LEAMAN GEOPHYSICS

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Executive Commissioner
Resource Planning and Development Commission
3rd floor, 144 Macquarie Street
HOBART TAS 7000

SUBMISSION: DRAFT IIS – GUNNS LTD PULP MILL PROPOSAL

Dear Sir,

Everyone, proponent, government and RPDC, tells us that this is an important and very large scale project. If we accept this exceptional character then we must also review **exceptional** measures with respect to its establishment, protection, life and feedstock. We must also beware of any "cargo-cult" effect, such that "this is the best thing possible for Tasmanians" when coupled with a simple economic view only. Any appreciation of such exceptional measures is wholly absent from the IIS even though a number of Guidelines brush the issues.

There are several such issues:- which seem to have been ignored but which are always raised in public debates (yet not, it seems, in the Gunns questionnaire).

ONE which applies to the mill itself, - guarantees of long term retention of monitoring standards. The company now agrees to abide by extant standards; but will it provide guarantees that it will not request dilution of these at some future time? What government mechanism exists which makes that possibility difficult to execute?

TWO which applies to the wood resource and its supply. RPDC in its wisdom chose to neglect or ignore the matters I raised in my original submission of April 2005 whereby I asked the company to consider the long term implications of providing the wood resource – namely its effect on water supply. It remains my view that this proposal it too large for the resource (wood and water) in Tasmania and that it should be scaled down. I discuss this issue under other ramifications (social, economic and environmental effects) because it does become live in that context. It should, however, have been required of the company to justify its water use to produce the resource. The IIS does not consider worst case scenarios for wood supply problems.

THREE which applies to retention of social, economic cohesion in the region which supplies the resource, and changes in environment there. The matters of loss of community, facilities, land use diversity, agricultural production, and risk to water supplies are not addressed in the IIS. These values, subject of a case before Victorian Civil and Administrative Tribunal in 2004, are not discussed in the IIS.

FOUR which applies to the risk of fire and loss of resource. What happens then? This recognises that the plantation estate is a drier land forest (more susceptible to arson or wildfire) and that the region is drying due to climate change. This topic seems to have been completely avoided in the IIS. The implications are crucial for both wood supply assumptions, economic evaluation and community factors.

Each of these items is considered in sufficient detail to establish any needs or deficiencies within the IIS.

ISSUE 1:
THE MILL AND GUARANTEES OF ENVIRONMENTAL MANAGEMENT (esp. Guideline 7.11)

Much effort has clearly been expended to assess and "mitigate" mill effects in the vicinity of the operation. Many promises and assurances are offered which, if kept, may be valid and good. I am not qualified to comment on the measures described and others should be involved to appraise the details.

BUT, may I remind RPDC of the 1915 story of the Electrolytic Zinc Company at Risdon, where the company and government of the day agreed on very high environmental standards; not just for that day, we would have been proud of them today. Yet, by 1921, the government of that day allowed, upon request from the company then in difficulties, remission of those standards and no attempt was made to re-instate them until the 1970s and, even today, there is a battle to achieve them due to growth of problems over the years. The zinc plant is now in steady clean up mode with good modern practices but there is a legacy – in the river and estuary, and on the land nearby – of that long gap in management.

Note that the zinc refinery was effectively rated as a project of "state significance".

Can we be sure that this will not happen again?

Stringent long term monitoring standards are required PLUS an Act of Parliament with status comparable to that required to reclassify a National Park in order to ensure that those standards are not easily compromised. An alternative, for which there is a precedent, is to ask that any remission of standards be approved only after a referendum of all electors. This was the Wrest Point case; exceptional development for its day.

We simply have to be sure that the development will be retained at high environmental standards.
It is not good enough to promise them now, have them approved now, and then easily change them later. Gunns may mean well; we must make sure things stay well.

This is a large plant, with a long life, and must be treated as a giant amongst pigmies.

RPDC should issue some recommendation to offer some confidence in the long term protection of standards and Gunns must make some contractual promise in its documentation that it will not require this and that its economic projections provide for changes in profitability in so far as these might affect standards.

