

Department of Environment and Resource Management (DERM) Final Comments on the Environmental Impact Statement for the North East Business Park: April '09

Issue	Comment/ Recommendation
<p><b>Terrestrial Ecology &amp; Biodiversity Offsets</b></p>	<p><b>Comments</b></p> <p>The western portion of the site (Lot 2 on SP169551 but referred to as Lot 2 on RP902075 in the EIS) is currently vegetated and provides a significant corridor width (averaging between 150m in the south and 350m in the north). Within the lot, the 15.5ha of endangered regional ecosystem (RE) 12.5.3, described as <i>Eucalyptus tindaliae</i> and/or <i>E. racemosa</i> open forest, (identified as 'Scribbly Gum Shrubby Open Forest' Community 11 in Figure 16) is of state biodiversity significance in the DERM's Biodiversity Planning Assessment (BPA v. 3.5) and a high conservation value community that is poorly represented in the sub-region and adjacent to a waterway or important wetland. It is identified as core habitat for koala, <i>Phascolarctos cinereus</i>, (listed as vulnerable under the <i>Nature Conservation Act 1992</i>) in the SEQ Threatened Species' Habitat layer and provides habitat for large and small ground-dwelling mammals (Terrestrial Ecology Assessment Report, p. 19).</p> <p>Most of the 12.6ha of 'Regenerating Paperbark Forest' (identified as Vegetation Community 12 in Figure 16) is identified as a 51-80% referable wetland (RE 12.3.11/12.3.5/12.9-10.3/12.3.14) and eventually could be rehabilitated to remnant regional ecosystem status. This wetland community is not mapped as remnant vegetation.</p> <p>The community bisecting RE 12.5.3 (described as community 2, paperbark open forest in Figure 16) is mapped as <b>RE 12.3.5</b>, <i>Melaleuca quinquenervia</i> open-forest to woodland, is described under the VMA as 'not of concern' but 'of concern' under the BPA. It is mapped as of regional biodiversity significance; acts as a buffer to the adjacent endangered RE; supports core threatened species' habitat for the acid frog <i>Crinia tinnula</i> and non-core for the acid frogs, <i>Litoria freycineti</i> and <i>Litoria olongburensis</i>, as well as non-core habitat for koala; and corresponds to a palustrine referable wetland designation.</p> <p>However, some 79% of 'Community 11, and 100% of the adjacent Community 12 is proposed to be cleared. As the NEBP site comprises ~769ha, of which 78 % is already cleared, there is sufficient area for development on the already cleared areas and the DERM does not accept that these remnant ecologically sensitive vegetation communities need to be cleared. Similarly, no mention has been made of the 'core threatened species' habitat designation over most of this corridor for the Koala and Wallum Froglet (both listed as 'vulnerable' under the <i>Nature Conservation (Wildlife) Regulation 2006</i>). A proposed management intent</p>

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	<p>for vulnerable wildlife under Section 19 of the <i>Nature Conservation (Wildlife) Regulation 2006</i> is: (j) to monitor and review environmental impact procedures to ensure they—</p> <p>(i) accurately assess the extent of the impact, on the wildlife, of the activities to which the procedures relate; and</p> <p>(ii) provide for effective measures to mitigate any adverse impact of the activities on the wildlife; and</p> <p>(iii) If there is an adverse impact of the activities on an area in which the wildlife normally lives, provide for the enhancement of other areas where the wildlife normally lives.</p> <p>In its current form, the proposal is not compliant with outcomes of the Caboolture Shire Plan’s Nature Conservation Overlay Code SO1 to SO5.</p> <p>Lot 2 on SP 169551 in its entirety provides contiguity between the communities of most interest; a north-south corridor; scenic amenity; and a noise and visual buffer to the Bruce Highway (M1). It should not be cleared: rather it should be rehabilitated to enhance its habitat values and protected, e.g. via an open space designation and an enduring management regime.</p> <p>Corridor width is an important determinant in wildlife use with studies indicating that increasing width reduces the negative impacts associated with edge effects, such as pest species’ invasion and noise and light impacts from adjacent industrial or residential development, or as in this case, the M1. Width also is important given its length of ~1.2km.</p> <p>Provision of fauna under and over-passes at the NEBP entrance road would re-establish connectivity with the Caboolture River and proposed riparian revegetation. Design objectives should be informed by Policy 1 Koala sensitive development of the <i>Nature Conservation (Koala) Conservation Plan 2006</i> and Fauna Sensitive Road Design (Volume 1) available from the Department of Transport and Main Roads.</p> <p>The proposed offset, which is located near Rosewood in Ipswich City, would protect a completely different regional ecosystem and may not provide equivalent habitat for the Koala. An environmental offset is required to address identical environmental values as those being impacted (i.e. a koala habitat offset should be found for the loss of koala essential habitat).</p> <p>The establishment of an environmental trust fund to be administered by an environmental group (Net Benefit Assessment, p.67) would require a rehabilitation management plan not only of the site impacted, but also for any offset sites. Such plans should indicate the extent of impacts or degradation, works proposed, methods to be adopted and management regimes, including base cases, monitoring and reporting, performance criteria etc. for all such sites. Revegetation should use native species that reflect the</p>

