

TURTLECOVE HAVEN RETIREMENT VILLAGE

DRAFT PUBLIC ENVIRONMENT REPOR

APPENDICES C -- F

EPBC 2013/7038

TURTLE COVE HAVEN RETIREMENT VILLAGE

RIVERHEADS

FRASER COAST QUEENSLAND

APPENDIX C

FCRC OVERLAY AND QLD SDAP RESPONSES

4.7.3 The overall outcomes are the purpose of the Natural Areas Overlay Code (Nature Management).

The overall outcomes are as follows -

a) To primarily maintain the existing conservation values that exist in the City.

b) To provide for the protection and enhancement of ecological values.

c) To protect the un-fragmented habitat areas so as to allow for the continued and

long term viability of such areas.

d) To enhance linkages between remnant habitat areas and the enhancement of species habitat areas.

4.7.4

Compliance with the Natural Areas Overlay Code

Code Assessable development that is consistent with the performance criteria (below) are considered to comply with the Nature Management component of the Code.

4.7.5

Development Principles - Nature Management

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	RESPONSE COMMENTS
PC 1	AS 1.1	The site contains no significant vegetation on the
The important natural values of	Development does not involve the clearing of	terrestrial footprint.
the City are protected and	vegetation on land identified as Natural Area	
enhanced and significant	on the Planning Scheme Overlay Maps.	All significant marine vegetation is to be
vegetation is retained and	AS 1.2	protected.
protected.	Clearing of vegetation and development is	The proposed footprint will also include a buffer
	limited to the following-	management plan which will substantially
	- removal of any vegetation on a lot less	increase vegetated areas to all wetland riparians
	than 5.000m2 where the girth of the tree is	currently devoid of correct floristic structural
	less than 50cm measured 1.0 metre from	elements.
	the around or the height of the tree is less	
	than 4.0 metre (note: this provision does	PC 1 is therefore met .
	not apply to land included within a Natural	
	Area on the Planning Scheme Overlav	
	Maps):	
	- removal of vegetation within an approved	
	building footprint of assessable	
	development. The building footprint	
	includes up to 6.0 metres outside of the	
	building for a site located within the Rural	
	and Rural Residential Zones, and up to 4.0	
	metres in any other zone;	
	- removal of vegetation required for fire	
	hazard reduction purposes as per the	
	Bushfire Hazard Areas Overlay Code, in	
	accordance with a Development Approval;	
	- removal of hazards to, or provision of clear	
	access for, vehicles along any existing or	
	approved access roads;	
	- removal of any dead or diseased branches	
	which pose an immediate danger to	
	property or persons;_	
	- removal of declared weeds or	
	environmental weeds as defined in	
	Council's Pest Management Plan;_	
	- an area approved by Council for waste	
	water disposal;_	
	- removal of non-remnant immature	

	regrowth less than 4.0 metres in height on sites located within the Rural Zone as part of a regular and ongoing maintenance program in connection with an existing lawful, agricultural or animal husbandry operation;_ - pruning as per Australian Standard AS4373- Pruning of Amenity Trees; and _ - removal of grass, shrubs and saplings less than 2.0 metres tall by moving or clashing	
	than 2.0 motios tail by mowing or sidening.	
PC 2 Important natural areas, features and values occurring within and/or adjoining the site are identified and assessed and the findings are utilised as part of the design of the proposal. The identified natural values and significant features are maintained and protected or enhanced to ensure sustainability.	AS 2.1 Any development within or adjoining an area identified as Natural Area on the Overlay Planning Scheme Maps is undertaken in accordance with an approved ecological survey, which: - evaluates the site's vegetation and habitat significance; - provides an assessment of the local and regional linkage values of the site, including the potential links; - provides measures to protect and enhance identified environmentally significant areas, significant vegetation, remnant vegetation and connectivity from the impacts which result from the proposed development (eg. significant habitat is retained in a compact form or in corridors of sufficient width to protect species viability). AS 2.2 Where development is proposed, development is undertaken in accordance with an approved Environmental Management Plan which incorporates at least the following: - vegetation management and rehabilitation; - buffering to minimise edge effects; - fauna management and rehabilitation;	This report has identified no significant vegetation areas within the proposed development footprints likely to be impacted . The proposal is expected to retain and enhance the net extent of all current wetland vegetation systems, with utilization of a buffer management plan to enhance Estuarine wetland system . A suitably designed and implemented buffer plan will result in a net increase in the WQ objectives. The retention of all estuarine vegetation systems and WQ treatment trains, will assit in assimilation of upstream WQ impacts and ensure lateral, terrestrial and hydraulic connectivity at the local catchment level landscape values up stream in a badly fragmented landscape . An exotic species management plan will assist in a net increase to the current biodiversity values of 'in situ' relictual elements of former RE systems. A site specific EMP will be created to address all requirements of the code The footprint maximizes the use of degraded areas, retains existing remnant and non remnant vegetation areas , minmises edge effects and

 weed control and management; management/control of feral animals and grazing practices; bushfire management and control11. AS 2.3 Old trees and dead trees containing hollows are retained (unless they present a significant risk to the health and safety of people and property). 	will enhance the integrity of ecologically significant habitats.
 AS 2.4 The development area layout incorporates consolidated and compact areas which – a) maximise the use of existing cleared and/or degraded areas not required to be rehabilitated; b) maximise the conservation and retention of retained vegetation; c) minimise the impact of 'edge effects'; d) minimise fragmentation of retained vegetation; e) utilise building envelopes within which all development activities are to be located; f) ensure that lot layout does not require bushfire management practices that compromise the integrity of any ecologically significant habitat; AS 2.5 Vegetation is retained to provide a linked network of remnant and regrowth vegetation. Linkages may be "local scale" (across property boundaries) or "regional scale" (across the City) and should include riparian corridors, ridgelines and coastlines. AS 2.6 Low impact construction techniques (ie.	The current landscape configuration of existing habitats will be retained and or improved by the application of the buffer management plan . PC 2 is therefore met

