Our Ref: 405062_LEO_036

18 June 2007

Major Development Assessment
Department of Planning
GPO Box 30
SYDNEY NSW 2001

Attention: Paul Weiner

Dear Paul

REVIEW OF DECC ASSESSMENT OF POTENTIAL IMPACT OF PROJECT APPLICATION # 05_0174 (PROPOSED DREDGING OF OYSTER LEASE AND OPERATION OF SAND STOCKPILE – OYSTER LEASE # 80-178 AND LOTS 59, 101, 123, 124, 125 DP 753207, LOT 12 DP 816473, 2 – 6 RODMAY ST, TUNCURRY) ON COASTAL SALTMARSH EEC IN THE WALLIS LAKE ESTUARY

We refer to the above and to the DECC's assessment report forward by you on 8 June 2007. This response has been prepared to address the points raised in DECC's assessment which have been used by DECC to justify not supporting the application in its current form.

1. General Comments on DECCs Assessment Report (DECC 2007)

DECC (2007) have provided the Department of Planning with an assessment of potential impacts on the coastal saltmarsh EEC at North Tuncurry from the Oyster Dredge proposal (Application #05_0174). Orogen considers that the assessment report displays a lack of understanding of the proposal, saltmarsh ecology, coastal hydrological/tidal processes as well as a lack of knowledge of (or refusal to acknowledge) the effectiveness of modern saltmarsh restoration/rehabilitation practices. Furthermore, it is clear from DECCs assessment report that its saltmarsh/wetlands unit 'experts' have little or no practical experience in impact assessment, as their comments reflect theory-based 'academia' only, which are of little relevance to predicting actual on-ground impacts and their level of significance in a statutory planning context.

Orogen's ecologists have extensive experience of observing first hand the actual impacts posed from similar infrastructure-related projects in wetland habitats and thus have a more realistic understanding of the interactions between infrastructure development and ecology in the field, as opposed to quoting from textbooks and theory-based literature. The assessment report provided by DECC is flawed in its entirety and should be rejected outright as a regulatory submission for this proposal.

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It is also important to note that no formal impact assessment framework was used by DECC (2007). DECC should have adopted, as Geolyse (2006) did, the statutory-based 'Test of Significance' (section 5A of the *Environmental Protection and Assessment Act 1979*) to determine whether a proposal may have a 'significant' impact on a TSC listed species, population or EEC. DECC (2007) have concluded that the proposal in its current form be rejected simply because, in their (mistaken) view, it has the potential to 'significantly' impact upon the EEC. However, the DECC (2007) have provided no 'significance' criteria or 'Test of Significance' framework with which to justify this recommendation.

As you may be aware, the 'Test of Significance' puts emphasis on placing a proposal in 'local' context, asking the following question:

> '*whether the action proposed is likely to have an adverse effect on the extent of the EEC such that its* ***local*** *occurrence is likely to be placed at risk of* ***extinction***'. (our emphasis in bold)

The Environmental Assessment prepared for the project (Geolyse, 2006) predicted that potential (pre-mitigation) impacts to the saltmarsh (compaction, vegetation death and damage) would be restricted to a 690 m x 3 m wide corridor, which equates to 1.6 % of the areal extent of saltmarsh occurrence[1]. in SEPP 14 Wetland no. 703. The DECC (2007) concurs that the potential impacts would likely be restricted to areas 'in the vicinity of the pipeline'. Impacts to this negligible, partly degraded portion of saltmarsh would be, as stated in the Environmental Assessment and communicated to the DECC's officers during the site inspection of 26 April 2007, temporary in nature and rehabilitated to pre-development condition (or better). As a result, it cannot be reasoned through any objective analysis that the saltmarsh component of SEPP 14 Wetland no. 703 would be placed at 'risk of extinction' as a result of the proposal.

Consequently, it cannot be reasoned that the proposal would 'significantly impact' upon the coastal saltmarsh EEC based on the formally recognised impact assessment framework that is used in NSW. We would expect that the DECC would have used a formal assessment process to determine the significance of the impact of the proposal, rather than the subjective, unqualified and unsubstantiated justification provided in their report. This is all the more disappointing, given that it has taken the DECC over six months to reach these ill-informed and unsubstantiated conclusions.