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	<p>pre-clearing regional ecosystems at each, with preference given to locally sourced, endemic species. The plan for the site of the development also should include erosion/restoration work referred to above.</p> <p>Although the proposal includes rehabilitation and revegetation of the Caboolture River riparian zone to increase the ‘ecological values and functions of the degraded habitats that currently exist,’ it is counter-intuitive to propose substantial restoration works of a major riparian corridor that currently is largely cleared whilst dismissing rehabilitation of an already regenerating paperbark forest (identified as Community 12) that would require significantly less work.</p> <p>Although the proposal to retain and protect ~55% of the site in an open space precinct is encouraged, as is its rehabilitation to yield an ‘overall ecological net benefit,’ most of the area is flood-prone and thus unsuitable for development anyway: only ~21ha of some 419ha are above the Q100 flood line.</p> <p><b>SEQ Regional Plan</b>  Despite the designation of part of the site as ‘urban footprint’ in the SEQ Regional Plan 2005-2026 (and similarly in the draft 2009-2031), not all areas in the footprint are intended to be developed for urban purposes: some areas may be constrained, e.g. because of their biodiversity values.</p> <p>Desired Regional Outcome (DRO) 2 ‘Natural environment’ under Policy 2.1.1 seeks to ‘<i>protect, manage and enhance the region’s nature conservation and biodiversity values and supporting ecological processes, including areas of state, regional and local significance</i>’. Policy 2.1.4 seeks to “<i>avoid or mitigate potential adverse impacts in areas of state, regional or local biodiversity significance inside the Urban Footprint...</i>’ Policy 2.5.3 states: ‘<i>Avoid clearing native vegetation or development within a waterway, wetland, riparian area or floodplain...</i>’ The notes state that: ‘<i>Development within watercourses, wetlands, riparian areas and floodplains should be restricted unless there is a demonstrated overriding need in the public interest.</i>’</p> <p><b>Caboolture Shire Plan 2005</b>  The Caboolture Shire Plan 2005 zones part of the area ‘District Industry’ and the land use is classed as ‘Industrial light/medium’ - as is most of the land east of the M1. Notwithstanding this designation, the entire area is mapped under the planning scheme’s Nature Conservation Overlay as containing state and regional nature conservation significance (including a 20m buffer around Lot 2 on SP169551). S1.2 of the Nature Conservation Overlay Code states that: ‘<i>Significant Vegetation, Wetlands, habitats for endangered, vulnerable and rare species within nature conservation areas and ecological corridors indicated on the overlay</i></p>

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	<p><i>map, are not disturbed’.</i></p> <p>An area marked as ‘Wetland Protection Area’ is identified under the Catchment Protection Overlay Code and is analogous to RE 12.3.5 and the southern section of RE 12.5.3. S4.1 (b) of the Code states that development is setback “At least one hundred (100) metres to Wetland Protection Areas”. Additionally, a minor waterway is identified within this area requiring a 40m buffer to development.</p> <p>It is also noted that the parcel is mapped as ‘medium bushfire hazard’ under the Bushfire Hazard Overlay. The planning scheme code and the <i>State Planning Policy 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide</i> state that development that increases the number of people living or working in a natural hazard management area, or that involves the manufacture or storage of hazardous material in bulk, is not to be located in a medium bushfire hazard area. However, the intention to clear would negate the requirement.</p> <p><b>Recommendation:</b></p> <p>Any approval by the Coordinator-General for the project require:</p> <ul style="list-style-type: none"> <li>• Amendment of the site plan to retain, protect and enhance the vegetation communities and associated threatened species’ habitat on Lot 2, which in its entirety provides a north-south corridor; scenic amenity; and a noise and visual buffer to the Bruce Highway (M1). It should not be cleared: rather it should be rehabilitated to enhance its habitat values and protected, e.g. via an open space designation and an enduring management regime;</li> <li>• Amendment of the plan to incorporate fauna infrastructure (over and under-passes). Such infrastructure at the NEBP entrance road would re-establish connectivity with the Caboolture River and proposed riparian revegetation. Design objectives should be informed by Policy 1 Koala sensitive development of the <i>Nature Conservation (Koala) Conservation Plan 2006</i>;</li> <li>• Preparation of environmental management plan (EMP) elements to address revegetation and rehabilitation for the development area and any offset site(s) elsewhere. The EMP revegetation element for the NEBP site should include rehabilitation works in the 100 metre wide riparian zone.</li> <li>• The EMP revegetation elements to be approved by the DERM prior to commencement of any development works for NEBP;</li> </ul>

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	<ul style="list-style-type: none"> <li>• All site rehabilitation work to be undertaken/managed by suitably qualified personnel;</li> <li>• Any vegetation clearing to accord with procedures of Policy 6, Vegetation clearing practices, of the <i>Nature Conservation (Koala) Conservation Plan 2006 and Management Program 2006-2016</i>. Clearing of koala habitat trees must be performed sequentially and in the presence of a qualified koala spotter; and</li> <li>• Any offsets to accord with the Queensland Environmental Offsets Policy 2008.</li> </ul>
<p><b>Dredging in the MBMP (Caboolture River);</b></p> <p><b>Public benefit test for designating a works area.</b></p>	<p><b>Dredging in Moreton Bay Marine Park</b>  Developmental dredging of a new navigation channel in the Caboolture River is, by definition, a ‘major work’ under the <i>Moreton Bay Marine Park Zoning Plan 2009</i> and can be undertaken only in a designated works area. As no such area exists, it is necessary to amend the plan, a prerequisite for which is demonstration of a public benefit, which may include the provision of facilities for use by the public. For the public benefit, it must be identifiable and the benefit must go to the public or a section of the public.</p> <p>The EIS was able to demonstrate minor direct public benefit, viz. improved navigability in the river, on which the viability of the development of the marina is dependent. In turn, the marina is expected to provide jobs and generate economic activities. It was unable to demonstrate that dredging was necessary for the provision of facilities for use by the public, although the proponent indicated a willingness to provide facilities for the public to access the River.</p> <p><b>Public Benefit - Demonstrated public benefit of dredging in a marine park</b>  Three designated works areas have been created in the Moreton Bay Marine Park since it commenced in 1997. These areas cover Toondah Harbour, Weinam Creek and the duplication of the Houghton Highway. The major works undertaken in these areas provide significant transport links, public ferry terminals and public facilities. It is clear that this development falls in a different class, being primarily to provide facilities for private use.</p> <p>Although the NEBP dredging is different in nature to the previously designated three works areas, an assessment of the necessity for the activity for public benefit considers social, environmental and financial aspects of the proposal. The justification in the EIS covered some aspects, such as improved navigable access and safety for the general boating community, and job creation.</p> <p>The public benefit was also weighed against potential environmental impacts from the dredging, in particular influence on Lyngbya, changes to tidal prism, and effects of changes at river mouth. It would seem that these matters can be addressed through</p>