	platforms, not 'slab on ground') are used.
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PC 3 The scenic values of important vegetated areas within the City are retained.	 AS 3.1 Native vegetation along visually prominent ridgelines, hillsides and waterways is retained. AS 3.2 Existing street trees are retained. 	All tidal vegetation is to be retained and enhanced. PC 3 is therefore met
PC 4 The clearing of vegetation does not cause or exacerbate land degradation within environmentally sensitive areas such as steeply sloping land or areas prone to erosion.	AS 4.1 The development does not involve the removal of native vegetation from – a) land with a slope of 15% or more. b) land within 100 metres of a waterway or wetland (measured from the high bank of the waterway/wetland) where the slope of the bank exceeds 15%; c) in any area identified as a recharge or discharge area of salt affected land; d) areas of dispersive or sodic soils	No significant native vegetation occurs on these parameters . PC 4 is therefore met
PC 5 No net loss of significant vegetation or ecosystems occurs.	AS 5.1 Development is undertaken only within areas that: - have already been disturbed or were previously cleared; - are not identified as Natural Areas on the Planning Scheme Overlay maps; - are not considered to be regional ecosystems.	No significant vegetation ecosystems occur on the terrestrial footprint. PC 5 is therefore met
PC 6 Links between fragmented areas of vegetation are enhanced to the extent they are protected and/or enhanced.	 AS 6.1 Ecological corridors are provided on site and link ecologically significant areas either within or adjacent to the site with a minimum of 200 metres. AS 6.2 Development incorporates an area of not less than 5% of the total land area for restorative and supplementary planting that links with or is in close proximity to areas of existing vegetation. Works consist of: 	No significant ecological areas exist within the terrestrial landscape. A pest management plan will manange all pest species. PC 6 is therefore met
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	 revegetation with locally native species at a density consistent with the general vegetation type that is being restored; and/or management of declared plant species (pursuant to State legislation) and council-declared environmental weed species within the subject area. 	
PC 7 Buffers are provided to ensure that development does not result in negative impacts on ecological values and functions of ecologically significant areas located on or adjacent to the site.	AS 7.1 Buffers of not less than 10 metres width, incorporating vegetated and degraded rehabilitation areas, are provided between the development and areas identified as Natural Areas on the Planning Scheme Overlay maps on or adjacent to the site.	A buffer management plan that meets all these parameters will be produced PC 7 is therefore met
PC 8 Management arrangements facilitate the conservation and protection of ecologically significant areas, corridors and buffers.	AS 8 Areas are not developed that are identified as Natural Areas on the Planning Scheme Overlay maps and/or any corridors or buffers required in accordance with this Code. Note: Council may request these areas to be dedicated as public open space where required for public access or for use for some other public purpose, consistent with the ecological values and functions or to be incorporated within private open space and included within a Voluntary Statutory Covenant.	A buffer management plan that meets all these parameters will be produced PC 8 is therefore met
PC 9 Unimpeded movement of fauna within and through the site and along designated ecological corridors is facilitated.	AS 9.1 The development incorporates viable native fauna movement paths (eg. fauna underpasses or overpasses across new roads constructed or upgraded to facilitate the development. AS 9.2 The development utilises fauna proof fencing to separate fauna from hazards and/or to direct fauna through development and to ecological corridors/areas of habitat to be retained.	The development footprint will not sever the current landscape configuration nor impede terrestrial and or aquatic movements for fauna PC 9 is therefore met
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PC10 Native fauna and its habitat is conserved.	AS 10.1 Where native fauna habitat is to be damaged as a consequence of development, fauna are to be relocated in accordance with a Fauna Management Plan which incorporates at least the following – a) the native fauna is safely relocated to an area of similar habitat; b) fauna relocation occurs immediately prior to habitat disturbance; c) where fauna nesting hollows or raptor nests are removed, they are replaces with artificial nestboxes/platforms. AS 10.2 The sequence of habitat disturbance is staged and ensures the fauna is not isolated from adjoining areas of habitat (eg. The roadside of the area is cleared first	No native fauna habit is to be destroyed. The implementation of suitable buffering to the tidal environment areas, will enhance faunal movements . PC 10 is therefore met
PC 11 Regional, local and neighbourhood ecological and vegetated corridors are provided, maintained and enhanced, to allow for the effective movement of fauna and flora on the site and surrounds.	AS 11.1 Ecological corridors are provided on-site to link ecologically significant areas either within or adjacent to the site with minimum widths of: a) 200 metres wide for regional corridors; b) 100 metres wide for local corridors (areas within two or more suburbs) and koala habitat corridors; and c) 50 metres for neighbourhood corridors (areas wholly within a suburb).	In situ estuarine ecological corridors are to be retained. PC 11 is therefore met

11 Note: Size of buffer areas is to be based on the potential impact of the development and the function(s) of the habitat area. A buffer of at least 50m of remnant or regrowth vegetation is recommended where adjoining an endangered regional ecosystem, migratory bird habitat or other highly significant habitat area.

4.7.6 Overall Outcomes for the Natural Areas (Waterways and Wetlands) Overlay Code

The overall outcomes are the purpose of the Natural Areas Overlay Code (Waterways and Wetlands). The overall outcomes are as follows -

a) To provide for the protection and enhancement of the ecological values and functions of wetlands, waterways, tidal lands and associated melaleuca forests and marine plants.

b) To protect and manage water quality, vegetation and habitat for fauna, the stability of banks and hydrological balance.

4.7.7

Compliance with Natural Areas Code (Waterways and Wetlands)

Code Assessable development that is consistent with the performance criteria (below) is considered to comply with the Waterways and Wetlands component of the Code.

4.7.8

Development Principles – Waterways and Wetlands

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	RESPONSES
PC 1	AS 1.1	All vegetation systems associated with the tidal
Vegetation associated with	No vegetation of an aquatic, wetland or	environment are to be retained.
waterways, aquatic and wetland	waterway nature is cleared.	
vegetation is protected so as to	Where assessable development –	The terrestrial land within 100m of HAT contains no
be ecologically sustainable and	AS 1.2 The development does not involve the	significant vegetation or important wildlife corridor.
the clearing of vegetation does	removal of native vegetation from land within	
not cause or exacerbate land	100 metres of a waterway or wetland	
degradation within	(measured from the high bank of the	
environmentally sensitive areas.	waterway including Highest Astronomical Tide	
Fauna dependent upon the	where applicable) where the waterway has	
above is to be similarly	significant vegetation or there is an important	
considered.	wildlife corridor.	
	AS 1.3	
	Cleared, degraded or disturbed waterway or	The wetland is not cleared, degraded or disturbed.
	wetland areas within the development site are	
	rehabilitated. Such areas are to be	A 50m revegetated buffer between HAT and the
	rehabilitated along their full length to a	development footprint is to be created. Buffers
	minimum width of 40 metres and in	ranging from 150- 550m for all
	accordance with a detailed plan, approved by	JAMBA/CAMBA/RAMSAR values are in existence.
	Council. The rehabilitation plan shall include:	
	- For waterways – appropriate	A site specific EMP with a buffer management plan
	rehabilitation and restoration methods	will be created to address all requirements of the
	for bed/banks and in-stream and	code.

	 waterway vegetation for waterways; and/or For wetlands – restoration methods for the wetland and vegetation; Management measures or weed species; Consideration of fauna habitat (including relevant national agreements such as CAMBA, JAMBA, RAMSAR); provision of buffers; proposed planting regimes (utilising species appropriate to the area); proposed measures for the protection of vegetation and habitat whilst rehabilitation works are being undertaken 	The footprint maximizes the use of degraded areas, retains existing remnant and non remnant vegetation areas , minmises edge effects and will enhance the integrity of ecologically significant habitat of the wetland The current landscape configuration of existing habitats will be retained and or improved by the application of the buffer management plan .
PC 2 Environmental values of waterways and wetlands are protected.	Where assessable development - AS 2.1 Development does not result in the release of contaminants into a waterway or wetland. AS 1.2 Development is undertaken in accordance with an approved Environmental Management Plan that protects the waterway/wetland.	The proposal includes a WQ management plan utilizing USWD designed to meet the WQO for the receiving waters of Basin 137 Plan WQ1371 middle estuary and lowland freshwater wallum stained systems of Eli creek catchment (EPP WATER 2006) . PC 1 & PC 2 are therefore met

APPENDIX D SDAP MODULES

Response column key:

10.1 Tidal works, or development in a coastal management district state code

Table 10.1.1: All development

Performance outcomes	Acceptable outcomes	Response	Comment
PO1 Development in a <u>coastal hazard area</u> is compatible with the level of severity of the coastal hazard.	 AO1.1 Development is located outside a <u>high coastal hazard</u> <u>area</u> unless it is: (1) coastal-dependent development, or (2) compatible with inundation due to its nature or function, or (3) temporary, readily relocatable, or able to be abandoned, or (4) essential community service infrastructure, or (5) small-to-medium-scale tourist development, or (6) redevelopment within an existing built-up urban area, or is redevelopment of built structures that cannot be relocated or abandoned. AND 		No infrastructure is to be located within the mapped high coastal hazard area.
	A01.2 Development referred to in AO1.1(6) avoids being located within a <u>high coastal hazard area</u> , or where this is not practicable, minimises the exposure of people and permanent structures to coastal hazard impacts.		NA
PO2 Development siting, layout and access in a <u>coastal hazard area</u> responds to potential inundation due to a defined storm tide event and minimises associated risks to personal safety and property.	AO2.1 Development within a <u>coastal hazard area</u> is located, designed, constructed and operated to maintain or enhance the community's resilience to <u>defined storm tide events</u> by limiting the exposure of people and structures to associated impacts. AND		NA
	 A02.2 Development mitigates any residual impacts from storm tide inundation in a coastal hazard area including by ensuring: <u>habitable rooms</u> of built structures are located above the <u>defined storm tide event level</u> and any additional freeboard level that would ordinarily apply in a flood prone area under a relevant planning scheme standard, or a safe refuge is available for people within the premises during a <u>defined storm tide event</u>, or at least one evacuation route remains passable for emergency evacuations during a <u>defined storm tide event</u>, including consideration of the capacity of the route 		NA