If it does not, and the government is not seen to appreciate the need for this or ensure a long period of intergovernmental compliance, then future changes may be beyond restoration. We cannot afford this with such a large project. The guidelines require only that the company comply with various current regulations and discretions. It says it will. We must be sure that those regulations remain appropriate, apply, and possibly over time become more stringent as things are learnt.

There needs to be considerable indication of good will and intent from all parties involved in the approval process if the community as a whole is to accept the proposal.

ISSUE 2:
WATER USE BY THE PLANTATION AND THE WOOD RESOURCE – AND THE IMPLICATIONS FOR NORTH EAST TASMANIA (esp. Guideline 4.2.1 and 6.1)

My reading of the IIS indicates that the huge wood resource required for the mill comes primarily from the north and north-east of Tasmania – from plantations, State forest, and private forests. The issue is, and it is nowhere canvassed in the IIS, can this wood be produced without significant side effect? It really does not matter who supplies the wood, or who owns it: the collateral cost of its production is the issue.

The company was asked to provide details of its wood production, production areas, needs and efficiency in general terms. This information is not present in any meaningful way; we are simply offered some very small scale maps showing the location of forest reserves, State forest, plantations etc. We are not told, region by region, catchment by catchment, what the approximate areas are, what the approximate ages are, what rates of growth and production have been found and can be expected in sub regions, and what sort of projections of the generation of the wood resource are reasonable or even feasible. No one needs to know ultra detail but RPDC needs to know how credible the assumptions are. We have no idea from this IIS.

Nor is it satisfactory to say, as the company does, that the resource would be produced for chipping anyway. That answers nothing.
There is a big difference between production for chipping and this new proposal. Chip infrastructure is extant (and paid for?) and operations could cease more readily in the short term depending on price and costs. The new pulp mill is designed for a minimum life of 30 years and, according to the tenor of the IIS and spokesmen for the company, for "two generations of our children". Let us say fifty years. The investment is made on this basis.

We must consider the implications of this type of time scale for they are potentially very serious. Yet the IIS deals with none of them. Why is this? Other aspects of this issue are considered in Issue 3, below.

Water use is the critical collateral issue.
A "baseline" for current status of the hydrological environment was required for the mill site under Guideline 6.1 and a wider application of this guideline would require this for the region supplying the wood. It is not here. There is no attempt to assess the current hydrological situation, something which does affect wood production, or any future projections.

No Tasmanian regulation, Code of Practice, or Act makes any provision with respect to this matter (wood and water). The Forest Practices Act and associated Code offers one liners about protection of water quantity (or yield) but nowhere states how this will be done (and there is ample evidence that the FPA does not know either). Nor does it suggest what the factors might be. Gunns live in the shadow of this hole in practice, and legislation. I refer RPDC to the Victorian Code of Forest Practice, which in Clause 3.2.4, spells out the very least which must be done: *"Water yield from catchments used for water supply must be protected by the adoption of appropriate rotation lengths and silvicultural techniques and, if appropriate, by limitations on annual harvest areas".* This and other clauses refer to calculations, on-going research, thinning and other options.
Clause 2.3.7 also requires exclusion of rain forest communities from harvesting.
These are very sensible hydrological provisions not included in the Tasmanian Code.

These Clauses predate, but are consistent with, the findings of two Senate Inquiries which reported in 2004 (Rural water resource use, August; Australian forest plantations, September), and which limit Federal agencies and funding should the necessary evaluations not be done. And, they have not been done in Tasmania as part of any agreement, including the Regional Forest Agreement!! These inquiries define the risks to other industries and communities of uncontrolled, under researched forest plantings and operations. Those risks are variable, according to region, demand for water competition and forest activity. **There is considerable science around this matter and none of it has been officially applied in Tasmania (whether operationally or in terms of forest use planning).** I refer RPDC to my 2005 book "Water: Facts, Issues and Problems" which details and summarises this science from a variety of sources and places it in Tasmanian context. I do not intend to repeat this material here. If RPDC does not have copies then it should acquire them from the nearest bookseller. Particular attention is drawn to pages 70-92, 133-144 and 161-173 of the book in the context of this IIS, the mill wood supply and the water supply ramifications.

