Applicant:** Thomas Borg

**Details of Application:**

A diversion drain for an unnamed tributary of the ETTY Bay Swamp with the following dimensions:

Length - 1300 metres

Depth - 2 metres

Width at base - 4 metres

Width at top - 8 metres

The drain is to be located within Borg's properties being Lot 2 RP744251 and Lot 3 RP718485 Parish of Mourilyan County of Nares.

**Terms:**

The terms are identical to those contained in the Waterworks Licence A50857.

**Special Conditions:**

1. The water level in the swamp is to be controlled by means of the drop board control structure located on the ETTY Bay Road and is not to be drained to below 1.85 m AHD.
2. The drain shall be located in accordance with the Commission's general arrangement plan attached hereto.
3. The licensee shall be responsible for the operation of the drop board control structure located on the ETTY Bay Road culverts in accordance with the following conditions.
  - Drop boards shall be in place to maintain a control level of not less than 1.85 m AHD at all times when the water level prevailing in the swamp is less than or equal to 1.90 m AHD.
  - Drop boards shall be in place to maintain a control level of not less than 1.40 m AHD (i.e. three 100 mm drop boards) at all times when the water level prevailing in the swamp is greater than 1.90 m AHD but less than or equal to 2.00 m AHD.
  - All drop boards may be removed when the water level prevailing in the

swamp is greater than 2.00 m AHD.

The prevailing swamp water level referred to shall be as indicated by the Commission's gauge board located within Lot 2 RP744251.

**3. Waterworks Licence A50859**

**Name of Applicant:** Mario De Maria

**Details of Application:**

A diversion drain within the ETTY Bay Swamp with the following dimensions:

Length - 1300 metres

Depth - 1.5 metres

Width at base - 3 metres

Width at top - 6 metres

The drain is to be located within Mr De Maria's properties being Lot 40 on N157438 and Lot 4 on RP746180 Parish of Mourilyan County of Nares.

**Terms:**

As in Waterworks Licences A50857 and A50858.

**Special Conditions:**

1. The water level in the swamp is to be controlled by means of the drop board control structure located on the ETTY Bay Road and is not to be drained to below 1.85 m AHD.
2. The drain shall be located in accordance with the Commission's general arrangement plan attached hereto.
3. The licensee shall be responsible for the operation of the drop board control structure located on the ETTY Bay Road culverts in accordance with the following conditions.
  - Drop boards shall be in place to maintain a control level of not less than 1.85 m AHD at all times when the water level prevailing in the swamp is less than or equal to 1.90 m AHD.

- Drop boards shall be in place to maintain a control level of not less than 1.40 m AHD (i.e. three 100mm drop boards) at all times when the water level prevailing in the swamp is greater than 1.90 m AHD but less than or equal to 2.00 m AHD.
- All drop boards may be removed when the water level prevailing in the swamp is greater than 2.00 m AHD.

The prevailing swamp water level referred to shall be as indicated by the Commission's gauge board located within Lot 2 RP744251.

4. The spoil having resulted from the excavation of the drain shall be disposed of to the satisfaction of the Commissioner.
5. All areas having been disturbed during the construction of the drain shall be rehabilitated to the satisfaction of the Commissioner.

## **BACKGROUND**

The drainage works for which the applications were granted, commence within a tongue of the Etty Bay Swamp at Mourilyan Harbour Road, about 2 kilometres easterly of Etty Bay Road, to drain in an irregular but generally north-easterly and northerly direction for a distance of about 2600 metres within the freehold properties of the applicants Messrs Borg and Mr M De Maria then in a north-westerly direction through Vacant Crown Land (a Proposed Reserve for Environmental Park purposes) to connect near box culverts under a causeway in Etty Bay Road.

The background to the applications is as set out in a statement provided to the Court by Mr L E Hinrichsen, an Engineer employed by the Water Resources Commission (the Commission) who was called to give evidence for the Commissioner. His statement reads as follows:

"The licences in question relate to a proposal to improve drainage of water from a wetland area known locally as the ETTY Bay or Bulguru Swamp. The wetland covers an area of approximately 270 ha of which 150 ha is public land with the balance being held under freehold title.

Drainage deficiencies have been an issue in the area for some years with several approaches having been made to the Commission for the establishment of a Drainage Board under the provisions of Section IX of the Water Resources Act 1989. For various reasons, the formation of a Drainage Board never eventuated.

Interest in the formation of a Drainage Board most recently resurfaced in 1990 with a petition to the Commission from several landholders whose farms fringe the wetland. The Commission is currently continuing investigation towards the formation of such a Board.

It was originally proposed that authority for the drains in question would be sought as part of the constitution of the drainage area. However it became evident that it was going to take longer to form the Board than the landholders concerned were prepared to wait.