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	<p>adherence to relevant legislation and policies (e.g. SEQ RCMP policy on algal blooms) and development and implementation of environmental management plan required to undertake the dredging activity. The net benefit under the State and regional coastal management plans was also considered.</p> <p><b>Conclusion:</b></p> <p>As outlined already, the proposal is clearly different in the provision of public benefits or facilities for the public when compared to the three existing works areas in the marine park. However, in considering the public benefit of undertaking the dredging, the broader benefits of the development, which is reliant upon the dredging activity, were taken into account. In this context, the information submitted by the proponent on public benefit, i.e. that improved navigation and maritime safety and increased economic activity, such as the creation of employment would be achieved, was sufficient to satisfy the DERM that dredging in the Caboolture River to support the NEBP’s marina provides an identifiable benefit for a section of the public. This view also balanced these benefits against the management and mitigation measures (such as an environmental management plan for dredging, including Lyngbya) to be implemented to minimise and manage environmental impacts as a requirement of undertaking the dredging.</p> <p><b>Recommendation</b></p> <p>It is recommended that the Coordinator-General:</p> <ul style="list-style-type: none"> <li>• Note the public benefit associated with the proposal is sufficient to justify designating a works area</li> <li>• Require the proponent to develop a component of the dredging activities EMP to address the SEQ RCMP policy on algal blooms, particularly in relation to the prevention of Lyngbya outbreaks.</li> </ul>
<p><b>Dredging in the MBMP (Caboolture River);</b></p> <p><b>Net gain of coastal resources and values.</b></p>	<p><b>Net gain of coastal resources and values:</b></p> <p>The <i>SEQ Regional Coastal Management Plan 2006</i> defines coastal resources and the coastal zone as follows:</p> <ul style="list-style-type: none"> <li>– coastal resources are the <u>natural</u> (natural and physical features and processes of the coastal zone, including wildlife, soil, water, minerals and air); and <u>cultural</u> (places or objects that have anthropological, archaeological, historical, scientific, spiritual, visual or sociological significance or value, including such significance or value under Aboriginal tradition or Island custom). (S12 and schedule of the <i>Coastal Protection and Management Act 1995</i>.)</li> <li>– Coastal zone includes all coastal waters and all areas to the landward side of coastal waters in which there are physical features, ecological or natural processes or human activities that affect, or potentially affect, the coast or coastal resources.</li> </ul>

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	<p data-bbox="607 193 1290 225"><i>(S15 Coastal Protection and Management Act 1995.)</i></p> <p data-bbox="510 276 2136 344">Coastal development needs to satisfy the test of ‘net gain of coastal resources and values.’ To convince DERM that the test has been met it is necessary for the proponent to:</p> <ul style="list-style-type: none"> <li data-bbox="589 357 2085 389">(a) Define all the qualitative and quantitative <b>coastal resources and values</b> (natural and cultural) of the following: <ul style="list-style-type: none"> <li data-bbox="663 402 2157 470">(i) Impacted areas (i.e. the proposed entrance channel; marina precinct areas and all other areas within the Coastal Management District likely to be impacted on by the development); and</li> <li data-bbox="663 483 2096 552">(ii) The existing areas that are intended to receive a gain in coastal resources and values, detailing the existing coastal resources and values, prior to the project proceeding; and</li> </ul> </li> <li data-bbox="589 564 2136 633">(b) Justify/demonstrate/quantify how/what/where there will be a consequential net gain of coastal resources and values for a development project. To demonstrate there will be a net gain of coastal resources and values it is necessary to provide detailed supporting information that there will be: <ul style="list-style-type: none"> <li data-bbox="663 646 972 678">(i) No net loss in the: <ul style="list-style-type: none"> <li data-bbox="736 691 1350 722">➤ Natural resources of the coastal zone; and</li> <li data-bbox="736 735 1359 767">➤ Cultural resources of the coastal zone; and</li> </ul> </li> <li data-bbox="663 780 1279 812">(ii) A net gain in at least one of the following: <ul style="list-style-type: none"> <li data-bbox="736 825 1330 857">➤ Natural resources of the coastal zone; or</li> <li data-bbox="736 869 1301 901">➤ Cultural resources of the coastal zone.</li> </ul> </li> </ul> </li> <li data-bbox="589 1000 2168 1069">(c) Fully detail plans/strategies/measures to ensure a net gain of coastal resources and values, as required in (a)(ii) above, showing how such measures would be implemented/achieved/reported, including: <ul style="list-style-type: none"> <li data-bbox="663 1082 2089 1150">(i) Specific objectives and measurable outcomes, performance targets, timeframes, monitoring programs and reporting arrangements; and</li> <li data-bbox="663 1163 1783 1195">(ii) Assurances and contingency arrangements to ensure outcomes will be met in full.</li> </ul> </li> </ul> <p data-bbox="510 1254 2179 1286">Measures to mitigate impacts arising from or as a consequence of the development and/or its operation should not be claimed as a</p>