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Performance outcomes	Acceptable outcomes	Response	Comment
	to support the evacuation of the entire local population within a reasonably short timeframe (for example, 12 hours).		
	AND		
	AO2.3 Development within a coastal hazard area is located, designed and constructed to ensure exposed structures can sustain flooding from a <u>defined storm tide event.</u> AND		NA
	 AO2.4 Essential community service infrastructure is: located so that it is not inundated by a recommended storm tide event specified for that infrastructure, or located and designed to ensure any components of the infrastructure that are likely to fail to function or may result in contamination when inundated by a storm tide (for example, electrical switch gear and motors, water supply pipeline air valves) are:		NA
	AO2.5 Emergency services infrastructure and emergency shelters, police facilities, and hospitals and associated facilities have an emergency rescue area above the peak water level for a <u>recommended storm tide event</u> .		NA
PO3 Development directly, indirectly and cumulatively avoids an unacceptable increase in the severity of the coastal hazard, and does not significantly increase the potential for damage on the premises or to other premises.	AO3.1 Development avoids increasing the number of premises from which people would need to be evacuated to prevent death or injury from a <u>defined storm tide event.</u>		NA
PO4 Development avoids the release of hazardous materials as a result of a natural hazard event. Editor's note: Applications should:	 AO4.1 Development that involves the manufacture or storage of hazardous materials in bulk are designed to: (1) prevent the intrusion of waters from a <u>defined storm tide</u> <u>event</u> into structures or facilities containing the hazardous materials, or 		NA
or otherwise exposing hazardous materials,	ensure nazardous materials remain secured despite inundation, including secure from the effects of		

Performance outcomes	Acceptable outcomes	Response	Comment
including appropriate emergency planning and contingency measures. applications are to be supported by a report certified by a Registered Professional Engineer of Queensland (RPEQ) that demonstrates this performance outcome will be achieved.	hydrodynamic forcing associated with wave action or flowing water.		
PO5 Natural processes and the protective function of landforms and vegetation are maintained in coastal hazard areas. Editor's note: Applications should be supported by a report certified by an RPEQ that demonstrates this performance outcome will be achieved.	 AO5.1 Development in an erosion prone area within the coastal management district: (1) maintains vegetation on coastal landforms where its removal or damage may: (a) destabilise the area and increase the potential for erosion, or interrupt natural sediment trapping processes or dune or land building processes (2) maintains sediment volumes of dunes and near-shore coastal landforms, or where a reduction in sediment volumes cannot be avoided, increased risks to development from coastal erosion are mitigated by location, design, construction and operating standards (3) minimises the need for erosion control structures or riverbank hardening through location, design and construction standards (4) maintains physical coastal processes outside the development footprint for the development, including longshore transport of sediment along the coast (5) reduces the risk of shoreline erosion for areas adjacent to the development footprint unless the development is an erosion control structure (6) reduces the risk of shoreline erosion for areas adjacent to the development footprint to the maximum extent feasible in the case of erosion control structures. 		NA
	 AO5.2 Development in a storm tide inundation area is located, designed, constructed and operated to: (1) maintain dune crest heights, or where a reduction in crest heights cannot be avoided, mitigate risks to development from wave overtopping and storm surge inundation (2) maintain or enhance coastal ecosystems and natural features, such as mangroves and coastal wetlands, between the development and tidal waters, where the coastal ecosystems and natural features protect or buffer communities and infrastructure from sea level rise and impacts from storm tide inundation. AND 		NA

Performance outcomes	Acceptable outcomes	Response	Comment
	 AO5.3 Redevelopment of built structures in the erosion prone area within a coastal management district: (1) avoids intensifying the use of the premises, or (2) demonstrates that any intensification of use will not result in an increase in the need for erosion control structures or riverbank hardening. AND 		NA
	 AO5.4 Development that is <u>coastal protection work</u> involves: (1) <u>beach nourishment</u> undertaken in accordance with a program of beach nourishment works that source sediment of a suitable quality and type from outside the active beach system, or (2) the construction of an <u>erosion control structure</u>, where it is demonstrated that installing an <u>erosion control structure</u> is the only feasible option for protecting permanent structures from coastal erosion and those structures cannot be abandoned or relocated in the event of coastal erosion occurring. Editor's note: Applications for <u>coastal protection work</u> should be supported by a report certified by an RPEQ that demonstrates how the engineering solution sought by the work will be achieved. Editor's note: Applications for <u>erosion control structures</u> should demonstrate the consideration of <u>beach nourishment</u> techniques, and include a statement of why nourishment (in whole or part) has not been adopted as the preferred means of controlling the erosion risk. 		NA
	 AO5.5 Development involving <u>reclamation</u>: (1) does not alter, or otherwise minimises impacts on, the physical characteristics of a waterway or the seabed near the <u>reclamation</u>, including flow regimes, hydrodynamic forces, tidal water and riverbank stability (2) is located outside the active sediment transport area, or otherwise maintains sediment transport processes as close as possible to their natural state (3) ensures activities associated with the operation of the development maintain the structure and condition of vegetation communities and avoid wind and water run-off erosion. 		NA
PO6 <u>Erosion prone areas</u> in a coastal management district are maintained as development free buffers, or where permanent buildings or structures exist,	AO6.1 Development locates built structures outside the part of the coastal management district that is the <u>erosion prone area</u> unless the development is listed under AO1.1 (1)–(5). AND	R	NA

Performance outcomes	Acceptable outcomes	Response	Comment
coastal erosion risks are avoided or mitigated.	AO6.2 Development is located outside the erosion prone area unless it is redevelopment. AND	V	NA
	 AO6.3 Coastal-dependent development: (1) locates, designs and constructs relevant buildings or structures to withstand coastal erosion impacts, including by use of appropriate foundations, or (2) installs and maintains <u>coastal protection works</u> to mitigate adverse impacts to people and permanent structures from coastal erosion at the location. 		NA
	 AO6.4 Development that is temporary, readily relocatable or able to be abandoned, or essential community service infrastructure: (1) locates built structures landward of an applicable coastal building line, or (2) where there is no coastal building line, locates habitable built structures landward of the alignment of adjacent habitable buildings, or locates lifesaver towers or beach access infrastructure to minimise its impacts on physical coastal processes, or (3) where it is demonstrated that (1) or (2) is not reasonable and (3) does not apply: (a) locates built structures as far landward as practicable uses layout design to minimise the footprint of the development that remains within the erosion prone area. 		NA
	 AO6.5 Redevelopment of existing built structures not referred to in AO6.4, and excluding <u>marine development</u>: (1) relocates built structures outside that part of the <u>erosion</u> prone area that is within the coastal management district, or (2) relocates built structures as far landward as practicable, and landward of an applicable <u>coastal building line</u>, or (3) where there is no <u>coastal building line</u>: (a) relocates built structures landward of the alignment of adjacent habitable buildings, or uses layout design to minimise the footprint of the development that remains within the erosion prone area, or 		NA