Finally, DECC's (2007) assessment of impacts is flawed because, among many other technical errors, it does not take into account the range of mitigation measures proposed by Geolyse (2006) to minimise the potential impacts on the coastal saltmarsh EEC. These include:

- Raising the section of pipeline within the saltmarsh using small timber blocks at intervals (approx. 10 – 15 m) to minimise areas of saltmarsh subjected to compaction. DECCs assessment incorrectly assumes that the entire pipeline will be laid directly on the saltmarsh soils – there will be no pipeline contact with the saltmarsh in areas where the saltmarsh is pristine;

[1] This 1.6% figure does not take into account other substantial areas of saltmarsh in the 'locality', defined by DECC as 10 km radius from the subject site. Large areas of saltmarsh occur in the immediate vicinity of the site on the western bank and flats of the Wallamba River, on the Wallamba Broadwater and continuing further upstream north of Gereeba Island. When other saltmarsh bodies in the locality are taken into account, 1.6% figure is substantially reduced, likely to be well below 1%.

- Rehabilitation of disturbed areas of saltmarsh (post pipeline decommissioning) using well recognised decompaction/re-aeration techniques and recontouring to facilitate natural colonisation of saltmarsh plants. This would be followed by a period of monitoring over a 2 – 3 year period to assess the effectiveness of the rehabilitation program. Follow-up assisted regeneration (*eg*. saltmarsh transplantation, tubestock propagation) is also proposed if warranted. Geolyse (2006) emphasised that the proposal has the opportunity to provide a net benefit to the local saltmarsh by rehabilitating a partially degraded section of saltmarsh that is presently too compacted to support saltmarsh vegetation. The pipeline will place pressure onto the saltmarsh soils roughly equivalent to that of a 50 kg person (0.8 t m^{-2}), which in the author's experience, will result in a compaction of several centimetres. This minor degree of predicted saltmarsh compaction can be easily remediated, as demonstrated through standard decompaction techniques used in many NSW estuaries in recent years, particularly by specialist contractors such as Australian Wetlands, Geoff Sainty and Associates and Hunter Wetlands Research.

2. Potential Impacts

DECC (2007) have listed the following potential impacts as being relevant to the proposal:

- Impediment to the natural flow of tidal inundation through the wetland;
- Scouring and erosion impacts;
- Increased soil compaction;
- Enhancing the potential for mangrove encroachment; and
- Vegetation impacts associated with the pipeline.

Orogen provide the following response to each of the predicted impacts stated by DECC (2007).

Impediment to tidal flow

DECC (2007) state that the positioning of the pipeline through the saltmarsh may inhibit the natural flow of tidal waters as well as freshwater inputs from rainfall. This may have significant implications for the transfer of zooplankton and detritus from the saltmarsh to estuarine waters during spring tides and the free movement of fish throughout the wetland.

DECC (2007) state that the saltmarsh would be inundated both at spring and neap tides.

Orogen response – We do not see how the DECC have concluded that the installation of a 200 mm diameter pipeline (with some areas raised above a saltmarsh bed) would impede tidal flow? This suggestion by DECC displays a complete lack of understanding of the proposal and of tidal dynamics in the saltmarsh area.

Long term observations of the site show that spring high tides inundate the saltmarsh both from the small creekline and main river channel that run virtually perpendicular to the pipeline corridor. Consequently, both sides of the pipeline corridor would receive unimpeded tidal flows even if the pipeline were placed directly onto the saltmarsh bed. It should also be noted that much of the pipeline corridor through the saltmarsh (Sarcocornia – Sporobolus community) is situated at or close to the upper intertidal limit (edge of saltmarsh and Swamp Oak Forest) and thus it would be physically impossible to impede tidal flow through this area (even if, for example, a much larger pipeline were placed directly onto the saltmarsh bed).

Orogen re-emphasise that the proposal would not be expected to alter the existing hydraulic (tidal, groundwater) regime for the saltmarsh site.

It should also be noted that the saltmarsh is inundated only at spring high tides, not neap tides as stated by DECC in their assessment report. Saltmarshes form when sediment deposited by rivers accumulates to heights above the average level of neap high tides. If the saltmarsh were inundated at neap tides as suggested by DECC, there would be no saltmarsh habitat, only mangrove woodlands. This is an example of the DECCs complete lack of understanding of even the most basic saltmarsh ecological principles.

Scouring and erosion impacts

DECC (2007) state that the direct damage to the underlying and nearby vegetation from the pipeline installation and the corridor's linear orientation may increase the velocity of tidal waters in the vicinity of the pipeline. This in turn may limit the ability of sediments to settle on the saltmarsh surface resulting in possible erosion and scouring.