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	<p>gain of a coastal resource, other than to the extent they mitigate impacts occurring from existing development.</p> <p>The cost benefit analysis submitted to satisfy the test contains multiple flaws and inconsistencies, e.g.:</p> <ul style="list-style-type: none"> <li>(a) All positive impacts (+1) and all negative impacts (-1) are equally weighted;</li> <li>(b) Negative impacts to coastal values (such as habitat loss) are given 0 values in several instances without explanation;</li> <li>(c) Several potential negative impacts are not taken into account;</li> <li>(d) Stormwater treatment measures proposed as a consequence of the development should not be given a positive value, as they are only mitigating new impacts;</li> <li>(e) Inconsistencies in the weighting for apparently similar activities, e.g. impacts on shorebirds are positive whereas on benthic fauna, they are neutral;</li> <li>(f) Monitoring activities do not of themselves lead to a positive increase in coastal resources and values, even if they are an integral part of any environmental management regime;</li> <li>(g) Proposed rehabilitation of river banks is used to address multiple criteria and thus skews the results;</li> <li>(h) There are additional negative impacts associated with dredging in the Caboolture River that have not been included e.g. loss of habitat for benthic communities; and</li> <li>(i) Some examples of Table 1 inadequacies/inaccuracies follow: <ul style="list-style-type: none"> <li>o Coastal terrestrial / riparian habitat has not taken into account the (potential) impact of the dredge pipeline including equipment used to repeatedly install and remove the pipe;</li> <li>o Aquatic fauna</li> <li>o Water quality within the Caboolture River would be impacted by dredging activities, which has the potential to impact its ecology including fish assemblages;</li> <li>o Potential disturbance to vertebrates was not taken into consideration.</li> </ul> </li> </ul> <p>Page 284 of the Aquatic Ecology report of the NEBP EIS states:</p> <p style="padding-left: 40px;"><i>.....on the basis of the information now available, it must be concluded that loss of bank/flat habitat adjacent to the channel could have an impact for the following reasons:</i></p> <p style="padding-left: 40px;"><i>The flats are relatively productive and provide a habitat for benthic invertebrates and fish likely to feed (or avoid larger predators) over the flats at high tide.</i></p>

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	<p data-bbox="797 193 2141 261"><i>The flats provide protection for mangroves and saltmarshes on the landward side of the flats. Therefore, loss of the flats may expose marine vegetation to erosion.</i></p> <p data-bbox="797 304 2114 373"><i>The flats, being outside the navigational channel, are within FHA-013. Impacts to the flats would also extend the extent of disturbance within the Moreton Bay Marine Park.</i></p> <p data-bbox="510 416 2150 520">Accordingly, any appreciable reduction in the intertidal area is likely to have significant impacts on estuarine food chains, productivity (including impacts on fisheries), biodiversity and use as feeding and roosting sites by shorebirds in an undeveloped waterway.</p> <p data-bbox="510 563 694 592"><b>Benthic fauna</b></p> <ul data-bbox="562 603 2179 815" style="list-style-type: none"> <li>○ Dredging would be likely to result in a net loss of habitat for benthic communities;</li> <li>○ Benthic communities would be likely to experience incidental mortalities from dredging activities;</li> <li>○ With recurrent dredging there would be an increased risk of the region experiencing phase shifts in species' assemblages;</li> <li>○ Incidental removal of habitat through the movement of sediment from adjacent areas, including possibly from the sand flats to the navigation channel; and</li> <li>○ Shoreline erosion may increase due to increased boat traffic/wake.</li> </ul> <p data-bbox="510 858 651 887"><b>Shorebirds</b></p> <ul data-bbox="562 898 2179 1002" style="list-style-type: none"> <li>○ Scored as '0' on the premise of no change to the sand flats, despite conflicting information as set out above.</li> <li>○ Ecological monitoring is not related to a net gain of resources and should not be scored. Monitoring is a necessary component of any environmental management regime but does not add any value unless followed with remedial action.</li> </ul> <p data-bbox="510 1045 696 1074"><b>Water Quality</b></p> <ul data-bbox="562 1085 2179 1297" style="list-style-type: none"> <li>○ Increased development is likely to increase runoff and thus the risk of pollutants entering waterways. It should have been scored as a negative;</li> <li>○ It is recognised that the project will take contaminated water from the upstream sewage treatment plant providing a positive benefit;</li> <li>○ Monitoring of water quality does not add to any natural resource value;</li> <li>○ Negative impacts due to dredging operations and general pollution are two matters i.e. score -2 not -1.</li> </ul>

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	<p>Social significance or value</p> <ul style="list-style-type: none"> <li>○ It is unknown whether any maintenance dredge spoil would be suitable for foreshore disposal and provide beach replenishment value;</li> <li>○ Issues relating to conflict with other users of the bay, e.g. commercial and recreational fishers, have not been considered.</li> </ul> <p><b>Conclusion:</b></p> <p>The information submitted has not convinced the DERM that the NEBP development proposal demonstrates a net gain of coastal resources as required under the s15 of the CPM Act. At best it is considered neutral.</p> <p><b>Recommendation</b></p> <p>It is recommended that the proponent be required to consider further actions in accordance with the guidelines under the CPM Act 1995 (referred to above) that will increase coastal resources and values to counteract the loss of resources and values arising from construction, dredging and operational activities. These could include:</p> <ul style="list-style-type: none"> <li>•</li> </ul>
<p><b>Impacts to the hydrology of the Caboolture River from capital and maintenance dredging</b></p>	<p><b>General comments on coastal modelling</b></p> <p>Cardno Lawson Treloar advised that in relation to their morphology modelling, ‘it is difficult to predict erosion and siltation with a high degree of accuracy using such modelling.’ Notwithstanding, they predict that the proposed dredging in the lower reaches of the Caboolture River will be relatively minor and have no adverse impact on the timing, duration and frequency of tidal flows.</p> <p>The modelling for the <i>Coastal Processes Report</i> and <i>Siltation Study</i> was undertaken using Delft 3D, an internationally-recognised software package for both hydrodynamic and sediment transport modelling. It is acknowledged that when modelling a complex environment such as the Caboolture River, certain assumptions and simplifications are inherent and results should be combined with sound engineering judgement as a basis for decisions. The following dot points are important in making any decisions.</p>