The landholders were advised that it would be possible for the question of authorisation for the proposed drains to be considered much sooner if they were to apply for licences under Section 4.17 of the Water Resources Act 1989. Messrs Borg and Mr De Maria subsequently followed this advice, applying for licences for a system of drains extending through their respective properties and across Vacant Crown Land to the culverts under ETTY Bay Road. Immediately below the ETTY Bay Road is the commencement of Ninds Creek which, following recent stream cleaning works, is a well defined watercourse."

## Appeals

Within the time period permitted, four appeals were lodged in the Land Court Registry, by the following appellants:

A92-38 RL & GJ Goebel

A92-39 JC Hermann

A92-40 Council of the Shire of Johnstone

A92-41 NR Gaia (Estate of GD Maria and NR Gaia)

The appeals were brought on for hearing at Innisfail on 9th November, 1992. At the outset, Counsel for the Commissioner, Mr K Fisher, objected to the appeal of Mr Hermann being heard on the grounds that no copy of that appeal had been served on the Commissioner. After evidence was given by Mr Hinrichsen for the Commissioner and then Mr Hermann, the objection was withdrawn. On the sworn evidence of Mr Hermann that the appeal had been served by post, and in the circumstances where there were several appeals relating to the same matters, jurisdiction was found to lie for the Court to hear the appeal. By consent of the parties, the four appeals were heard together. None of the appellants had legal representation.

The appeals are dealt with in reference order and not necessarily in the order in which the evidence was given.

**RL & GJ GOEBEL**

Mr Goebel gave evidence in this matter. He and Mrs Goebel acquired, in 1987, some twelve hectares of land adjoining and partly within the ETTY Bay Swamp. The land had been originally part of Mrs Goebel's father's farm. An orchard had been progressively established on the land since 1987 and is now producing income from predominantly rambutans and papaws. Mr Goebel is a graduate of Gatton College in agriculture and beekeeping disciplines, and is in fulltime employment with the Department of Primary Industries as an Inspector of Horticulture. His experience in the department included a period in the former Conservation Branch when he was involved in investigation of matters such as the swamp lands on Stradbroke Island.

Mr Goebel has a demonstrated keen interest in the local ETTY Bay Swamp environment including such matters as affect farm planning and in particular his own rambutan orchard. He is convinced (and has the training and qualifications to lend support to his opinions), that the Goebel property with adequate irrigation and protection of the immediate environment, is on track to become an economically viable orchard, capable of maintaining returns in keeping with acceptable industry standards. He has established a water pumping facility which he describes as a "well" excavation, either in, or in close proximity to the swamp. This facility is not licensed with the Commission and it would appear that some controversy may be imminent as to its correct technical classification. Suffice to say that Mr Goebel, with apparently good reason in terms of his previous enquiries, found the description of the unlicensed facility in the Court as an "illegal" facility as offensive and uncalled for. The matter of the status of the "well" is not one on which this Court needs to make further comment, except that interference to the established irrigable water supply is a matter of considerable concern to the appellants.

Mr Goebel sees their agricultural activity (reliant on the swamp facility without drainage) as equally, if not more important, on a hectare for hectare viability basis, as the marginal low-lying sugar cane land of the Applicants (requiring improved drainage of the swamp). The grounds of the Goebel appeal are somewhat extensive and include such matters as:

- fire hazard to adjoining property resulting from an excessively dry swamp;
- the designated water level of 1.85 m being too low, based on uncertain or incorrect criteria, such as an unusually low dry season swamp level, selected vegetation damage from causes other than increased swamp level (e.g fertiliser [phosphatel] run-off, cyclone damage) and then not indicative of overall vegetation health;
- potential salt water contamination resulting from reduced fresh water levels;
- drainage proposals necessitated by the cultivation of unsuitably low or marginal land and poor farm management practices;
- premature drainage work and construction;
- unsatisfactory security for water level retention by inefficient control board structure;

- perceived ineffective control of construction and rehabilitation requirements of drains;
- potential future Drainage Board charges for maintenance of drains which are considered a disability to the Goebel property.

It is the contention of Mr and Mrs Goebel that, if it was possible to use a standard for the normal level of the swamp, at any specific seasonal times, then there has been no significant increase, if any, in the level of swamp water. Mr Goebel called two witnesses to strengthen this opinion. First Mr G Horsford, whose recollection of the swamp goes back some sixty years, said that over that period he didn't think the swamp had changed much at all except for the encroachment of cultivation for cane growing. He agreed it would be "nearly impossible" to compare levels from year to year unless actual readings were taken. Next called, was Mr RG Giddins who has specific interests in the effects of drainage works as they relate to property north of ETTY Bay Road. His evidence was that there was a lot of local confusion as to the location best suited for monitoring the level in the swamp, and was critical of the selection of a gauge board upstream of the main swamp, as indicated in the approvals for the licences granted. He was also critical of the usefulness of the drop board structure as it has been used in the immediate past.