Orogen response - Again, Orogen would like to know how the DECC have justified their conclusion that the installation of the pipeline would result in scouring and erosion of saltmarsh soils (as no reasoned justification was provided). While we acknowledge that there will be relatively small direct vegetation damage from pipeline installation in the nominated 3 metre wide corridor, typical tidal flow velocities (inundation and retreat) in a saltmarsh are of such a small magnitude (somewhere in the order of 0.005 m/s) combined with negligible damage or loss of saltmarsh vegetation (from timber pipeline support blocks and tractor) that scouring and erosion from pipeline installation impacts are likely to be undetectable. DECC have not suggested a mechanism for their inferred (though unsubstantiated) relationship between the pipeline and increased tidal flow velocities (and hence scouring and erosion) in the saltmarsh. It can only be assumed that the DECC officers are of the misinformed view that the presence of the pipeline will increase tidal velocities to the extent that they will be able to initiate sediment entrainment.

The nonsensical statements made by the DECC can be simply demonstrated through referencing published critical shear stresses for consolidated sandy silts, material which is typical of the saltmarsh substrate. These sediments are naturally compacted and are not easily eroded, particularly as areas such as saltmarshes only become inundated at spring high tides and as will be shown, tidal velocities are far too low to initiate sediment entrainment. Neilsen and Miller (2001) calculated shear stresses for this material as between 20 – 30 N/m^2, which equates to tidal velocities of 0.13 – 0.16 m/s. Velocities of tidal flows in a saltmarsh are on the order of 0.005 m/s. It is not physically possible for the presence of the pipeline to increase tidal velocities by greater than an order of magnitude such that sediment motion would be initiated.

Therefore, it is not possible for tidal flows in the saltmarsh, even with the presence of the pipeline, to induced sediment transport (*ie*. scouring and erosion). Using this as a reason for not supporting the proposal is patently unsubstantiated and has no scientific basis.

Increased soil compaction

DECC (2007) state that the degree of soil compaction resulting from the proposal is difficult to predict and assume that the impacts to the saltmarsh will be 'significant' in terms of its long term sustainability and therefore (in terms of the Test of Significance). poses a 'risk of extinction' of the saltmarsh EEC in 'the locality'. The DECC also compare the impacts of the pipeline with all-terrain vehicles on saltmarsh and conclude that the response of the saltmarsh to the pipeline would be similar (*ie*. little to no chance of recovery in the short to medium term).

Orogen response – In their assessment of soil compaction, (which was acknowledged as an impact by Geolyse (2006)), DECC have ignored the proven mitigation measures proposed (*ie.* rehabilitation program proposed for disturbed areas) that would rehabilitate the compacted areas post pipeline decommissioning. DECC also base their comments incorrectly on the whole of the pipeline being directly placed onto the saltmarsh bed. Further, Orogen have provided the DECC with data, reported in the DECC assessment, of the pressure that the pipeline would exert on the substrate, which is approximately 0.8 t m^{-2}. In lay terms, this is equivalent to the pressure that would be exerted by a person weighing approximately 40 – 50 kg. Therefore, statements about the degree of soil compaction being difficult to predict are perplexing, given that the data Orogen provided is reported in the DECC assessment.

Based on the predicted pipeline pressures, minor soil compaction in the order of several centimetres depth would be expected on relatively consolidated saltmarsh soils. Orogen wish to re-emphasise that the entire 3 m wide corridor pipeline through the saltmarsh (of which > 50 % is already too compacted from previous disturbance to support saltmarsh vegetation) will be subjected to a comprehensive rehabilitation program involving industry-standard decompaction techniques and recontouring. As stated in the Environmental Assessment and communicated to the DECC officers during both field inspection, rehabilitation methodologies will be detailed in an Environmental Management Plan for the project once approval for the project has been received and will be endorsed by DECC prior to its implementation. Orogen propose to partner with specialist wetland contractors who have expertise in saltmarsh restoration practices (*eg*. Geoff Sainty and Associates, Hunter Wetlands Research).

Further, it is important to note that the disturbance would be limited to a narrow linear strip in the saltmarsh EEC. The DECC assessment implies that the compaction of this strip would significantly impact on the whole of the EEC, which is patently misleading and erroneous, given that the area of impact represents approximately 1.6 % of the area of this saltmarsh in SEPP 14 wetland No. 703. There is no physical, scientific or logical basis for these assertions by the DECC.

Enhancing the potential for mangrove encroachment

The DECC state that the proposal may potentially enhance mangrove encroachment into the saltmarsh by causing soil compaction, impeding tidal flow, initiating tidal scouring and reducing vegetation coverage of the saltmarsh.

Orogen response – Much of the lower to mid marsh areas along the pipeline corridor (supporting Sarcocornia – Sporobolus community) are already subject to mangrove encroachment (which was witnessed by the DECC officers during site inspections) and will likely be replaced by mangrove woodland habitat in the near future unless remedial action is undertaken. The primary cause of this mangrove encroachment is related to the increasing tidal range inside Wallis Lake in response training of Wallis Lake entrance in the mid 1970's. It is perplexing as to why the DECC have made no mention of the existing high rate of mangrove encroachment into the saltmarsh area.