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	<p><b>Hydrodynamic Model</b></p> <ul style="list-style-type: none"> <li>• The effects of neither storm surge nor sea level rise have been modelled/quantified. Any development would need to have regard for them.</li> <li>• No details were provided of the bathymetric survey supplied by Queensland Transport and Mapping and Hydrographic Services Pty Ltd on which the model grid was developed.</li> <li>• The general model set up in Section 5.2 is brief with no information regarding model grid size.</li> <li>• Calibration of the hydrodynamic model was carried out to measurements recorded in August 1990 and verification using the April 2006 data displayed only a ‘reasonable’ fit. (Field work carried out 18 years ago may not be representative of current conditions.)</li> </ul> <p><b>Morphological Model</b></p> <ul style="list-style-type: none"> <li>• There are some large restrictions to the morphological modelling such as river meandering, changing sediment composition, vegetation, etc, which have been acknowledged in Section 5.1.2 of the <i>Siltation Study</i>. They are likely to affect the accuracy of the model results.</li> <li>• No results have been presented on the morphological model calibration between the 1998 and 2007 hydrographic surveys that are described in Section 6.2.4 of the <i>Siltation Study</i> as ‘reasonable.’</li> <li>• The conclusions of the <i>Siltation Study</i> state that maintenance dredging will be required at ~ five yearly intervals with such spoil estimated at 220,000m<sup>3</sup>.</li> <li>• It is likely that morphological changes that have not been accounted for or quantified will occur, e.g. river bank erosion.</li> </ul> <p>A monitoring regime, with consequential remedial actions, needs to developed to assess ecological impacts associated with any changes to the hydrodynamics associated with the proposed dredging, that might occur should the modelling predictions prove to be inaccurate.</p> <p><b>Recommendation:</b></p> <ul style="list-style-type: none"> <li>• That the dredging component of the NEBP EMP address the potential increased risk to the environmental values of the project site and the Caboolture River arising from storm surges and sea level rises, particularly on the stability of the river bank; including development of a comprehensive monitoring and reporting program identifying: <ul style="list-style-type: none"> <li>○ Morphological changes to the river and river bank over time</li> </ul> </li> </ul>

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<p><b>Dredging and Channel Use Impacts</b></p>	<p><b>Dredging</b> It is assumed that the capital dredging (600,000m<sup>3</sup>) of river material and the marina basin will be deposited totally on the NEBP development site.</p> <p>Section 7.1 of the <i>Coastal Processes Report</i> states that it is expected that there would be some redistribution of material from the adjacent sandy bed resulting in siltation of the dredged channel and regular (~5 yearly) maintenance dredging would occur. Continual removal of sediment from the river may alter river morphology and there is no mention of any associated long term effects (see previous issue). The report also states that the development is likely to result in slightly lower low tide levels (up to 0.1m) in the upper estuarine section of the river, which may increase the inter-tidal habitat area; (however) redistribution of material adjacent to the dredged channel may reduce the inter-tidal habitat area. Predicted lower low tide levels and possible effects on inter-tidal habitat area may have ecological affects that will need to be monitored.</p> <p>Parts of the catchment are areas of conservational significance recognised under international conventions - Ramsar, JAMBA and CAMBA - which provide protection to areas of seagrass, mangroves and saltmarsh for migratory birds. The potential effects of dredging on these areas of intertidal habitat is of concern, and will need a targeted monitoring program.</p> <p><b>Increased boat traffic</b></p> <p>The proposed location of the NEBP is ~10km upstream of the bay. This is a relatively long distance along a meandering river for boat travel. It is also a considerable length of bank exposed to possible erosion. Approximate boat movements stated in Section 8 of the <i>Coastal Processes Report</i> do not account for increases at holiday periods. During such times bank erosion would be more likely. The report does not define how boat numbers or sizes were determined or assumptions and the extent of uncertainties.</p> <p>Policing speed limits (to reduce riverbank erosion) would be problematic, even with an education program. Riverbank erosion</p>

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	<p>may increase sedimentation, result in river bank vegetation loss and deleteriously affect river ecology. The possible need for riverbank protection as a consequence of the proposal is concerning, so monitoring will be required with response plans developed.</p> <p>The <i>Coastal Processes Report</i> states that the impact of boating traffic would not be significantly greater than existing wind wave impacts. However, Section 8 states that the wave height of boat swash waves would be 0.2m to 0.3m with a period of 3 to 5 seconds and wind wave heights would be 0.1 to 0.2m with periods of 1 to 2.5 seconds. These swash waves are significantly larger, and would be generated over longer, more continuous time periods than naturally-generated wind waves and, thus, would be more damaging to the river bank than wind-induced waves.</p> <p><b>Construction</b></p> <p>Possible increased sediment concentrations associated with the capital works has not been addressed, despite proposed sediment control measures. There is minimal information about controlling impacts from the capital dredging. The method of installing and operating the pipeline is inadequately described.</p> <p><b>Recommendation</b></p> <p>Any approval of development necessitating dredging in the marine park require:</p> <ul style="list-style-type: none"> <li>• Preparation of an environmental management plan (EMP) dredging component in accordance with DERM’s guideline to address the following: <ul style="list-style-type: none"> <li>○ Potential impacts, together with their extent/duration, of dredging on coastal hydrology, including mitigation measures, proposed monitoring and trigger point actions;</li> <li>○ Potential changes to stream velocity as a result of dredging, including mitigation measures, proposed monitoring and trigger point actions, particularly with reference to impacts on: <ul style="list-style-type: none"> <li>▪ Bank stability adjacent to dredged areas or shown as likely to be affected by such works;</li> <li>▪ Changes to fauna/flora habitats (e.g. mangroves, salt-marshes and sand-banks/wader bird roost sites);</li> <li>▪ Transport of sediment; and</li> <li>▪ Changes to the tidal prism.</li> </ul> </li> </ul> </li> <li>• Determination of a long term management arrangement for maintenance dredging, preferably in the context of a strategic plan for long term maintenance dredging needs for the northern part of Moreton Bay</li> </ul>