**JC HERMANN**

Mr Hermann owns two properties on Etty Bay Road - the one relevant to this appeal being on the southern side. He irrigates approximately one hundred exotic fruit trees from a bore which pumps at 45000 litres an hour. He is in full time outside employment but says he intends to grow small crops "such as papaws but have waited the outcome of this Court to decide what I am going to do". He holds the opinion "that further opening up of this swamp will have a detrimental effect on small farming on Etty Bay Road, by lowering the water table and in future rendering their underground water supplies useless, due to salinity". He does not believe that the control board structure at the causeway will be effective in maintaining the swamp level due to the extreme porosity of the soil under the causeway culverts and the underground flow to drains which have been constructed on the northern side. He is concerned that the lowering of the wet season level of the swamp will render it useless to the fish and bird life during the dry periods.

As with other witnesses and appellants, Mr Hermann was concerned with the drainage works which have been constructed on the northern side of Etty Bay Road and which he believes will have the effect of not only compounding the drainage of the swamp but adding to the potential of salt intrusion.

**Council of the Shire of Johnstone**

Mr G D Smith, Johnstone Shire Council Engineer appeared for the Council. He had intended to provide the Court with a document produced by a firm of environmental consultants but did not wish to speak to the contents of the document. The author of that document was not available to be called. Objection to the document being admitted as evidence was allowed in the circumstances.

Mr Smith's comments then were that the Council's position was that it wished to restate the grounds of appeal, maintaining that before any permit was given, an environmental impact statement and study should be made and a Drainage Board should be formed in the area.

**NR GAIA**

Mr M Gaia conducted the case for the appellant, his wife. He and his wife and their parents before them have had long sugar cane farming experience, including the farming of property in ETTY Bay Road adjoining the swamp. It is Mr Gaia's considered opinion that if a decision was made by the Commissioner to allow drainage of the swamp based on its level as at August 1991 then such decision was both premature and wrong. He says that the water level at that period of time was subsequent to an unseasonally dry period. He says that it is only the fringe cane land on the Gaia property which suffers from flooding and then only after abnormally high rainfall periods. It is the Gaia's opinion that if the level of the swamp has risen, which they do not accept, then the cleaning of the natural outlet is the solution to the flooding of the fringe cultivation areas. If that has been attempted and failed (the evidence is that that is the case) then he believes the

natural outlet had not been properly identified. He is suspicious that the drainage works are not so much for the improvement of drainage of fringe areas but more the first step in the drainage of

the swamp proper to allow further extension of cultivation for cane growing. These appellants consider that the lowering of the swamp level will have a deleterious effect on the irrigable potential of the appellant's land, with difficulties already experienced with an existing excavation facility within the freehold swamp area.

Mr Gaia is obviously genuinely concerned as to salt intrusion into the underground resource by increasing tidal levels and any greenhouse effects, and the future environmental impact which might result from drainage works.

Mr Gaia has had costly first hand experience with a Drainage Board in another locality and does not want to have further involvement with another scheme "from which greedy minority groups benefit at the expense of everyone else concerned".

In the appellant's opinion the drop board structure at ETTY Bay Road causeway is useless "because it is being controlled by the greedy minority and not the Water Resources Commission...".

**The Case of the Commissioner**

Three principal witnesses were called by the Commissioner as follows:

- Mr R W Lait, hydrologist, employed by the Commission, who holds the qualifications of Certificate in Geology (1977); Bachelor of Science (Geology) (1983); Master of Science in Hydrogeology (1987).
  
- Mr J P Stanton, conservation officer employed by the Department of Environment and Heritage who holds the qualifications of Diploma of Forestry and Bachelor of Science - Agriculture.
  
- Mr L E Hinrichsen, engineer employed by the Commission who holds the qualification of Bachelor of Engineering (Agricultural).

**The Evidence of Mr Lait**

Mr Lait has had considerable experience in the field of groundwater behaviour of the local and other Queensland aquifer systems. It is his evidence that the Commission has invested considerable resources in study of the ETTY Bay Swamp area over a long period, but particularly during 1992.

He identified two major grounds within the appeals which he accepted as representing valid concerns. These were:

- (i) Concern that lowering of the water level in ETTY Bay Swamp will result in reduced supplies of water available to users for groundwater from both bores and dug excavations, and
- (ii) Concern that tidal water may invade the swamp, drainage channels, and creek thereby resulting in saltwater intrusion into the unconfined surface aquifer and, perhaps, the deeper semi-confined or confined aquifer.