Performance outcomes	Acceptable outcomes	Response	Comment
	provides sufficient space seaward of the development within the premises to allow for the construction of erosion control structures.		
	AND		
	 AO6.6 Redevelopment of built structures in the erosion prone area within a coastal management district, which results in an intensification of use, mitigates the erosion threat to the development, having regard to: (1) design and construction standards (2) installing and maintaining on-site erosion control structures within the premises if the development is not intended to be temporary. 		NA
P07 Development avoids or minimises adverse impacts on coastal resources and their values, to the maximum extent reasonable.	A07.1 <u>Coastal protection work</u> that is in the form of <u>beach</u> <u>nourishment</u> uses methods of placement suitable for the location that do not interfere with the long-term use of the locality of, or natural values within or neighbouring, the proposed placement site. AND		NA
	AO7.2 <u>Marine development</u> is located and designed to expand on or redevelop existing marine infrastructure unless it is demonstrated that it is not practicable to co-locate the development with existing marine infrastructure. AND		NA
	 AO7.3 <u>Marine development</u>: relies on a natural channel of a depth adequate for the intended vessels, or where there are no feasible alternative locations for the facility in the local area that do not require dredging for navigation channel purposes: involves capital dredging for new navigation channel purposes located, designed and operated to minimise the need for capital and subsequent maintenance dredging for navigation channel purposes. 		NA
	A07.4 Development minimises <u>dredging</u> or the disposal of material in <u>coastal waters</u> during key biological events (such as fish aggregations or spawning) for species found in the area. AND		NA

Performance outcomes	Acceptable outcomes	Response	Comment
	 A07.5 Measures are to be incorporated as part of siting and design of the development to protect and retain identified ecological values and underlying ecosystem processes within or adjacent to the development site to the greatest extent practicable. This includes: (1) maintaining or restoring vegetated buffers between development and <u>coastal waters</u> to the extent practicable, unless the development is within ports or airports, or is <u>marine development</u> (2) maintaining or enhancing the connectivity of ecosystems in consideration of the cumulative effect of the development in addition to existing developed areas (3) retaining coastal wetlands, seagrass beds and other locally important feeding, nesting or breeding sites for native wildlife. 		NA
	AO7.6 Measures are incorporated as part of siting and design of the development to maintain or enhance water quality to achieve the <u>environmental values</u> and water quality objectives outlined in the <i>Environmental Protection (Water) Policy 2009.</i> AND		NA
	A07.7 Development avoids the disturbance of acid sulphate soils, or where it is demonstrated that this is not possible, the disturbance of acid sulphate soils is carefully managed to minimise and mitigate the adverse effects of the disturbance on coastal resources.		NA
PO8 <u>Coastal protection work</u> is undertaken only as a last resort where erosion presents an imminent threat to public safety or permanent structures. Editor's note: Applications for <u>coastal protection</u> <u>work</u> must be supported by a report certified by an RPEQ that demonstrates how the engineering solution sought by the work will be achieved.	AO8.1 Coastal protection work is only undertaken to protect existing permanent structures from imminent adverse coastal erosion impacts, and the structures cannot reasonably be relocated or abandoned. AND		NA
	AO8.2 <u>Coastal protection work</u> to protect private structures is undertaken on private land to the maximum extent reasonable. AND	Ø	NA
	AO8.3 <u>Coastal protection work</u> does not increase the coastal hazard risk for adjacent areas or properties.		NA
PO9 Development avoids adverse impacts on <u>matters of state environmental</u> <u>significance</u> , or where this is not reasonably	AO9.1 Development:(1) is set back from matters of state environmental significance		The proposal has a 150m buffer to roosting sites for MSES avifauna .
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Performance outcomes	Acceptable outcomes	Response	Comment
possible, impacts are minimised and residual impacts are offset.	 (2) avoids interrupting, interfering or otherwise adversely impacting underlying natural ecosystem components or processes and interactions that affect or maintain the matters of state environmental significance, such as water quality, hydrology, geomorphology and biological processes, or (3) incorporates measures as part of its location and design to protect and retain matters of state environmental significance and underlying ecosystem processes within and adjacent to the development site to the greatest extent practicable. Editor's note: Applications for development should identify any threatened species or their habitats, or threatened ecosystems, that may be affected by the proposal. In particular, applications should identify and describe how the development avoids adverse impacts on any critical life stage ecological processes within or adjacent to the development area. 		The proposal will not interrupt , interfere or otherwise adverseley impact on MSES , as WQ , Hydrology,geomorphology and biological processes required by the MSES are to be maintained. Please refer to EMP.
	AO9.2 An <u>environmental offset</u> is provided for any unavoidable significant residual impact on matters of state environmental significance caused by the development. Editor's note: Applications for development should identify anticipated losses, and outline what actions are proposed to be undertaken to offset the loss in accordance with the relevant <i>Queensland</i> <i>Government Environmental Offset Policy</i> available from the Department of Environment and Heritage Protection library catalogue.	Ø	NA
PO10 Development maintains or enhances general public access to or along the <u>foreshore</u> , unless this is contrary to the protection of coastal resources or public safety.	 AO10.1 Development adjacent to state coastal land or tidal water: (1) demonstrates that restrictions to public access are necessary for: (a) the safe or secure operation of development, or the maintenance of coastal landforms and coastal habitat (2) separates residential, tourist and retail development from tidal water with public areas or public access facilities, or (3) maintains existing public access (including public access infrastructure that is in the public interest) through the site to the foreshore for: (a) pedestrians, via access points including approved walking tracks, boardwalks and viewing platforms, or vehicles, via access points including approved roads or tracks. 	Ø	The foreshore is FH title and acess is to be restricted to protect the habitat for MSES. Please refer to EMP.

Performance outcomes	Acceptable outcomes	Response	Comment
	 AO10.2 Development adjacent to state coastal land, including land under tidal water: (1) is located and designed to: (a) allow safe and unimpeded access to, over, under or around built structures located on, over or along the foreshore ensure emergency vehicles can access the area near the development, or (2) minimises and offsets any loss of access to and along the foreshore within two kilometres of the existing access points, and the access is located and designed to be consistent with (1)(a) and (b). AND 		Please refer to EMP.
	AO10.3 Any parts of <u>private development</u> that extend over tidal water are to be designed, constructed and used for marine access purposes only.		NA
PO11 Development avoids structures attaching to, or extending across, non-tidal state coastal land abutting tidal waters.	AO11.1 Private marine development and other structures such as decks or boardwalks for private use do not attach to, or extend across <u>state coastal land</u> that is situated above the high water mark. Editor's note: For occupation permits or allocations of State land, refer to the <i>Land Act 1994</i> .		NA
 PO12 Further development of <u>canals</u>, <u>dry</u> <u>land marinas</u> and <u>artificial waterways</u> avoids or minimises adverse impacts on coastal resources and their values, and does not contribute to: (1) degradation of water quality (2) an increase in the risk of flooding (3) degradation and loss of matters of state environmental significance (including, but not limited to, coastal wetlands, fish habitat areas and migratory species habitat). 	AO12.1 The design, construction and operation of artificial tidal waterways maintains the <u>tidal prism volume</u> of the natural waterway to which it is connected. AND		NA
	AO12.2 The design, construction and operation of artificial tidal waterways does not increase risk from flooding from a defined storm tide event. AND		NA
	 AO12.3 The design, construction and operation of an artificial waterway in connection with the reconfiguration of a lot ensures: (1) the water inlet and outlets structures are of sufficient capacity to maintain the water level and water quality within the waterway (2) the top level for the waterway is specified and water level to support the effective operation of the waterway are maintained (3) siltation of the waterway during operation is minimised (4) monitoring guides the maintenance of water quality 		NA

Performance outcomes	Acceptable outcomes	Response	Comment
	(5) revetment and hydraulic structures will be maintained. AND		
	AO12.4 The location of <u>artificial waterways</u> avoids <u>matters of</u> <u>state environmental significance</u> , or does not result in any significant adverse effect on <u>matters of state environmental</u> <u>significance</u> .		NA
 P013 Development does not involve reclamation of land below tidal water, other than for the purposes of: (1) coastal-dependent development, public marine development or community infrastructure (2) strategic ports, boat harbours or strategic airports and aviation facilities, in accordance with a statutory land use plan, where there is a demonstrated net benefit for the state or region and no feasible alternative exists (3) coastal protection work necessary to protect coastal resources or physical coastal processes. 	No acceptable outcome is prescribed.		NA