The DECC assertion that the pipeline will compact the soils and hence enhance mangrove encroachment is again totally unjustifiable both scientifically and logically. The temporary compaction of several centimetres depth along a narrow linear disturbance cannot possibly affect the elevation of the rest of the saltmarsh (and therefore encourage mangrove intrusion). Further, the assertion by DECC that this compaction of several centimetres will reduce the ability of the saltmarsh to accommodate a predicted sea level rise of between "0.18 m to 0.59 m in the 21st century" (6 to 20 times the size of the predicted compaction under the pipeline) is bewildering and demonstrates the incompetence of the impact assessment provided by the DECC.

One of the positive benefits of the proposal is that the proposed rehabilitation program will restore saltmarsh elevations along the pipeline corridor (previously compacted through past activities) which may act to limit or cease mangrove encroachment. Clearly, if no action is taken, the marsh we are discussing will soon disappear. This is an important point which the DECC has refused to acknowledge.

We wish to re-emphasise that the proposal will not alter tidal flows or result in scouring as previously discussed.

Vegetation impacts associated with the pipeline.

The DECC state that the proposal will cause vegetation damage as a result of the installation, removal and operation of the pipeline and that the saltmarsh recovery will be slow.

Orogen response – We wish to re-emphasise that the disturbance to saltmarsh vegetation will be restricted to a narrow 3 m wide corridor which forms a negligible part (1.6 %) of the SEPP 14 coastal saltmarsh at Tuncurry. Much of this pipeline corridor that will be traversed by tractor and foot is already highly compacted and supports no saltmarsh vegetation. Areas within the pipeline corridor that are subject to disturbance are proposed in the Environmental Assessment to be restored to pre-development condition (or better) by a comprehensive rehabilitation program that will be DECC endorsed prior to its implementation. The rehabilitation program would facilitate natural colonisation of saltmarsh flora into an otherwise degraded area of saltmarsh. We wish to re-emphasise that the proposed revegetation and rehabilitation techniques of the disturbed areas have been proven successful in many saltmarsh restoration projects in NSW, as indicated in previous responses to the DECC. The DECC's refusal to acknowledge this point demonstrates that their advice to the DoP is flawed.

Summary

In conclusion, we are of the opinion that the DECC's assessment that the impact of the pipeline on the saltmarsh EEC would be 'significant' is critically flawed. First, there has been no objective methodology for concluding that the level of impact would be 'significant'. Second, the reasons provided by the DECC for concluding that the pipeline would have a 'significant' impact and therefore cannot be supported have been demonstrated to be based on flawed, unscientific generalisations that for the most part, have no basis in science, logic and are unsupported by any objective reasoning. Third, the DECC have given no recognition to the role of the proposed rehabilitation and restoration of the areas to be disturbed, which formed part of the proposal as detailed in the Environmental Assessment.

The DECC have provided adequate demonstration of their inability to grasp even the most basic concepts of impact assessment, which are usually based on science, reason and logic, and presented in the context of a formal impact assessment framework. Their conclusion of a 'significant impact' has been reached without any reference to the only statutory process accepted in NSW for assessing the level of significance of impacts (*ie*. Test of Significance or s5A Assessment). In summary, Orogen wish to emphasise that the proposal, whilst occurring in a sensitive coastal environment, is predicted to result in relatively minor, localised and temporary impacts which can easily be mitigated.

Orogen therefore objects in the strongest possible terms to the assessment provided to the Department by DECC and urges the Department to give careful and due consideration to the response provided herein. In conclusion, the content of the DECC response, given the length of time that DECC has had to make an informed, objective assessment of the proposal (draft EA provided in July 2006, Final in December 2006) is extremely disappointing and reflects poorly on the NSW planning process.

We request that following the Department's review of this response, a meeting be arranged between Orogen and the Department to discuss moving the project to decision resolution. We do not wish to involve the DECC in this meeting at this stage, given the unacceptable lengthy delays they have brought to the project.

If you have any queries, please do not hesitate to contact the undersigned.

Yours faithfully
Orogen Pty Ltd

DR JUSTIN MELEO
Project Director

References

DECC (2007). *Assessment of the Potential Impacts of Project Application # 05_0174 on Coastal Saltmarsh (EEC) in the Wallis Lake Estuary.*

Geolyse (2006). *Environmental Assessment - Oyster Lease Dredging, Lease No. 80 – 178, Wallis Lake*. Unpublished report prepared for Trevor Dent.

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