Mr Lait's statement was made available to the Appellants but repeated here is the response to these grounds, as contained within his statement.

- i) "Water levels have been monitored at two-monthly intervals in the deeper semi-confined or confined aquifer since 1987. Records show that water levels in this aquifer have a normal seasonal fluctuation of between 1.5 and 2.0 metres.

The amount of leakage, if any, from the unconfined surface aquifer - which is in direct hydraulic connection with the swamp, creek and drainage features - is not defined at this stage and will be quantified in further groundwater investigation in late 1992. Logic dictates, however, that the amount of leakage would be small otherwise that water contained in ETTY Bay Swamp, NIND'S Creek, drainage channels and the unconfined surface aquifer would drain into the lower aquifer and would not be available for consumptive use or to sustain water levels in surface water features.

Water levels have been monitored at weekly intervals in the unconfined surface aquifer since February, 1992. Records from these bores show fluctuations between 1.5 and 2.0 metres. This aquifer responds almost instantaneously to rainfall - filling rapidly and draining laterally as soon as rainfall ceases. This is in contrast to the lower aquifer which shows a delay between rainfall and water level responses.

In my opinion lowering of the swamp level to an elevation of 1.85m AHD will have only minimal effect on the supplies available in privately owned water bores tapping the lower aquifer in the area. The lowest known water level in the deeper aquifer which these bores use was experienced in February, 1992 (4.14m below reference point of elevation 1.5m AHD). This level is 0.35m below the proposed level at which ETTY Bay Swamp will be regulated. To my knowledge no reduction in bore supplies occurred from the lower aquifer at the time of lowest water levels despite an extended dry period from February, 1991 until January, 1992 based on observations from the only bore with consistent records. It therefore appears that the level of water in the swamp has little bearing on the performance of bores extracting water from the lower aquifer (Annexure 6 - sketch of dune/swampland system).

- ii) In regard to the appellants concerns over the possibility of saltwater intrusion into the surface water features data collected during high tides in October, 1991 and November, 1991 have shown that significant attenuation, or "tidal dampening" effects occur from the

mouth of Nind's Creek to the concrete culverts separating the northern and southern sides of Etty Bay Swamp.

A high tide of 0.88m AHD at Mourilyan Harbour on 30 October, 1992 was monitored at the "plug" in Nind's Creek. Maximum elevation of tidal water was reached at the plug two hours and fifty-five minutes after nominal top of the tide at Mourilyan Harbour (from tide book recordings). This elevation was 0.883m AHD. The elevation of the northern culvert on Etty Bay Road is 0.970m AHD.

The appellants have concerns about the likelihood of storm surges allowing tidal water to travel up Nind's Creek, over the concrete culverts and into Etty Bay Swamp. In my opinion such storm surges usually, but not necessarily always, occur during periods of rainy or cyclonic weather. Hence, the volume of freshwater flowing out of Etty Bay Swamp during such events is very likely to be proportionally much greater than the amount of tidal water which could enter the southern side of Etty Bay Swamp via the channel of Nind's Creek. At the same time the dilution of saltwater contamination of the swamp and drainage channels. It is unlikely that irrigation water from the swamp would be required to any great degree during such weather conditions.

Flood gates are in place at the junction of the drain constructed by Mr Carlon on the northern side of Etty Bay Road and Nind's Creek. Providing that these gates are operating correctly tidal water should not enter this drain.

With respect to the probability of saltwater invasion of the unconfined surface aquifer this phenomenon will only occur under three coincident circumstances. Firstly, the comparative head of fresh water in the unconfined aquifer must be significantly lower than the head of saltwater in the surface water feature. No formal data exists for the Etty Bay area at present. Experiences throughout the rest of the state and nation indicate that saltwater invasion of similar aquifers occurs when the saltwater head is of the order of 0.5m greater than the head of freshwater in the aquifer. For this to occur a tide level of approximately 1.4m AHD at the concrete culvert, in combination with a lowering in aquifer level to about 0.9m AHD, would need to occur. This aquifer level is unlikely to occur unless a massive increase in abstraction of groundwater from the unconfined surface aquifer takes place (Annexure 7 - mechanism for saltwater intrusion). The Water Resources Commission currently does not control volume of groundwater extraction in the area as it is not proclaimed as an area of sub-artesian supply under section 4.6 of the Water Resources Act 1989.

The second circumstance necessary for saltwater intrusion is the proximity of a source of saltwater, in sufficient volume, and for sufficient time for physical replacement of freshwater pore fluids with saltwater. The relationship between the volume of water in Nind's Creek and its probable residence time in proximity to the unconfined surface aquifer are not yet qualified.