Yet, though the issue is well known nationally and been the core of inquiries, the risks have not even been mentioned, let alone explained or properly assessed by this IIS and the very restricted nature of the guidelines (reflecting lack of appreciation by RPDC) forces me to consider it again in terms of the next issue. This matter should be at the very core of the regional issues (wood resource) because without water there would be no resource, or not an economically adequate resource.

ISSUE 3:
THREATS TO COMMUNITY, ECONOMY AND ENVIRONMENT (esp. Guidelines 3, 8.6, 9.1)

Threats to the human and environmental cohesion of the catchment region for the wood resource take several forms. I found it interesting that none of the questions posed by Gunns as part of its evaluation of concerns within the community record them. Why not? There is a narrow emphasis on economic benefit (yet to be established) but it is strange that no one wrote in what is heard all over the areas now either blanketed by plantations, or in rural areas where farming land is being swallowed. The results are simply unbelievable, or incredible, certainly invalid.

Entire villages and small towns are disappearing.
This happens gradually. Farm labour is lost because it is not needed. Plantation or forest operation occurs in stages spread over years and then often using out of area contract labour. As land usage is swapped from farm to forest, or as forest and mill usage is swapped to forest farm, labour declines.
There then comes a point where small town businesses begin to close.
The cycle continues until facilities for the few people left either disappear entirely or are far away in bigger centres.
Community and social relationships, including sporting events, crumble.
All this has already happened in NE and NW Tasmania where productive local economies have been destroyed (good example: Preolenna and its effect on Wynyard). We must expect more of this.

None of this was canvassed in the IIS – but was required under Guidelines 8.6 (8.6.7 esp and 9.1.2). What price do we place on these things? Dollars only?
The need for balance of development and community was reviewed by the Victorian Civil and Administrative Tribunal in May 2004 (ref P861/2004): which found for the East Gippsland Shire Council and others against Willmott Forests Pty Ltd on these very grounds. Namely, that too much development of plantations had already occurred and that the community had become “fragile”.

Gunns Limited must surely be aware of cases like this. Why has it chosen not to discuss them, and any possible relationships which might apply in Tasmania?

Likewise, I find it most strange that the IIS does not mention the concerns that every community in northern Tasmania has expressed about its WATER SUPPLY (proper review under Guideline 9.1.7 should have produced this). This tells me that either the community review, or the IIS, or both, is corrupt.
The company is well aware of the well publicised friction between farmers and plantation owners (examples at Oldina, Mole Creek, Pipers catchments etc) and other communities and forest developments (as at Blue Tier and St Helens, Launceston and Esk Water, and South Sister and St Marys). Many individuals have expressed concerns and my files are full of their worries or complaints.
These are community concerns. They are not mentioned, nor even alluded to. Why not?

6 Submission by D E Leaman

Because they are simply too many, too serious, and any attention drawn to this topic would show that the entire project is too big and that too much hydrological damage has already been done by the forest industry due to lack of appropriate planning.

Note that this is not the fault of the company. It does what it is legally permitted to do. What we have on this island is an almost total lack of sound water policy, a Water Management Act which has more holes than a leaky can, and a complete lack of the sort of integrated planning which could determine balances of land and water use for all purposes such that no resource system was stressed. RPDC, by not requiring clear guidelines on the matter of regional water resource, has become complicit in this. Government action is long overdue and it is now, in my opinion, perhaps too late for some catchments. (I offer this comment as the only researcher to have completed an integrated analysis of Tasmanian catchments)

The population of north east Tasmania, including Launceston; agricultural operations between Pipers Brook, Tomahawk, Bicheno, Conara and Hadspen, associated industries and power generation – all depend on water from the wet catchments in the centre of the north east. Rivers radiate from this wet core and that wet core, for the South Esk for example, generates up to 75% of the water in the South Esk catchment (my research). Any damage to, or reduction of, this resource has serious ramifications for many communities.
My research, as outlined in the attached table, indicates a very serious risk. This work should be extended, reviewed or replicated – not ignored. I have done enough research on northeast rivers to know there is already a water problem and that <u>some</u> of this problem is forest-related.
Gunns, however, have done nothing to assess this – even though the company must be well aware of community concerns and my very public stance on this issue. The table was published in my 2005 book.
Yet there are no comments and no research offered in the IIS. Nothing. This is simply not good enough. In fact, it is downright outlandish and arrogant.