11.1 Wetland protection area state code

Table 11.1.1: All development

Response column key:			
\checkmark	Achieved		

Performance outcomes	Acceptable outcomes	Response	Comment
All development			
PO1 Development is not carried out in a wetland in a wetland protection area unless:	AO1.1 Development is located outside:(1) the mapped boundary of a wetland in a wetland protection area, or		The wetland is not in a wetland protection area
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Performance outcomes	Acceptable outcomes	Response	Comment
 there is an overriding need in the public interest, or the development is a development commitment, or the development is for community infrastructure. Editor's note: There is an overriding need in the public interest only if the overall social, economic and environmental benefits of the development outweigh: any detrimental effect upon the wetland the development cannot be located elsewhere so as to avoid conflict with PO1. The following does not establish an overriding 	 (2) an alternative mapped boundary of the wetland in a wetland protection area: (a) submitted as part of the development application, and 12 supported by a site assessment and analysis of the wetland to delineate its extent, in accordance with the Queensland wetland definition and delineation guidelines (as updated from time to time) available on the Department of Environment and Heritage Protection website, if the chief executive is satisfied the alternative is a more accurate representation of the boundary. 		
 need in the public interest: (1) uses with relatively few location based requirements interests in or options over land availability or ownership of land. 	AO1.2 Development in a wetland in a wetland protection area provides an <u>environmental offset</u> for any adverse impact that cannot be avoided, in accordance with PO13 (except where development arises from, and is necessary to give effect to a current <u>development approval</u>).		<u>N/A</u>
PO2 An adequate buffer to a wetland in a wetland protection area is provided and maintained.	 AO2.1 A <u>buffer</u> surrounding a <u>wetland in a wetland</u> protection area is provided and has a minimum width of: (1) 200 metres, where the wetland is located outside an <u>urban area</u>, or (2) 50 metres, where the wetland is located within an urban area. 		<u>The wetland is not in a wetland protection area</u> <u>The wetland is within an urban area so a 50m uffer is to be</u> <u>applied</u>
	AO2.2 An alternative <u>buffer</u> is provided, the width of which is supported by evaluation of the <u>environmental values</u> and functioning of, and threats to, the <u>wetland in a</u> <u>wetland protection area</u> . Editor's note: The <u>Queensland wetland buffer guideline</u> , Department of Environment and Heritage, 2011 should be referred to when planning detailed <u>buffer</u> design to position development, determine any alternative <u>buffer</u> widths, and establish operating measures that avoid adverse impacts on a wetland.		
Hydrology			
PO3 The existing surface <u>water</u> <u>hydrological regime</u> of the <u>wetland</u> <u>protection area</u> (including the area of the <u>wetland</u>) is enhanced or maintained.	 AO3.1 Development must: (1) provide a net ecological benefit and improvement to the environmental values and functioning of a wetland in a wetland protection area 		The wetland is tidally dominated so the existing surface water hydrological regime will not be impacted.

Performance outcomes	Acceptable outcomes	Response	Comment
	 (2) rehabilitate the existing hydrological regime, or restore the natural hydrological regime of the wetland in a wetland protection area to enhance the ecological functions and biodiversity values of the wetland. Editor's note: Refer to the Wetland rehabilitation guidelines for the Great Barrier Reef catchment, Department of Environment and Heritage, 2008. 		
	AO3.2 Development does not change the existing surface water hydrological regime of a wetland in a wetland protection area, including through channelisation, redirection or interruption of flows. Editor's note: An assessment of the extent of change should take into account the natural variability of the hydrological regime of the wetland.		<u>n/a</u>
	OR		
	 AO3.3 The extent of any change to the existing surface water hydrological regime is minimised to ensure wetland values and functioning are protected. The change is minimised if: (1) there is no change to the reference duration high-flow and low-flow duration frequency curves, low-flow spells frequency curve and mean annual flow to and from the wetland (2) any relevant stream flows into the wetland comply with the relevant flow objectives of the applicable water resource plan for the area (3) for development resulting in an increase to the velocity or volume of stormwater flows into the wetland—the collection and re-use of stormwater occurs in accordance with (1) and (2). 		<u>n/a</u>
PO4 The existing groundwater <u>hydrological regime</u> of the <u>wetland</u> <u>protection area</u> (including the area of the <u>wetland</u>) is enhanced or protected.	AO4.1 The <u>water</u> table and hydrostatic pressure in the <u>wetland protection area</u> are returned to their natural state. OR		The wetland is tidally dominated so the existing surface water hydrological regime will not be impacted.
	AO4.2 The <u>water</u> table and hydrostatic pressure in the <u>wetland protection area</u> is not lowered or raised outside the bounds of variability of existing pre-development conditions. AND		<u>n/a</u>

Performance outcomes	Acceptable outcomes	Response	Comment
	AO4.3 Development does not result in the ingress of saline <u>water</u> into freshwater aquifers.	<u>ष</u>	<u>n/a</u>
In an urban area			
 PO5 During construction and operation of development in a <u>wetland in a wetland</u> <u>protection area</u>: (1) a wetland in a wetland protection area is not used for stormwater treatment (2) the <u>buffer for and water</u> quality values of a wetland in a wetland protection area are protected from stormwater impacts. 	A05.1 Development in an urban area does not result in any measurable change to the quantity or quality of stormwater entering a <u>wetland</u> in a wetland protection area during construction or operation. AND		<u>n/a</u>
	A05.2 Development in a <u>wetland protection area</u> in an urban area manages stormwater quantity and quality in accordance with best practice environmental management for erosion and sediment control in the <i>Queensland urban stormwater quality planning guidelines</i> , Department of Environment and Heritage Protection, 2010. AND		<u>n/a</u>
	 AO5.3 During the construction of development in a wetland protection area in an urban area, erosion and sediment control practices, including approved proprietary products, are designed, installed, constructed, maintained and monitored in accordance with local conditions and recommendations by suitably qualified persons or professionals. During construction, development also incorporates erosion and sediment control measures to achieve best practice design objectives. Editor's note: It is recommended that an erosion and sediment control plan should be prepared by a Registered Professional Engineer of Queensland (RPEQ) to demonstrate compliance with AO5.2 and AO5.3. AND 		<u>n/a</u>
	 AO5.4 During construction of development in a wetland protection area in an urban area, release of sediment-laden stormwater is avoided for the nominated design storm, and minimised if the design storm is exceeded, consistent with an erosion and sediment control plan for the development which includes the following best practice principles: (1) stormwater run-off during any construction works is diverted or by-passed around a wetland 		<u>n/a</u>

Performance outcomes	Acceptable outcomes	Response	Comment
	 (2) all stormwater run-off saved for dewatering flow from site catchments achieves a maximum concentration of 50 milligrams per litre of total suspended solids (3) all drainage lines, diversion and collection drains and bank, chutes and outlets are able to safely carry peak flow in accordance with the <i>Queensland urban stormwater quality planning guidelines</i>, Department of Environment and Heritage Protection, 2010. AND 		
	AO5.5 During construction of development in a wetland protection area in an urban area, erosion and sediment control practices, including approved proprietary products, are designed, installed, constructed, maintained and monitored in accordance with local conditions and recommendations by suitably qualified persons or professionals.		<u>n/a</u>
	 AO5.6 During operation of development in a wetland protection area in an urban area, stormwater discharges are treated in accordance with best practice load reduction design objectives before stormwater flow enters the <u>buffer</u> for a <u>wetland</u>. Stormwater treatment should address pollutants including, but not limited to: (1) total suspended solids (2) total phosphorus (3) total nitrogen (4) gross pollutants >5 millimetres. 		<u>n/a</u>
	AO5.7 During operation of development in a wetland protection area in an urban area, development incorporates stormwater flow control measures to achieve best practice design objectives.		<u>n/a</u>
Outside an urban area			
 PO6 During construction and operation of development in a <u>wetland protection area</u> outside an urban area: (1) a wetland is not used for stormwater treatment (2) the buffer for and water quality values of a wetland are protected from stormwater impacts. 	AO6.1 Development in a wetland protection area outside an urban area does not result in any measurable change to the quantity or quality of stormwater entering a <u>wetland</u> during construction or operation.		<u>n/a</u>