The third circumstance for saltwater intrusion is the presence of a porous and permeable receptacle for the saltwater to invade - in this case the unconfined surface aquifer.

The Water Resources Commission has invested considerable resources in the investigation

of water level and groundwater behaviour in the last twelve months. No valid assessment of saltwater intrusion probability can be made without the necessary background data. Extensive investigations have been undertaken in 1992. These, in combination with data collected since 1983 allow proper assessment of saltwater intrusion probability, sustainability of the unconfined surface aquifer and the relationship between groundwater and surface water uses."

Mr Lait concluded that the Commission is adequately addressing the concerns of the

Appellants by:

- i) Undertaking a continuing groundwater assessment and monitoring program in the Etty Bay area, since 1983, in order to establish the probability of saltwater intrusion into both the upper and lower aquifer.
- ii) Establishing that there is a low probability of tidal water entering the southern side of Etty Bay Swamp and interfering with irrigation supplies in that area.

He confirms his opinion that lowering of regional water level to 1.85m AHD will have minimal effect on the hydrology of the area as this is within the recorded range of water table fluctuation since 1987.

While he did not claim expertise in the mechanics of the drop board control structure, he held the opinion "that well maintained and efficient drop boards can only assist the hydrology of the area" and reduce the seasonal fluctuation in the upper aquifer.

Under cross examination, Mr Lait said that, based on the highest astronomical tide of 1.68 m at Mourilyan Harbour and the limited observation carried out downstream of the Etty Bay Road culvert, he estimated that the tide at the culverts "couldn't possibly rise more than 1.35 m or 1.4 m". He agreed that under conditions of an extraordinary high tide reaching that level, salt water could enter the Etty Bay Swamp. He said that in such circumstances, the drop board structure, if secured and working efficiently would prevent such entry.

With regard to the underflow of water to the north of Etty Bay Road, Mr Lait indicated that there would be no viable method of stopping that flow and that it would occur - drains or no drains. He admitted it occurred slightly more quickly now that there are drains on the northern side.

Mr Lait's evidence was found to be frank and informative. He was not prepared to give guarantees on matters relative to salt water intrusion but he saw the possibility of such occurrence as being slight. He admitted that further studies were necessary for a full understanding of the semi-confined aquifer, as well as the extent of the available resource and the underground flow of water from the Etty Bay Swamp to the north.

#### **Evidence of Mr J P Stanton**

A short statement under the hand of Mr Stanton was tendered. Mr Stanton is presently the Principal Conservation Officer with the Queensland Department of Environment and Heritage, based in Cairns. He has had long technical experience in departments associated with the administration of National Parks. He has been intermittently engaged in research and

resource assessment surveys, much of which work has involved studies of wetland areas. This latter work has included a fairly recent (completed 1987) detailed assessment of coastal low land habitats between Cooktown and Cardwell. This assessment included the subject locality. He had examined the ETTY Bay Swamp area in May 1991, for the purpose of advising the Commission in connection with swamp water levels. With regard to that inspection, his statement contains the following passages:

"My observations supported a claim that there has been some rise in permanent base water levels in this swamp in recent years. It was, and remains, my opinion that observed ill-health in trees within the swamp could best be explained by a slow but significant rise in base water levels over a period of years. I expressed the view that restoration of some stability of water-levels at a level lower than what pertained then, could be beneficial to the health of the scattered trees in the swamp without altering it in other ways. This would depend on the way in which the level was lowered, and upon avoidance of any rapid and significant reversal of current trends.

From an observation of the current water level in relation to the tops of hummocks supporting the living trees, I suggested that a lowering of the base level by 0.25 metres would be a safe starting point. Any further lowering would be dependent on the observed response of the swamp vegetation to that suggested lowering. I also expressed the opinion that to cause least disturbance to the swamp vegetation the best location of any drain to lower water levels would be along its margin with the freehold lands adjacent to the ETTY Bay-Mourilyan Road, where a non-functional drain currently existed."

His verbal evidence was that his initial visit lasted "a couple of hours" then another inspection of similar length was carried out in August 1991, followed up by another in October 1991.

He said there was no noticeable change in August but some "significant differences" in October when the swamp level had been much lower. He had not walked around the boundary of the swamp and was not in a position to comment on Mr Goebel's assertion that the vegetation within the swamp on the north-western fringe was "extremely healthy". He had noticed that the vegetation near the causeway which was bordering on a rain forest type influence, "which was looking quite yellow earlier in the year had recovered some colour". He put this down to the lower water level caused by an extreme drought. He was asked about the possibility of "acid sulphate debris" being created by drainage of the swamp. He agreed that it was critical to know whether the soil in any swamp would react in that way, before the swamp was drained. He had not considered the problem in this matter where a conservative lowering of the swamp water level by 0.25 m had been his recommendation. He did not relate the recommended lowering to the actual control level which had been decided by the Commission, but 0.25 m less than the level he had observed on the ground in May 1991. He agreed with Mr Goebel that it was sound environmental management practice to maintain as wide a buffer as possible around wet land areas "where you have direct rise and fall of the water at around that margin".