RPDC must request the necessary analyis, have it made public, have it be subject to scrutiny or cross examination, either as basis for approval or disapproval, or to confirm or deny my work. It is quite improper to dismiss the only researcher and the only relevant work without even discussing or checking it and its implications. I would consider any failure to request this to be both reprehensible and irresponsible given the scale of the present plantation industry and this mill proposal.

RPDC should also know that the analysis requires the forest layout and age information NOT provided under Guideline 4.2.1 as noted in Issue 2 above. Had this been provided with the IIS I might have considered doing an approximate calculation given the resources and data at my disposal. In the interim we must live with my older and very conservative estimates as presented in the Table. This is not in the best form for project appraisal because that was not the intent of the evaluation, but it does suggest problems ahead if no thought is given to proper resource planning.
This is not the place to spell out details of my research, which has been spread over 40 years and as many catchments, or the science involved, for that has been summarised in my book.

7 Submission by D E Leaman

RPDC should know some of the background involved in this topic since Gunns was offered some of the necessary information – free of any charge – but never engaged in any discussion, or follow-up contact. Why was this, for such an important matter?

When my research began in 1966, and ultimately made a primary endeavour after 1995-7, it was directed toward understanding groundwater-surface water interactions and catchment characteristics. Early work (by 1970) showed that land use changes and seasonal effects were important and would have to be defined and examined. This was finally achieved for the eastern highlands by 2004 and the north eastern highlands by 2005. The results were as staggering as they had been unexpected. I was very concerned and I have attempted to raise government and industry interest in the risks I discovered. To no avail. Because of the manner in which my concerns and my reputation have been treated, and because of the way the research was funded (privately), I have now determined not to release this research freely as originally intended – and as I initially offered to all agencies, industry participants and municipal authorities throughout 2004. I took this decision on the "not casting pearls before swine" principle since no one showed any interest in the material with the sole exception of Hydro Tasmania (with respect to cloud seeding).

Why give something away that no one wants, or certainly that no one wanted to know about? If it is free, it must be worthless? So, I sit on this pile of work and draw on it for submissions, and will do so until it, and I, become properly valued.

Seasonal yield effects have NOT been researched in other main stream studies in Australia (note work by Catchment Research Centre comments on the need), nor has the role of groundwater in major land use change. Conventional hydrology deals with annual balances and in seasonal climates this can be very misleading. This is why I have taken the cutting edge approach from these two aspects.

I do offer some findings.
1. Regional climate change studies have limited value. The best these can offer is that western Tasmania will probably get wetter and eastern Tasmania will probably get drier and warmer. (This type of gross application was quoted in the VCAT case listed above and confused the Tribunal which then ignored actual, local data showing the opposite!!)

2. Local climate change studies, already possible, show that the changes are variable. Over the last 30 years there has been a core reduction of about 8 to 15% in total rainfall across many parts of eastern Tasmania and that there has been a shift in seasonal inputs. In those areas where the rainfall total has remained unchanged the time in which it is received has changed with ramifications for crops, growth, run off and evaporative losses.

Gunns has not considered this nor where it applies.
It will affect their growth assumptions for the wood resource, the land needed, AND the bottom line of economics.

8 Submission by D E Leaman

3. The supportive water source for the entire north east (Maurice-Victoria-Mathinna) is threatened by climate change (input reductions in excess of 10%) regardless of land use change in the same region. The effect on some catchment yields is as much as 30% due to the seasonal effect. Gunns has not considered this nor where it applies. Use of the wet upper catchments (St Patricks, North Esk, South Esk, Ringarooma, Great Forester, Brid, George, Break O'Day, Scamander) is robbing the entire catchment of a further 10-20% (at least) of water yield – especially as the plantings are held to short rotations (goals quoted of 15-25 years).

Neither Gunns nor the Forest Practices Authority has considered this, nor where it applies, nor its ramifications for everyone else in those catchments. THAT, is the community damage risk.