<i>Issue</i>	<i>Comment/ Recommendation</i>
	<ul style="list-style-type: none"> <li>• DERM’s approval of the elements of the EMP prior to the commencement of any works.</li> </ul> <p><b>NB</b> The EMP element addressing dredging would need to be preceded by adequate scientific work, based on existing modelling to address the above issues with findings used to develop an appropriate monitoring regime, design responses and mitigation/management responses.</p>
<p><b>Long-term management of dredge spoil</b></p>	<p><b>Comment</b></p> <p>The EIS states that Residential Area 2 would be used as a ‘long term’ dredge spoil disposal location until such time as an alternative strategy is negotiated and agreed. However, there is no process currently in place for identifying spoil disposal locations in the northern Moreton Bay /Deception Bay area. Accordingly, any development that is dependent on recurrent dredging needs to provide/dedicate and operate a suitable management area, which should be located, designed and operated to avoid nuisance to local residents, businesses and users of land in its vicinity. To the greatest extent practicable, design/management must avoid risk of nuisance or environmental harm, e.g. to waterways, including ground waters and where there are any unavoidable risks, they are to be minimised.</p> <p>Outcomes, principles and policies of the <i>SEQ Regional Coastal Management Plan 2006</i> and the <i>State Coastal Management Plan 2001</i> identify the following issues for land-based spoil disposal (maintenance dredging):</p> <ul style="list-style-type: none"> <li>• rehandling of dredge-material involving the treatment of material such as silts, muds and clays to stabilise contaminants and remove water for eventual placement at land-based sites;</li> <li>• limited opportunities for re-use of dredge-material comprised of muds, silts and clays after rehandling as the material is fine-grained silt with a high saline content; and</li> <li>• Identification of viable sites for the long-term storage of dredge-material after rehandling.</li> </ul> <p>Policies 2.1.4 and 2.1.8 of the SEQ RCMP/ SCMP require clear identification of methods/means to ensure that land allocated for dredge-material disposal or rehandling will be protected from future development. There also may be issues associated with the quality of sediments near the proposed lock.</p>

<i>Issue</i>	<i>Comment/ Recommendation</i>
	<p>Table 1 indicates that Beachmere foreshore protection using dredge spoil from maintenance dredging is the long-term dredge spoil disposal strategy preferred by the proponent. Such a strategy would be contingent on sediment sampling and analysis package and will require DERM's approval. As the material is inadequately tested, it is uncertain whether it would be suitable.</p> <p><b>Recommendations:</b>  Associated with any approval for the NEBP project, the proponent should:</p> <ul style="list-style-type: none"> <li>• set aside sufficient area of land to handle maintenance dredge spoil for the life of the project or until alternative long term disposal options are agreed</li> <li>• Ensure that development within the vicinity of the dredge spoil disposal area will be compatible with the expected odour, dust and noise emissions likely to arise from a dredge spoil handling facility.</li> </ul> <p>It is also recommended that the Coordinator-General establish a government coordinated process to identify a site for long term disposal of dredge spoil within the northern Moreton Bay/Deception bay region.</p>
<p><b>Sand flats at the Caboolture River mouth</b></p>	<p><b>Comments</b>  The banks provide habitat for benthic invertebrate and fish likely to feed over the flats at high tide and provide protection for mangroves and salt-marshes on their landward side. Sand/silts from the flats would be expected to redistribute into any channel dredged in Caboolture River until a dynamic equilibrium was reached.</p> <p>The scope of the table outlining the overall impact of the proposal is fairly generic (i.e. no change to sand flats acting as foraging and roosting habitat at the Caboolture River estuary) and it provides no new information: the issues/concerns have not been addressed adequately.</p> <p><b>Recommendation:</b>  Any approval necessitating dredging in the vicinity of the Caboolture River mouth require a comprehensive study by a suitably qualified person to inform an EMP component, prepared and approved as above, developing a monitoring regime to identify any impacts on the sand flats and propose actions to avoid as far as possible and, where unavoidable, to overcome impacts to:</p> <ul style="list-style-type: none"> <li>- benthic fauna and fish that use the area; and</li> <li>- the high tide roost site on the southern side of the mouth of the river and potential loss of feeding habitat for shorebirds.</li> </ul>

<i>Issue</i>	<i>Comment/ Recommendation</i>
<p><b>Coastal Buffers &amp; Protection of the Coastal Management District (CMD)</b></p>	<p><b>Comment</b>  No new information has been provided in the supplementary response, and specified policies relating to coastal buffers (under Policy 2.2 Physical coastal processes and Policy 2.8 Conserving nature) under the State and SEQ Regional CMPs have not been addressed.</p> <p>In preparing this advice DERM is aware of the position of the MBRC that open space be surrendered by the proponent but be managed under an agreement between the MBRC and the proposed body corporate.</p> <p><b>Recommendation</b>  Any approval be conditioned to require:</p> <ul style="list-style-type: none"> <li>• Surrender of the area covered by the Coastal Management District to the state for coastal management purposes, as has been the DERM policy for some years and was applied to development on the Coomera River.</li> <li>• The surrendered area to be the subject of a day to day management plan to be prepared by the proponent and to the satisfaction of DERM in conjunction with MBRC and QPIF.</li> <li>• The cost of management of the surrendered area to be the responsibility of the developer/body corporate under an agreement with the MRC.</li> <li>• The CMD and buffer remain undeveloped in perpetuity.</li> <li>• The public to have unrestricted access to the CMD and buffer in perpetuity.</li> <li>• No car-parking will extend into the CMD or buffer.</li> <li>• Any discharges during either construction or operational stages to/through the CMD or buffers and/or waterways, including the Caboolture River demonstrate best practice to ensure, as a minimum, protection of the environmental values of wetlands and coastal waters and, in the case of the river, improvement to its water quality.</li> <li>• No discharge points (e.g. stormwater channels/outlets, stormwater management devices) are located in the CMD: all discharges must be suitably treated on the development site prior to discharge onto any grass swales, etc within the buffer outside the CMD or into the marina basin.</li> </ul>