Performance outcomes	Acceptable outcomes	Response	Comment
Ecological values			
PO7 Development involving the <u>clearing</u> of <u>vegetation</u> protects the biodiversity, ecological values and processes, and hydrological functioning of a <u>wetland in</u> <u>wetland protection area</u> , including: (1) water quality values	 A07.1 <u>Vegetation clearing</u> undertaken as a consequence of development does not occur: (1) in a wetland in a wetland protection area, or (2) in a buffer for a wetland in a wetland protection area. OR 	☑	<u>n/a</u>
 (2) aquatic habitat values (3) terrestrial habitat values (4) usage of the site by native wetland fauna species or communities. 	A07.2 Where development is in a wetland protection area in an urban area, development is located and designed to minimise the extent of <u>vegetation clearing</u> , and development is undertaken outside of a wetland and any <u>buffer</u> for the wetland to minimise the extent of <u>vegetation clearing</u> required.		<u>n/a</u>
 PO8 Development avoids land degradation in a <u>wetland protection area</u>, including: (1) mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, wind erosion or scalding (2) loss or modification or chemical, physical or biological properties or 	 AO8.1 Development: (1) is located outside the wetland in a wetland protection area and buffer for the wetland (2) that involves clearing is undertaken in a way that avoids and minimises land degradation in accordance with a sediment and erosion control plan. AND 		<u>n/a</u>
functions of soils.	 AO8.2 <u>Mechanical clearing</u> of <u>vegetation</u> within a <u>wetland</u> <u>protection area</u>: (1) is located outside of a wetland and any buffer for the wetland (2) is undertaken in a way that avoids and minimises land degradation in accordance with a sediment and erosion control plan. OR 		<u>n/a</u>
	AO8.3 The application is a development application where a local government is the assessment manager.	<u>ष</u>	<u>n/a</u>
PO9 Development in a wetland protection area ensures that any existing <u>ecological corridors</u> are enhanced or protected, and have dimensions and	AO9.1 Development in a wetland protection area does not occur within an existing <u>ecological corridor</u> . OR each of the following acceptable outcomes apply:		<u>n/a</u>
 characteristics that will: (1) effectively link habitats on or adjacent to the development (2) facilitate the effective movement of terrestrial and aquatic fauna accessing or using a wetland as habitat. 	 AO9.2 If an <u>ecological corridor</u> is required to facilitate fauna movement, access or use of a wetland in a wetland protection area, the <u>ecological corridor</u>: (1) has a minimum width of 100 metres, and is provided and maintained in accordance with the <i>Wetland rehabilitation guidelines for the Great Barrier Reef catchment</i>, Department of Environment and Heritage, 2008 or other relevant guidelines, or 		<u>n/a</u>
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Performance outcomes	Acceptable outcomes	Response	Comment
	 (2) is of sufficient width to facilitate fauna movement, access or use of a wetland in a wetland protection area, and is provided and maintained in accordance with the Wetland rehabilitation guidelines for the Great Barrier Reef catchment, Department of Environment and Heritage, 2008 or other relevant guidelines. AND 		
	 AO9.3 Unimpeded movement of fauna associated with or likely to use, a wetland in a wetland protection area as part of their normal life cycle is facilitated within and through the wetland protection area, particularly along identified ecological corridors, by: (1) ensuring that development (for example, roads, pedestrian access, in-stream structures) during both construction and operation does not create barriers to the movement of fauna along or within ecological corridors (2) providing wildlife movement infrastructure where necessary, and directing fauna to locations where wildlife movement infrastructure has been provided to enable fauna to safely negotiate a development area (3) separating fauna from potential hazards (for example, through fencing). 		<u>n/a</u>
PO10 Development does not result in the introduction of non-native pest plants or animals that pose a risk to the ecological values and processes of a <u>wetland in a</u> <u>wetland protection area.</u>	AO10.1 Existing non-native pest plants or animals are removed, or their threat is controlled by adopting pest management practices that provide for the long-term integrity of a wetland.OR all of the following acceptable outcomes apply:		<u>n/a</u>
	AO10.2 Development does not result in the introduction of any non-native fauna or pest species. AND		<u>n/a</u>
	AO10.3 Exclusion fencing or other pest dispersal control measures are provided in appropriate locations to manage the threat of pest species to a wetland in the wetland protection area of state environmental significance. AND		<u>n/a</u>

Performance outcomes	Acceptable outcomes	Response	Comment
	AO10.4 Exclusion fencing does not result in a barrier or hazard to the movement of wetland fauna in the wetland protection area.		<u>n/a</u>
PO11 During construction and operation of development in a wetland protection area, <u>wetland fauna</u> are protected from impacts associated with noise, light or <u>visual disturbance</u> .	A011.1 Development in a wetland protection area does not result in any measurable impact on <u>wetland fauna</u> from noise, light or <u>visual disturbance</u> during construction or operation. AND		<u>n/a</u>
	AO11.2 Development in a wetland protection area minimises noise, light and <u>visual disturbance</u> in accordance with expert advice, to ensure it does not have an adverse effect on the <u>wetland fauna</u> of a wetland in a wetland protection area. <u>Visual disturbance</u> may be minimised by excluding activities in certain areas (for example, line of sight <u>buffers</u> , exclusion fencing), and using visual screens, or similar, during sensitive periods, such as when breeding or roosting.		<u>n/a</u>
PO12 During construction and operation of the development in a wetland protection area, ongoing management, maintenance and monitoring is undertaken to ensure adverse effects on hydrology, <u>water</u> quality and ecological processes of a wetland are avoided or minimised.	AO12.1 Construction and operations related to the development in a wetland protection area are carried out in accordance with an operational management plan where appropriate.		<u>n/a</u>
P013 Development in a wetland protection area in an urban area avoids adverse impacts on <u>matters of state</u> <u>environmental significance</u> , or where this is not reasonably possible, impacts are minimised and residual impacts are offset.	AO13.1 Matters of state environmental significance likely to be affected by development in a wetland protection area in an urban area are identified and evaluated, and any adverse effects on the areas are avoided, or where this cannot be reasonably achieved, impacts are minimised and any residual impacts are offset. Editor's note: For offsets see the <i>Queensland wetland</i> <i>definition and delineation guidelines</i> (as updated from time to time) available on the Department of Environment and Heritage Protection website.		n/a
 PO14 Acceptable circumstances for not fully achieving the policy outcome is development that: (4) provides for an overriding need in the public interest 	AO14.1 The proposal achieves PO1–PO13 to the maximum extent practicable, where this would not compromise the intrinsic characteristics of the development. AND		<u>n/a</u>

Performance outcomes	Acceptable outcomes	Response	Comment
(5) is a development commitment(6) is for community infrastructure.	AO14.2 The proposal provides an environmental offset for any adverse impact on a wetland that cannot be avoided, except where the development arising from, and is necessary to give effect to, a development approval.		<u>n/a</u>

SHEET D - Site/transect form Vegetation structure - crown cover measured

Location		_					
Site No.	<u>A</u> R	ecorder: REN	IC				Day/Date: 14 MARCH 2011
Purpose	REMN	ANT TO NON	REMNANT				
Locality:	(inc. distance/	direction to nearest town	n) 5KM WES	5T	OF PI.	ALBA	
Vegetatic Median heig Cover densit	DN Struc ht of EDL is ty is to be es	ture to be measured stimated		F	Plant s Record r d – domi	specie elative (n nant; <i>c</i> –	S umerical) dominance for each stratum; codominant; s - subdominant, a – associated.
Stratum	Median height	Height interval	Est. cover density (D,M,S,V)		Str.	Rel. dom.	Scientific Name
Е		-					
T1	4	2-6	D		T1	D	Melalueca quinquinervia
T2	3	2-5	M		Т2	S	Allocasuarina glauca
Т3					Т2	D	Melalueca styphloides
S1	1	1-1	5		51	D	Acacia dissparima
S2		-					
G		-					