4. The Senate Inquiries, and my studies confirm their conclusions, recommend no plantings in rainfall areas in excess of 800 mm since the water loss fraction is too high and risks stress to the environment, other users and their allocations (towns and farms). Why is the Tasmanian forest industry, with its support by Federal legislation, allowed to operate, typically, in rainfall zones in excess of 1000 mm???!!!

Has Gunns considered the implications of future federal objections to this practice? Note obligations under Guideline 1.2.4 of Federal agreements.

5. Related erosion and siltation problems are not restricted to poor farming practices which are largely limited in these catchments. They are mainly associated with forest working of slopes in excess of 10 degrees in a variety of rock types.

Has Gunns considered the implications should the Forest Practices Code be upgraded to geological and protective operational reality on the matter of slope working and proper use of windrows?

6. Future plantations should be located at the bottom of catchments and receive the water not needed to support individuals, towns, farms or other industry. This would likely fulfil conditions 4 and 5. The trees would be slower growing and rotations would be longer. Perhaps this is why no one seems interested?

Would the mill and proposal be viable in these terms?
We cannot know since no consideration of these options is provided – and I have not done the requisite analysis either.

7. The current water drain to plantations is already enormous and, when coupled with climate changes, amounts to a serious problem/risk. It must be assessed. Properly.

What options exist to provide the required resource at minimal risk to the water system? No attempt has been made in the IIS to do this. Note that much regional population (including the towns of Scottsdale, Bridport, St Helens and St Marys, and the city of Launceston) is threatened with the need to develop alternate or controlled water management systems. What is the cost of these? This is surely a community and social, not to mention health issue.

Note that any farming that persists is also threatened. In a world where irrigation is virtually essential for profit and survival, any loss of supply or allocation is critical. Note also that forest water use is neither estimated, allocated nor rated in any way in any Tasmanian law or regulation. It is simply taken. (Forest use here refers to the water differential – an excess use – which is involved with the active growing phase of the plantation crop, and not the much lesser background use of water by mature forests or aged plantations)

Water changes to operate the feed stock on short rotation will be large. Proper economic and long term evaluation of this IIS proposal must consider them and their potential costs and ramifications, noting that it may take many decades for restoration to occur whenever use of the wood resource is reduced or terminated. None of this has been considered and it is not possible to evaluate the economic benefits, or losses, of the proposal without such consideration.

8. The effect of changing climate is already apparent in the vegetation mixes in many areas which have developed over the last 30 years. There is a trend to lesser understorey and drier forest species. This changing environmental pattern will be enhanced by the increased interception of water by the enlarging plantations. The entire region will become noticeably drier. This will have a feed back into plantation rotations and production.
I see no evidence that Gunns has considered this either.

9. The IIS refers to enlargement of the plantation estate. I found it hard to determine just how much but something of the order of 50000 ha seems to be involved. Which areas in general are to be targeted, and what proportion of this is likely to be farm land? This information (which should have been provided under 4.2.1, 4.2.4 and 4.2.6) is important in general terms, critical in hydrological planning (which we are not doing), and economically significant since it will determine some limits on the water changes. If the target conversions are in rainfall zones over 800 mm then the water losses can be large. If farm conversions are a large proportion in any area then the water exchanges will be very large, and in any case 50000 ha is equivalent to an area of about 23 km by 23 km. This is a huge area. This needs to be thought about. Yet it is a throw away line in the IIS. It must not stay at that.

10. There is a common belief in the industry that any run off surge (on clearing land) cancels out the growth take up on planting, and aging to harvesting. We should not even wish to have the surge (silting and erosion risks) but the time scales are an order of magnitude different and can never cancel. This is true for pines and eucalypts. Very low order changes and possible cancellation do appear to occur for deciduous trees (based on international research). We should conservatively apply what we know of Australian tree species.

My east Tasmanian research which involves areas with several species indicates that mainland results are comparable.
Enough is known to work out approximate hydrological land use plans. It is high time that it was done. No budget should ever carry a zero when some number could be inserted, however limited it might be initially.

The IIS provides no appraisal of the effect of changed climatic conditions or water demand on the general environment nor the economic and social implications of the natural and industrial changes enacted or to be enacted.