Mr Stanton's opinion was not shaken as to his interpretation of the evidence, suggesting to him that the ill-health of some vegetation had been caused by rising swamp water levels. He was adamant that the "conservative" reduction in water level recommended, would have no deleterious effect on the eco-system but was likely to improve it.

Mr Stanton's experience in his field is not challenged. He readily admitted however, that his recommendation "was intuitive more than based on objective data". He also admitted that "without any shadow of a doubt there is some level at which you can do damage to the swamp and my original assessment was that it involved a drop in level at something greater than 0.25 m before that was likely to happen".

Mr Stanton advised that in terms of disturbance to the existing vegetation he would have preferred to see an alternative scheme involving the use of an existing but disused drainage system. He accepted that there could be technical difficulties, such as the availability of access to works on the old system, to prevent implementation of his preference.

**Evidence of Mr L E Hinrichsen**

Mr Hinrichsen had been involved initially in matters relating to the ETTY Bay Drainage Board proposal. His evidence indicated that the Commission supported in principle, the establishment of a Drainage Board, allowing self-regulation of the issues by the land owners directly involved.

Mr Hinrichsen became the Commissioner's Investigating Officer when the applications for the subject drainage works were submitted.

He was fully aware that the Applicants, Messrs Borg and Mr De Maria, had applied for, and been granted, provisional increase in sugar cane assignments covering most of their freehold lands within ETTY Bay Swamp. He was therefore aware that the purpose behind the drainage works proposal was two-fold.

In the first place the applicants' existing cane land was subject to extensive flooding with residual waters causing water logging and ponding of water. This affected the viability of much of the cane farming activities. It was the opinion of the Applicants that the residual water problem had worsened in recent years.

Secondly, the Applicants wished to drain as much of their freehold land as was possible for the proposed extension of the cane growing lands.

In Mr Hinrichsen's opinion, there was a reasonable argument to support the drainage of residual water to ensure the viability of existing cane land. It seemed logical to him that increased swamp levels could have occurred in recent times as a result of debris from a cyclone (Winifred), siltation of the existing drainage system and encroachment of exotic grasses and vegetation. Survey work on the Borg property had indicated to the Commission that in the period from 28th February 1992 to 5th October, 1992 water level in the swamp land of the Applicants

had been "in excess of 2 m AHD". The lowest level of the cane land on the Borg property was 2.5 m AHD. He had obtained information published by the Bureau of Sugar Experimental Stations (BSES), that "sugar cane yields decline by approximately 0.46 t/ha for each day that the water table level is less than 0.5 m below the soil surface level. Losses are however kept within acceptable limits provided that the water level is not within 0.5 m of the soil surface for more than approximately 50 days during the growing season."

With regard to the undeveloped land of Messrs Borg and De Maria, Mr Hinrichsen said that it is extremely low-lying with surface elevations indicated to be in the order of 1.0 to 1.7 m AHD. He said that advice he had received is that this land is incapable of being developed for agriculture owing to several severe limiting factors.

Apart from the needs of the Applicants, the Commissioner's investigation embraced considerations relative to the environmental issues; the protection of the other resource values of the area including the proposed environmental park; water supplies for owners along Etty Bay Road and the potential flooding impact on land downstream of the causeway.

The advice given by Mr Stanton was in the end result, critical to the drainage proposal because the recommended 0.25 m reduction in swamp water level, set the control level of 1.85 m AHD. This was 0.25 m below the observed level at the time of Mr Stanton's report. It is not clear from the evidence whether this was the observed level in May or August 1991 but Mr Stanton had said that he did not notice any change between those dates.

In any event, the evidence is that there had been a previous although recent approval for drainage works given by the Johnstone Shire River Improvement Trust for stream cleaning both upstream and downstream of the causeway. The control of 1.85 m AHD had been set by the Trust, apparently based on the same interpretation of Mr Stanton's recommendation. This approval was apparently subject to the control structure having first being placed. It is of interest, that the invert of the culvert where the control is constructed is stated to be 1.1 m AHD.

With regard to the environmental issues, the Commissioner also sought advice from the Fisheries Branch of the Department of Primary Industries. Officers of that branch were "comfortable" with Mr Stanton's recommendations. It seems that there was some initial concern,

at senior Environmental and Heritage Department level, regarding the effect of the proposal on the Vacant Crown Land (proposed to become the environmental park). This concern was apparently satisfied on the basis of Mr Stanton's recommendation and some Ministerial input.