<i>Issue</i>	<i>Comment/ Recommendation</i>
	<ul style="list-style-type: none"> <li>• An EMP or component of a broader EMP to be developed to include management prescriptions for the CMD and which addresses the above points</li> <li>• The EMP component would need to be to be approved by DERM as a pre-requisite to commencing any works.</li> </ul>
<p><b>Lock, weir, and dry land marina</b></p>	<p><b>Comment</b> Detailed information on the design, construction and operation of the lock, weir and dryland marina has not been provided and will be developed during the project’s detailed design stage. Specific conditions for tidal works development approval will be provided by the DERM when the detailed design work is provided with the formal application, as occurs with other tidal works proposals.</p> <p>The design specifications will be used by the EPA to determine whether the facilities will have significant impacts that need mitigating conditions. In determining whether the proposal will have ‘no significant direct or cumulative adverse impacts’ reference should be made to the DERM’s policy document:</p> <p>State and regional coastal management plans: interpretation of the policy terms ‘no’, or ‘no significant adverse impact’ – <a href="http://www.epa.qld.gov.au/publications?id=1981">http://www.epa.qld.gov.au/publications?id=1981</a> and detail the proposed (i.e. after completion of an implementation plan) coastal resources and values, including any rehabilitation, boardwalks, bird-hides, etc.</p> <p>Recommendations are provided on matters to be addressed in the detailed design stage.</p> <p><b>Recommendation:</b> Any approval requires that</p> <ul style="list-style-type: none"> <li>(i) The design of the project waterways complies with items (a) to (g) in Chapter 2.1.15 of the SEQ Regional Coastal Management Plan; and</li> <li>(ii) Land is provided for the disposal of dredge-material (capital and maintenance) and accord with policy 2.1.8 Dredging. Land allocated for dredge-material handling needs to be protected from future development and, conversely, that future incompatible development such as residential and commercial activities are buffered from the nuisance effects of the dredge spoil handling site.</li> </ul>

<i>Issue</i>	<i>Comment/ Recommendation</i>
	To satisfy the above, design reports and an EMP component compiled by suitably qualified personnel containing definitive coastal/structural/civil engineering, environmental and biodiversity information and justifications will be necessary.
<b>Algal Blooms</b>	<p><b>Comment</b> No information has been provided to show how the development conforms to policy 2.4.7 Algal Blooms of the SEQ RCMP 2006.</p> <p><b>Recommendation:</b> Any approval require definitive coastal / structural / civil engineering, environmental and biodiversity information and justifications to demonstrate compliance with policy 2.4.7 Algal Blooms of the SEQ RCMP 2006.</p>
<b>Public maritime facilities</b>	<p><b>Comment</b> Direct and indirect impacts associated with any public maritime facilities must accord with the policy 2.1.5 Maritime Infrastructure of the of the SEQ RCMP 2006. However, very little information has been provided to justify need, environmental impacts or structural integrity of the ancillary ‘public’ facilities, viz. pontoon, canoe ramp and fishing landing. Detailed design information will be required by DERM before the relevant approvals can be given, as is the case of other tidal works applications.</p> <p><b>Recommendation:</b> Require any approval incorporating public maritime facilities to accord with the policy 2.1.5 Maritime Infrastructure of the of the SEQ RCMP 2006; ensure unimpeded public access; and demonstrate how they would be managed and maintained in an EMP component.</p>
<b>Water quality:</b>	<p><b>Groundwater Impact Assessment:</b> Groundwater modelling of marina excavation (p.28) indicates that:</p> <ul style="list-style-type: none"> <li>○ The work would be likely to change the groundwater flow and recharge.</li> <li>○ Transformation of the site into a more urban landscape would be likely to affect the recharge sources.</li> </ul>

<i>Issue</i>	<i>Comment/ Recommendation</i>
	<ul style="list-style-type: none"> <li>○ Capillary groundwater may rise at filled areas, but the impact would not be major if the fill is not acidic.</li> <li>○ Groundwater pressure heads close to the marina basin (~400m) may decline temporarily during excavation with drawdown dependant on duration.</li> <li>○ There is potential seepage of river water into the marina during its excavation.</li> <li>○ The marina excavation may cause a localised lowering of the water level and consequent land subsidence (p 31). This needs to be considered in all structural designs.</li> </ul> <p>Although further water chemistry sampling/ testing is recommended by the consultants, no specific mitigation measures are nominated.</p> <p><b>Recommendation</b> Any approval require an initial and ongoing commitment to monitoring groundwater for hydrocarbons, organic compounds and heavy metal scans as a basis for determining the management regime for the site; specific mitigation response measures; and design criteria to avoid any water contamination – surface or ground water. An appropriate monitoring program is outlined by the proponent in Appendix L2, Section 5.5.5, pages 45 and 46.</p>
<p><b>Stormwater management &amp; Water Sensitive Urban Design (WSUD)</b></p>	<p><b>Stormwater</b> The EIS response, viz. that objectives for stormwater runoff will be achieved through water sensitive urban design lacks the detail necessary to develop conditions specific to the development. The DERM requires that all assessable development be accompanied by an erosion and sediment control plan incorporating a range of best practice erosion, sediment and drainage-control measures for planning, design and construction activities.</p> <p><b>Constructed wetlands for environmental management</b> The location of constructed wetlands for water treatment/stormwater polishing within areas declared ‘open space for coastal and/or biodiversity outcomes’ is not supported on two grounds: firstly, such areas are intended for specific purposes that are likely to be compromised by such wetlands; and secondly, bioretention basins/ constructed wetlands located on flood-prone land (&lt;Q100 line) may result in prolonged inundation of the pond during flood events with consequent system failure. Scour effects of any sustained flood waters also may lead to costly repairs of filter media and necessitate replanting following storm events.</p>