THE PROPOSAL SHOULD BE DENIED UNTIL SUCH AN APPRAISAL IS ATTEMPTED AND VETTED.
It is my view that the proposal should be down scaled given landscape variations already effected.

Any replicative research must be done to the advanced cutting edge levels of my own work and that it goes beyond standard practice which works to annual figures and ignores groundwater exchanges – as recently admitted for the management of the Little Swanport catchment. In that case the reviewing expert agreed key things (seasonal effect and groundwater) should be included, "next time", and the government is to proceed without such inclusion. This is sheer folly. To act like this across a region, at the scale of this mill, is not folly, it is criminal stupidity.

Note that any appraisal of water demands across 30 to 50 years requires information about the areas of State forest to be retained, utilised, thinned or converted; information about the age and location of past conversions or plantations, likely areas and locations of further plantings. This information need not be highly detailed but the more detailed the better. **What is needed, however, is <u>some estimate</u> of water balances and possible demand ranges.**
At the moment, we have no idea other than some of my data as presented in the table – and that is based on old and incomplete information (due to tight control of areas and location information by the industry) which definitely understates the risks and problems. RPDC should note that very few of the catchments listed are in good shape and several are already highly stressed regardless of the criteria I applied in evaluation.

Note that none of this is about forests or old growth. Trees are either old or older. Water release is a function of age or disturbance. The question is, can the trees be used or planted without upsetting other values in the region? (Guideline 8.3) I do note that the conversion of huge areas of forest, to forest farms, has an unavoidable series of consequences for natural values, a variety of species and the landscape as a whole. Gunns do not mention this either.

Any land use or resource "planning" which does not consider the long term hydrological ramifications is by definition inadequate. This is particularly true at the scale of our forest transformation – and this project.
We do need to know WHERE it is best to plant, WHY it is reasonable, and WHEN to harvest within such a framework. Operations and land acquisitions and use cannot remain at whim or willy-nilly if we are to equitably satisfy the forest industry and everyone else. As presented, this project is not the answer to anyone's prayer; it is closer to hell for those who must live in the region.

The water and changed climate issues leads directly into the final issue I wish to raise. Fire.

ISSUE 4:
IMPLICATIONS OF HEIGHTENED FIRE RISK

I can find nowhere in the IIS where the effect of a large fire has been considered. Fires are inevitable in Tasmania and they are more likely in drier areas and hot seasonal regions. These comments apply to much of northern Tasmania which has a fire history.

Changes in climate, especially the reduction in rainfall, will increase the likelihood of fire (whether due to arson, or wildfire). The increased drain on the water system to grow drier land trees will also change factors such as soil dryness, evaporation and temperatures. **The very large plantation estate has to be considered an abnormal fire risk.**

The question is: what happens if such a fire occurs? What will this mean for the wood supply, the draw on wetter State forests, older growth and other options for supply? How much plantation stock is actually in reserve for such eventuality or will it mean reduced production and changed plant economy for several years? We are told nothing of the possible scenarios.

The topic of fire, its management, the management of the resource and effects on communities must be detailed.
Note that a wildfire which forces large areas into same age regrowth will have severe consequences for the water resources of the region and those changes will make the serial changes of normal rotations seem like bathtub drains and fills in comparison. The effects of a large fire could well foreclose many farms by constraining water supply afterwards and, as noted by the Peel study undertaken for Launceston City Council by CRC for Catchment Hydrology, such a fire would seriously affect water supplies to Launceston.

None of this has been considered.
It is such an important issue that there is no specific Guideline! Consequently it must be considered under Guidelines 4.2.1 (wood resource), 8 (economic impact) and 9 (community impact). These risks must be rated and costed in all these relationships. More than money values are involved as well.

SUNDRY ISSUES:

WATER USE, WHY NO CLOSED LOOP CIRCULATION?

Although my suggestion implied in earlier submissions has been accepted by the company, namely provision of water from the only stream in the region with the resource and relatively free of conflicts, I do feel it is a pity that we must continuously waste water as a matter of principle. I could find no satisfactory reason in the IIS, other than profit, for avoidance of the closed loop continuous circulation with occasional top ups. Guidelines 7.9.2 and 7.9.3 would seem to require consideration.