As far as matters of hydrology were concerned, including the potential for salt intrusion, and the effect on irrigation supplies, the investigation and validity of the advices of Mr Lait were adopted by Mr Hinrichsen in his capacity as investigation officer.

In the end result, the recommendation of Mr Stanton (which was accepted by Mr Hinrichsen as being conservative) happened to meet the water table guidelines (as suggested by the BSES) for the existing agricultural land of the Applicants. The reduction would cause no significant problem to the ground water supplies of other land owners based on Mr Lait' report. The first stage of the Applicants' drainage proposal was therefore seen by Mr Hinrichsen to have merit. He pointed out that the drains were designed not to mitigate the extensive flooding to which the existing agricultural land was subject, but to remove subsequent residual water as quickly and as efficiently as possible.

Mr Hinrichsen was satisfied that the grounds of the original objections to the proposal had been addressed. Each of the grounds of the individual appeals against the Commissioner's decision to grant the licences had been given consideration for the Court hearing. Mr Hinrichsen's statements prepared for the Court on each individual appeal, dealt with those grounds in full detail.

It was Mr Hinrichsen's considered opinion that the control level of 1.85 AHD provided a good balance, allowing the desired improvement to the applicants' existing cane land while recognising the issues of an environmental nature as well as the available water supplies for irrigation.

That control level did however, prevent the drainage of the further land of the applicants for development. The Commissioner through Mr Hinrichsen had decided that "without

additional information" he was not in a position "to adjudicate one way or the other as to whether it was appropriate for the water level to go down any further" - to allow for the applicants' development plans.

#### **The evidence of Mr B P Gaydon**

Brief evidence was given by Mr Gaydon who is the Manager of the Innisfail Office of the Commission. He identified certain photographs which had been tendered showing wet season flooding of some of the cane land in question. He also confirmed the evidence of Mr Hinrichsen as to the lack of labour resource available in Innisfail to allow the Commission to be responsible for the physical measures necessary for the designated water level to be controlled.

#### **Summary of Commissioner's evidence**

Both Mr Lait and Mr Stanton were frank in their assessments that while they are confident that the reduced swamp water level as adopted by the Commissioner will not damage the resource on one hand or the eco-system on the other, there were inherent dangers if drainage was excessive.

I accept that their evidence is given without bias and may be relied upon. It is noted however that some comments of Mr Stanton were related to a reduced level "as an initial stage" of drainage. I have gained the distinct impression (and particularly from Mr Stanton's evidence) that the opinion of the Johnstone Shire Council, that there is the need for the commissioning of an Environmental Impact Study is sound and should be seen as necessary to ensure protection of the ETTY Bay Swamp eco-system, but only if additional interference to the swamp level be contemplated. I am convinced, in other words, that any further recommendations in terms of the lowering of the swamp should be based on a detailed study rather than an "intuitive" opinion.

Mr Hinrichsen had the difficult task of weighing the conflicting needs of the various property owners and interested parties. His investigation has obviously been extensive and time consuming. He is confident that the benefits to the Applicants, resulting from the granting of the

licenses, is one of significance, although the special conditions do not permit the full extent of benefit sought. The effect of the granting of the licenses on competing interests is seen to be at worst, minor. The eco-system of ETTY Bay Swamp is not seen to be placed at risk, due to the special control conditions imposed.

Mr Hinrichsen chose not to recommend the softer option as suggested by the Johnstone Shire Council of restricting works until a Drainage Board might be established because in this particular matter, that option was seen as causing unwarranted delay whilst the viability of the existing cane farming activities was affected.

The designated control level is recognised as a factor critical to the extent of benefit to the applicants and to the degree of effect on the land owner Appellants and the eco-system of the swamp. The physical control of that level is seen by both Mr Hinrichsen and Mr Gaydon as a burden which should not have been borne physically by the Commissioner, even if the cost involved could be past on to those who enjoy the benefit.

## **CONCLUSIONS**

It is apparent that the competing land use interests in the ETTY Bay Road area are causing unfortunate local community conflict which should be viewed with concern.

In the hearing relative to these appeals and leaving aside environmental issues, the areas of primary conflict became clear and are identified as:

- 1) The perceived need of the irrigators or potential irrigators to protect a valuable resource.
- 2) The need of the sugar cane farmer Applicants to protect as far as is reasonable, cultivated land from perceived increased service water levels.

This may seem an oversimplification of the wider issues which have polarised community thinking. Nevertheless, and regardless of the grievances which exist as to drainage work activities or proposals north of ETTY Bay Road, these appeals are relevant to the proposals or activities on the southern side of ETTY Bay Road.