<i>Issue</i>	<i>Comment/ Recommendation</i>
	<p><b>Recommendation:</b> Any approval require that:</p> <ul style="list-style-type: none"> <li>• The entire development including car parking in open space areas such as the ‘Sport &amp; Recreation Area and Heritage Park’ use WSUD principles;</li> <li>• An element of the EMP address stormwater management, in particular detailing measures to address erosion and sediment controls;</li> <li>• Any constructed wetlands to be located outside areas designated as ‘open space for coastal and/or biodiversity outcomes’;</li> <li>• Design of stormwater treatment measures for industrial areas to be structurally separated from other stormwater runoff pathways to avoid its entry to waterways. See: Healthy Waterways’ Partnership fact sheets and guidelines on Water Sensitive Urban Design for Industrial Sites and Precincts.); and</li> <li>• The EMP component should be negotiated with the MBRC and require DERM’s approval prior to commencement of any works</li> </ul> <p>See: <i>EPA best practice urban stormwater management: erosion and sediment control: Guideline</i> (<a href="http://www.epa.qld.gov.au/publications?id=2301">http://www.epa.qld.gov.au/publications?id=2301</a>). In so doing it must provide for reports against the water quality objectives as outlined in the EPP Water 1997 as the adopted water quality targets are based on pollutant load reductions rather than achieving median pollutant concentrations.</p>
<p><b>River bank stability</b></p>	<p><b>Comment</b> River bank erosion would be a likely consequence of increased river vessel traffic, whether as a result of vessel wake or speed. Table 1 indicates that revegetation would be used to stabilise river banks and an educational program, signage and monitoring implemented. The report also states that if the measures prove inadequate, that revetment works could be necessary. River bank protection and rehabilitation measures that do not lead to construction of engineered walls are preferred by the DERM.</p> <p><b>Recommendation:</b> Vessel speed should be restricted to a “no wash” limit.</p> <p>Any approval require river bank protection measures that:</p>

<i>Issue</i>	<i>Comment/ Recommendation</i>
	<ul style="list-style-type: none"> <li>• Avoid engineering structures (i.e. revetment walls);</li> <li>• Necessitate DERM and QPIF's endorsement prior to their implementation; and</li> <li>• Are the developer, or any successor developer, or the body corporate's responsibility to undertake and maintain at nil cost to the State.</li> </ul>
<p><b>Design and management for the proposed golf course.</b></p>	<p><b>Comment</b> No response was provided in the supplementary response to the DERM's concerns about:</p> <ul style="list-style-type: none"> <li>– Run-off from high nutrient areas;</li> <li>– Edge effects on remnant vegetation;</li> <li>– Mitigation measures to ease the impact on rare or threatened species; and</li> <li>– Establishment and enhancement of wildlife corridors.</li> </ul> <p><b>Recommendation:</b> Any approval require that any golf course be designed and managed to:</p> <ul style="list-style-type: none"> <li>• Ensure that any run-off from high nutrient areas is directed away from natural waterways and that irrigation systems be self-contained (i.e. there should be no off-take or input into local waterways). Treatment ponds and constructed wetlands should be designed to capture &amp; polish stormwater and render it suitable for irrigation;</li> <li>• Retain and protect remnant vegetation. The viability of thin strips of locally endemic species adjacent to artificially irrigated and fertilised fairways is problematic: edge effects (such as from the use of pesticides for weed management) may adversely impact on the structural and floristic integrity of these vegetation communities, especially in the medium to long term; and</li> <li>• Mitigate impacts on rare or threatened species to accord with Section 19 and 24 of the <i>Nature Conservation (Wildlife) Regulation 2006</i>. <i>Crinia tinula</i> and <i>Adelotus brevis</i> are recorded in the Raff Creek area associated with wetland vegetation RE 12.3.5. They are particularly susceptible to changes in nutrient levels and special attention should be given to establishing a specific recovery or conservation plan from potential impacts associated with the construction and operation of the golf course;</li> <li>• Ensure that threatened species' habitat (including referable wetlands) is adequately buffered from the golf course through revegetation of waterway corridors. A distance of at least 50m is recommended to protect sensitive environments from</li> </ul>

<i>Issue</i>	<i>Comment/ Recommendation</i>
	<p>run-off, nutrient leaching and chemical pollutants; and</p> <ul style="list-style-type: none"> <li>• Maintain and enhance wildlife corridors. Herbicide spaying should not be conducted adjacent to or within regional ecosystems identified for rehabilitation: manual weed removal techniques are preferred.</li> </ul> <p>A document relating to the above, entitled 'Improving the Eco-Efficiency of Golf Courses in Queensland' is available for purchase via the web page: <a href="http://www.agcsa.com.au/guests/bookshop/index.xsp?book_type_code=13000">http://www.agcsa.com.au/guests/bookshop/index.xsp?book_type_code=13000</a></p>
<p><b>Soils and Contaminated Land on Lot 10 on RP902079</b></p>	<p><b>Comment</b> A Suitability Statement issued in accordance with Chapter 7, Part 8 of the <i>Environmental Protection Act 1994</i> (stating that Lot 10 on RP902079 is suitable for the intended use), is required to be obtained prior to consideration of any application for development approval.</p> <p><b>Recommendation:</b> Any approval require rehabilitation of the contaminated site and submission of a report to the DERM in accordance with the <i>Environmental Protection Act 1994</i>.</p>