Use of the closed loop completely avoids the extra piping to sea, any possible long term problems there, and at the same time provides some extra circulation at the Launceston end of the Tamar River – already carrying a siltation problem due to power station operation at Trevallyn and very limited long term flows through the gorge.

I think there is scope to review the source, treatment and recycling of water for, and from, the mill. Some proper costing of these options is needed.

This is yet another example of the general community, company and all, not properly valuing our water resources, or even thinking hard about those resources and their limitations.

WHY NO PROPER GEOLOGICAL REPORTING

Geological notes in regional discussions cite inadequate geological references. Kirkpatrick is not a geologist, but a botanist, and any quote from him must be a very filtered version of rock reality. Similarly, Sharples – who is qualified, is a source directed at other issues. None of the geological comment in the regional study can be considered proper, sufficient or adequate. The comments are also trivial and ignore the important productive realities of regions and materials. For example, granite is not just granite. There are many varieties and the soils and potential vary. One hopes Gunns has allowed for this type of variation in its land acquisition and productive potential calculations.

Properly qualified people should be engaged for technical reporting even if it is only for a couple of token paragraphs.
The same has to be said for any hydrology which may be undertaken as a result of this submission. That will need professionals with a broad background and not be based simply on standard simple methods by engineering-trained hydrologists only. Local knowledge is also required.

HOW DO WE ALL BENEFIT BY $870?

No member of my family can see how we will get to spend an additional $870 per year into the future because of the increased wealth in the community created by the mill (see executive summary).

Share holders or employees, or those with businesses serving the company and its employees might, but the rest of us just have to watch. Note Guideline 8.3 and the need for critical analysis.

This is a nonsense argument meant to deceive, by greed.

If my suspicions are correct, in terms of long term resource and community conflicts, we are all likely to lose more than this amount, than gain it. See issues 2, 3 and 4 above.

13 Submission by D E Leaman

The only way I could gain from this proposal is if I were engaged to calculate the comparative water resource figures for the catchments involved.

I have noted that my argument for use of a different catchment (not Pipers River) for mill supply – as argued in my April 2005 submission – has been taken up by the company. Perhaps I am of some use after all even though it was not acknowledged.

The shallow economic arguments based on turnover, taxation yield, export benefit and so on do not consider all the possible impacts. All are based only on the operation as a factory with a simple feedstock resource with no issues or hidden costs.

That is neither the reality nor what the Guidelines required.

We do, however, need to look at all the issues – not omit some very large elephants from the zoo.

And, we must cost them properly – for all sorts of values, and not just as dollars – in terms of benefits, losses, alternatives and exchanges.

It this had been done in this IIS we might all now be in a position to appraise the cost of not accepting the proposal (Guideline 9.3). This is not possible.

Nor have we been offered the best AND worst case scenarios for the big issues related to the wood resource, the water resource and community changes involved – as required by Guideline 8.1.