This is not to say that the wider issues which encompass the locality generally, are not matters which require careful consideration - but not necessarily in this forum. Activities down stream of ETTY Bay Road are not matters which will impact on the decision to be made in this Court, except so far as they affect the granting of the licenses in question.

For example, some discussion has taken place in the Court as to the need or otherwise of the establishment of a Drainage Board. In the context of the overall problems which exist, such a step would seem theoretically logical, provided the decision making processes include identification of resource and environmental considerations.

There is however, a body of opinion amongst those directly involved which is strongly opposed to the establishment of such a Board, on the basis that minority needs will prevail at the cost of the majority. This opinion is based on personal and practical experience and notwithstanding the exposed advantages of self-regulation, those views cannot be ignored.

This aspect is mentioned, because it is basic to the grounds of appeal of the Johnstone Shire Council, which sees the need for establishment of a Drainage Board and the study of impact on the environment. There is seen to be good reason for the Council to adopt such a stance before at least any further drainage works are approved. There has been no evidence put forward to show however, that the works involved in these licenses will have any significant deleterious effect with regard to environmental issues or any future decision making process.

With regard to the appeals of Mr and Mrs Goebel, Mr Hermann, and Mrs Gaia, I see their primary interest to be in terms of competing land use, and it is reasonable that these Appellants took every opportunity to protect their not insignificant interests. I accept that as well as the enhancing effect that ETTY Bay Swamp may have on their individual interests and land assets, there is also a genuine concern by these Appellants for the protection of a natural resource of value, in environmental terms, to the community at large.

Regardless of the considerable effort put into the appeals and of the costs associated with the presentation of evidence by Mr Goebel, in particular, the Appellants have not been able to carry the difficult burden of proving that the appeals should be upheld.

In many areas their arguments, of necessity, were subjective and unable to be proved. I have therefore not been convinced, on the evidence before me, that the decision by the Commissioner to issue the licenses subject to conditions, has been shown to be wrong, or that those works, as an individual and specific scheme, will have other than a minimal affect on the natural resource except no doubt, for the visual impact particularly near Etty Bay Road.

I am concerned however, that the licenses issued by the Commissioner might be seen by some as an initial step towards the potential draining of lands of the licensees additional to those which influenced the Commissioners' decision. My concern is heightened in this respect when evidence is placed before me as to the earlier application for, and indeed the provisional granting of, cane assignments over land which is unable to benefit from the level of swamp water as specifically controlled in terms of the licenses. The use of such land for cultivation purposes is clearly not envisaged by the Commission.

There is an inherent objection by the land owner Appellants, that the licensees whose desire it is and who have most to gain from drainage of the swamp below the designated level, are given the responsibility of operating and maintaining the control device. There is before the Court, compelling evidence to suggest that the operation of the control structure has been far from satisfactory in the immediate past.

## **FINDINGS**

The appeals against the granting of Waterworks Licences A50858 and A50859 are dismissed.

Waterworks licence A50857 is seen to be critical to the drainage scheme of the licensees. Non compliance with conditions, leading to cancellation of that licence and the closing of the drainage benefit would render ineffective the drainage works on the freehold lands. In view of the concerns that have been expressed (and reasonable concerns in my view), I have decided that

the decision of the Commissioner to issue Waterworks Licence A50857 should be confirmed but the Special Conditions attaching to the terms of the granting of the licence should be varied as follows:

a) delete Special Condition 7

b) add amended Special Condition 7 as follows:

Further work on the construction of the drain shall not commence until such time as the licensees have been notified in writing by the Commissioner that the drop board control structure located on Etty Bay Road is constructed, together with provision of suitable locking device or devices, to the satisfaction of the Commissioner.

c) Add Special Condition 8 as follows:

The locking device or devices will secure the structure at all times  
when drop boards are in place.

d) Add Special Condition 9 as follows:

i) The licensees will maintain in such written form as approved by the Commissioner, recordings of the prevailing swamp water as indicated on the Commission's Gauge Board located within Lot 2 RP744251 on such periodic basis as directed and notified in writing by the Commissioner.

ii) The licensees will maintain a written record of the dates of all alterations made to the level of the drop board control structure; damage to; faults; maintenance of and repairs to that structure.

iii) The written recorded information in (i) and (ii) shall be provided to, and as directed in writing by, the Commissioner, who will maintain such information on the relevant licence file.

e.) Add Special Condition 10 as follows:

Special Condition 1 in the licence as issued is to be deemed a benefit to the licensees in terms of Section 4.19 (2) (b) (i) of the Water Resources Act 1989.

I direct that this decision be certified in terms of Section 4.26 (6) of the Water Resources Act

1989.

(R.E. Wenck)

**Member of the Land Court**