Structural formation including height: (estimated)
OWL
Ecologically dominant layer: T1

Transect - crown cover measured (transect intercept method)

GPS coordinates:	Datu	m:	MGA 94	562	Transect length:	100M
Start point End point	Zone 5 6 F Zone 5 6 F	0 4	7 8 9 7 7 8	3	5 N 7 2 0 3 9 0 9 N 7 2 0 3 9 8	2
		01		 	2	
0-30	30m	Str. T1	Height 5		Minimum height of plants included in the transect table	: 3m
57-79	22m	T1	4		Intercept of EDL 0 - 50m:	30m
92-100	8m	T1	4		Intercept of EDL 50 -100m:	30m
					Measured crown cover % of EDL 0 -100m:	60%
					Structural formation	OWL
					Conclusions/notes: Uniform Regrowth .Species which has a open forest stru- cover of 26%, . This site pas	present represent 12.3.5b cture , with a minimum crown ses the remnant test for cover .

SHEET D – **Site/transect form** Vegetation structure - crown cover measured

Location

Site No. B Recorder: REMC		Day/Date:	14 march 2011
Purpose REMNANT TO NON REM	NANT		
Locality: (inc. distance/direction to nearest town)	5KM WEST OF PIALBA		

Vegetation structure

Plant species

Median height of EDL is to be measured Cover density is to be estimated			R d	Record relative (numerical) dominance for each stratum; d – dominant; c – codominant; s - subdominant, a – associated.					
Stratum	Median height	Height interval	Est. cover density (D,M,S,V)		Str.	Rel. dom.	Scientific Name		
Е		-							
T1	3	1-4	m		Т1	D	M. styphloides		
T2		-							
Т3		_			Т2	D	Acacia dissparima		
S1		-							
S2		-							
G		-							

Structural formation including height: (estimated)		
Ecologically dominant layer: T1		

GPS coordinates:	Datum:		MGA 94	56	Z Tra	ansect le	ngth	:			100M	
Start point	Zone 5 6 E	4	7 8 8	5	1 N	7 2	0	4	1	0	7	
End point	Zone 5 6 E	4	7 8 7	5	6 N	7 2	0	4	1	5	3	
Interval (metres)	Intercept S	str.	Height]	Sumn	nary:						
0-19	19 1	۲1	3		Minimu include	um heig ed in the	ht of e trar	plar sect	nts t tab	le:	3n	n
26-38	12 1	۲1	4		Interce	ept of EI	DL 0	- 50	m:			32m
46-52	6 1	٢2	3		Interce	ept of EI	DL 50	0 -10	00m:	-		20m
60-68	8 1	۲1	4		Measu of EDI	red crov L 0 -100	wn co)m:	over	%			52%
88-100	12 1	۲1	3		Structu	ural form	natio	n			OWL	
					Conclu	isions/n	otes	:				
					Uniforn which h cover c but not	m Regro has a oj of 26%, t height	owth pen f . Thi	.Spe fores is sit	ecies st str e pa	s pre ructu asse	esent represen ure , with a min s the remnant	t 12.3.5b imum crown test for cover .

SHEET D – Site/transect form Vegetation structure - crown cover measured

cation				
Site No.	C Recorder: REM	c	Day/Date:	14 MARCH 2011
Purpose	REMNANT TO NON	EMNANT		
Locality: (i	inc. distance/direction to nearest town	5KM WEST OF PIALBA		

Vegetation structure

Plant species

Median heig Cover densit	ht of EDL is t ty is to be est	o be measured imated		Record relative (numerical) dominance for each stratum; d – dominant; c – codominant; s - subdominant, a – associated.							
Stratum	Median height	Height interval	Est. cover density (D,M,S,V)		Str.	Rel. dom.	Scientific Name				
Е		-									
T1	4	2-6	m		Т1	D	Allocasuarina glauca				
T2	3	2-5	m		Т2	С	M. styphloides				
Т3		-									
S1		-									

S2		-			
G		-			
Structura	I formation	including height:	(estimated)		
		OWL			
Ecologica	ally domina	int layer:	T1		

GPS coordinates:			Datum:			MGA 94 56Z			Transect length:						100M				
Start point	Zone	5	6	E	0	4	7	9	0	2	2	N	7	2	0	4	1	0	4
End point	Zone	5	6	E	4	7	8	9	6	2		N	7	2	0	4	2	0	7

Interval (metres)	Intercept	Str.	Height
25-54	29	Т1	4
90-100	10	Т1	4
-	m		
-	m		
-	m		

Summary:		
Minimum height of plants included in the transect table:	3m	
Intercept of EDL 0 - 50m:		25m
Intercept of EDL 50 -100m:		10
Measured crown cover % of EDL 0 -100m:		35%
Structural formation	OWL	
Canalyziana/natao		

Conclusions/notes:

Uniform Regrowth . Species present represent 12.3.5b which has a open forest structure , with a minimum crown cover of 26%, . This site passes the remnant test for cover . but not height

SHEET D – Site/transect form Vegetation structure - crown cover measured

oution			-	
Site No.	D Recorder: REMC		Day/Date:	22 march 2011
Purpose	REMNANT TO NON REM	INANT		
. . .				

Vegetation structure

Plant species

Median height of EDL is to be measured Record relative (numerical) dominance for each stratum; Cover density is to be estimated d-dominant; c-codominant; s-subdominant, a-associated. Height Est. cover Rel. Median Str. **Scientific Name** Stratum interval density (D,M,S,V) dom. height Е T1 4 2-6 D Т1 D Allocasuarina glauca T2 M Т2 С 3 2-5 M. styphloides

Т3		-			
S1		-			
S 2		-			
G		-			
Structura	I formation	including height:	(estimated)		
Ecologica	ally domina	int layer:		 	

GPS coordinates:	Datı	um: MGA S	94 56Z	Transect length:	100M
Start point	Zone 5 6]	E 4 7 9	0 4 4	N 7 2 0 4 3	6 0
End point	Zone 5 6	E 0 4 7 8	9 3 2	N 7 2 0 4 3	6 0

Interval (metres)	Intercept	Str.	Height
0-41	41	T1	4
52-72	20	Т1	4
73_89	16	τ2	3
73-07	10	15	
-	m		
-	m		
-	m		

Summary:		
Minimum height of plants included in the transect table:	3m	
Intercept of EDL 0 - 50m:		41m
Intercept of EDL 50 -100m:		20m
Measured crown cover % of EDL 0 -100m:		61%
Structural formation	OWL	

Conclusions/notes:

Uniform Regrowth . Species present represent 12.3.5b which has a open forest structure , with a minimum crown cover of 26%, . This site passes the remnant test for cover . but not height

SHEET D - Site/transect form Vegetation structure - crown cover measured

Location



Vegetation structure Median height of EDL is to be measured Cover density is to be estimated

Plant species

Record relative (numerical) dominance for each stratum; d – dominant; c – codominant; s - subdominant, a – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)	Str.	Rel. dom.	Scientific Name
Е		-				
T1	4	2-6	D	Т1	D	M. styphloides
T2		-		Т1	5	Allocasuarina glauca
Т3		-				
S1		-				
S2		-				
G		-				
Structura	I formation	including height:	(estimated)			
Ecologica	ally domina	int layer:				

GPS coordinates:	D	atum:	MGA	94 56Z	Tra	ansect le	ngth:			100
Start point	Zone 5 6	E 0 4	79	1 1	B N	7 2	0 4	2	8	9
End point	Zone 5 6	Е о 4	79	09	5 N	7 2	0 4	1	9	4