Yours faithfully,

Dr. D. E. Leaman

Catchment	Nile	North Esk	Pipers	Brid	Gt Forester	Ringarooma	Ansons	George	Ransom	Scamander	Break O'Day	St Pauls
Area ha	22300	36300	29800	13900	19300	48200	22800	40500	2800	26100	24000	49500
Forest var ha	>300	4500	2400	1400	2700	2500	400	2176	200	1000 est	negligible	>2200
% forest var	>1.3	12.4	8	10	13.9	5.2	1.75	5.4	7.1	3.8	negligible	>4.5
Input ML/yr	267500	546000	321500	173500	273800	657300	167900	824100	34800	420300	269300	320250
Yield ML/yr	116400	155000	91300	43900	80900	272750	58300	182800	13800	59400	53600	99700
Baseflow ML/yr	>60000	116000	36000	17500	53000	182700	15000	137100	7000	35000	18000	50000
Evapotranspiration	56.5	71	71	72	70	58.5	68.5	77	62	85.5	80	67
Yield ML/ha	5.2	4.25	3.1	3.15	4.2	5.7	2.6	4.5	4.9	2.3	2.25	2.01
Forest demand	0.5-1.5	1.7-2.6	1-2.5	1.5-2.5	1.5-2.5	1.8-2.5	0.5	2-2.5	1.7-2.2	1-2.0	0.5-1.7	0.3-1.7
After input normalisation												
Loss/gain ML/yr	18000	6000	24000	18000	36000	60000	negligible	36000	9600	0	12000	36000
As % of total	14		30	33	33		negligible			0	0	
As % long term av	15.5	3.9	26	41	44.5	22	negligible	19.7	69.5	0	22	36
As % base flow	30	5.1	67	100	68	33	negligible	35.8	all?	0	67	72
Irrigation claims ML/yr	0	0	0	0	0	4900	0	0	0	0	0	0
Forest inferences		using	CRAFTY									
Poss peak demand ML/yr	>450	9500	4000	3500	5900	5000	200	8300	500	2000	>100	>2200
Long term demand ML/yr	>350	5700	3000	2800	4200	4000	150	6000	400	1500	>70	>1500
Peak/Lt as % of yield	0.4/0.3	5.7/3.4	4.4/3.3	8/6.4	7.3/5.2	1.8/1.5	0.3/0.25	3.3/4.4	2.9/5.7	3.4/2.5	.2/.15	2.2/1.5
Peak/Lt as % of baseflow	0.7/0.6	8/4.8	11.1/8.3	20/16	11.1/7.9	2.7/2.2	1.33/1	4.5/6	3.6/7.1	5.7/4.3	.5/.35	4.4/3
Seasonal rating summer %rain/ET range%	39/50-60	36/50-80	32/45-95	39/60-85	33/50-85	33/40-80	40/50-90	50/65-85	50/45-80	45/80-90	40/80-90	50/50-90
INDEX ONE Peak demand												
Lterm demand %	0.5	9.8	9.75	13.9	13.4	3.4	0.6	5.6	4.6	5	0.4	2.8
Lterm demand % rel bflow	0.9	13.1	24.75	34.9	20.4	5.3	2.25	7.4	9.1	8.6	1.1	5.4
INDEX TWO Amplifier	0.5	3	18.2	5	4.6	3.4	8	3.7	3.2	5	1	8
Lterm demand %	0.4	31	187	82	72	15	5	24	19	28	0.3	29
Lterm demand % rel bflow	0.75	41	475	205	110	23	20	32	37	48	1	57
IF %fores is		20				12						
ltdemand		8500				8000						
indices		46/61				30/46						
Comment	rock snow											

Table: An extract from analysis of catchments in north east Tasmania.
The version presented here excludes the South Esk River which was included in the published version (Water, facts, issues and problems: D. E. Leaman, 2005). An updated rating is given for the North Esk and Ringarooma. The book provides an explanation of many elements of the water cycle and impacts, particularly due to forest transformations. Some other extracts of my own research are also published in the book and on the website for the Environmental Defenders Office. The Tasmanian forest industry (and farm lobby groups) have studiously and intentionally avoided this issue because to economic stakes involved. Both groups have made claims that it is a non issue but that is not what two federal inquiries found.

The Table, with a forest bias to exemplify issues and conflicts, indicates the percentage of forest variation (based on limited inspection, restricted access to plans and aerial photography) which is a minimum and has certainly increased since this table was generated in early 2005. The table also shows the variation in forest growth demand in each catchment, the varied extraction, and rates this in terms of base flows and catchment storage and yield. These numbers are not biassed by flood flows but represent long term reality. Demands are related in terms of peak flows and long term (Lt) flows and then two indices using direct ratios (1) or seasonal amplifiers (2) assess the stress of the catchment. It is likely that any value in excess of 10 for index 1 or 30 for index 2 indicates a problem for that catchment.
Such indices imply that there remains scope for development in some catchments without undue conflict but that farm allocations and forest transformations should either cease or be carefully managed in other catchments. Given that these estimates are now dated and minimal we may appreciate the risks involved. Note also that the catchment proportions quoted are the true geographic areas relative to the gauging point and not the artificial management areas used by the Tasmanian government which present misleading forest use data proportions.