Interval (metres)	Intercept	Str.	Height
0-72	72	T1	4
82-100	18	T1	4
-	m		
-	m		
-	m		

Summary:		
Minimum height of plants		
included in the transect table:	3m	
Intercept of EDL 0 - 50m:		50
•		50
Intercept of EDL 50 -100m:		18
Measured crown cover %	_	
of EDL 0 -100m:		68%
Structural formation		
olidolaranomaton	OWL	
Conclusions/notes:		

Uniform Regrowth .Species present represent 12.3.5b which has a open forest structure , with a minimum crown cover of 26%, . This site passes the remnant test for cover . but not height

SHEET D – Site/transect form Vegetation structure - crown cover measured

Location

Site No.	G Recorder: REMC		Day/Date:	22mar 2011		
Purpose	REMNANT TO NON REM					
Locality: (inc. distance/direction to nearest town)		5KM WEST OF PIALBA				

Vegetation structure

Plant species

Median height of EDL is to be measured

Plant specie	es			
Record relative (numerical)	dominance	for each	stratum;

Cover densit	y is to be es	stimated		d – domi	nant; c –	codominant; s - subdominant, a - associated.
Stratum	Median height	Height interval	Est. cover density (D,M,S,V)	Str.	Rel. dom.	Scientific Name
Е		-				
T1	4	2-6	D	Т1	D	M. styphloides
T2	4	2-6	M	Т1	С	Allocasuarina glauca
Т3		-		Т2	D	
S1		-		Т2	A	
S2		-				
G		-				
Structura	I formation	including height	: (estimated)			
Ecologica	ally domina	nt layer:	T1			

Transect - crown cover measured (transect intercept method)

GPS coordinates:	D	atum:	MGA 94	4 56Z	Transect length:	10
Start point	Zone 5	E 0 4	7 9 2	4 1	N 7 2 0 4	2 4 3
End point	Zone 5	E 0 4	7 9 2	6 6	N 7 2 0 4	3 6 3

P

Interval (metres)	Intercept	Str.	Height
0-25	25	Т1	4
25-70	35	Т2	4
-	m		
-	m		
_	m		

•		
Summary:		
Minimum height of plants		
included in the transect table:	6m	
Intercept of EDL 0 - 50m:		25m
Intercept of EDL 50 -100m:		m
Measured crown cover % of EDL 0 -100m:		25%
Structural formation	OWL	

Conclusions/notes:

Uniform Regrowth . Species present represent 12.3.5b which has a open forest structure , with a minimum crown cover of 26%, . This site passes the remnant test for cover . but not height

SHEET D – **Site/transect form** Vegetation structure - crown cover measured

cation			
Site No.	H Recorder: REMC	Day/Date	e: 22mar 2011
Purpose	REMNANT TO NON REM	INANT	
Locality: (in	c. distance/direction to nearest town)	5KM WEST OF PIALBA	

Vegetation structure

Median height of EDL is to be measured Cover density is to be estimated

Plant species

Record relative (numerical) dominance for each stratum; d – dominant; c – codominant; s - subdominant, a – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)		Str.	Rel. dom.	Scientific Name	
E	10	8-12	S		E	Δ	E.moluccana	
T1	10	4-6	m		Т1	D	M. styphloides	
T2		-						
Т3		-						
S1		-						
S2		-						
G		-						
Structura	I formation	including height	(estimated)					
Ecologically dominant layer: E								

Transect - crown cover measured (transect intercept method)

GPS coordinates:	D	Datum:	MGA 94	+ 56Z	Transect length:	10
Start point	Zone 5	E o 4 7	93	8 7	N 7 0 2 4	1 4 4
End point	Zone 5	E 0 4 7	94	0 7	N 7 0 2 4	2 5 0

Intercept	Str.	Height
15	T1	8
20	Т1	8
15	Т2	8
m		
m		
m		
	Intercept 15 20 15 m m	Intercept Str. 15 T1 20 T1 15 T2 m

Summary:		
Minimum height of plants included in the transect table:	3m	
Intercept of EDL 0 - 50m:		25m
Intercept of EDL 50 -100m:		10m
Measured crown cover % of EDL 0 -100m:		35%
Structural formation	OWL	

Conclusions/notes:

Uniform Regrowth . Species present represent 12.3.5b which has a open forest structure , with a minimum crown cover of 26%, . This site passes the remnant test for cover . but not height

SHEET D – Site/transect form Vegetation structure - crown cover measured

Location

Site No.	I Recorder: REMC	D	ay/Date:	22mar 2011
Purpose	REMNANT TO NON REM	NANT		
Locality: (i	nc. distance/direction to nearest town)	5KM WEST OF PIALBA		

Vegetation structure

Plant species

ledian height of EDL is to be measured over density is to be estimated			Re d	Record relative (numerical) dominance for each stratum; d – dominant; c – codominant; s - subdominant, a – associated.			
Stratum	Median height	Height interval	Est. cover density (D,M,S,V)		Str.	Rel. dom.	Scientific Name
E	6	4-8	s				
T1	4	2-6	m		Т1	D	E.moluccana
T2		-			Т1	С	M. styphloides
Т3		_					
S1		_					
S2							
G		-					
Structura	I formation	including height	: (estimated)				
Ecologica	ally domina	nt layer:	T1				

Transect - crown cover measured (transect intercept method)

GPS coordinates:	Datum:	MGA 94 56Z	Transect length:	100M
Start point	Zone 5 E 0	4 7 9 5 3 7	N 7 2 0 4 0 9	8
End point	Zone 5 E 0	4 7 9 5 8 9	N 7 2 0 4 1 7	7
Interval (metres)	Intercept Str.	Height	Summary:	
0-15	15 T1	N ir	Animum height of plants ncluded in the transect table:	6m

1

25-56	31	T1	
85-100	15	Т2	
-	m		
-	m		

Intercept of EDL 0 - 50m:	40m
Intercept of EDL 50 -100m:	21m
Measured crown cover % of EDL 0 -100m:	61%
Structural formation	OWL

н

Conclusions/notes:

Uniform Regrowth .Species present represent 12.3.5b which has a open forest structure , with a minimum crown cover of 26%, . This site passes the remnant test for cover . but not height

SHEET D – Site/transect form Vegetation structure - crown cover measured

	T			
Site No.	1 Recorder:REMC		Day/Date:	22mar 2011
Purpose	REMNANT TO NON REM	NANT		
Locality: (i	inc. distance/direction to nearest town)	5KM WEST OF PIALBA		

Vegetation structure

• ...

Median height of EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; Cover density is to be estimated d-dominant; c-codominant; s-subdominant, a-associated. Height Est. cover Rel. Median Str. **Scientific Name** Stratum interval density (D,M,S,V) dom. height Е -T1 6 4-8 D Т1 D Allocasuarina glauca T2 4 Т2 S 2-6-D M. styphloides **T3** -**S1 S2** G Structural formation including height: (estimated) Ecologically dominant layer:

Transect - crown cover measured (transect intercept method)

GPS coordinates:	Datu	m:	MGA 94	562	Transect length:	10	MOM	
Start point End point	Zone 5 E Zone 5 E	2 0 4 2 0 4	7 9 7 7 9 7	0	5 N 7 2 0 4 0 2 N 7 2 0 4 0	0 9 8 5		
Interval (metres)	Intercept	Str.	Height		Summary: Minimum height of plants			
0-6	6	T1	6		included in the transect ta	able:	6m	
15-42	27	Т1	6		Intercept of EDL 0 - 50m:			33m
50-78	28	Т2	4		Intercept of EDL 50 -100r	n:		28m
-	m				Measured crown cover % of EDL 0 -100m:	1		61%
-	m				Structural formation		OWL	
_					Conclusions/notes: Uniform Regrowth .Speci which has a open forest s cover of 26%, . This site p but not height	es preser structure , basses th	nt represent 1 , with a minim e remnant te	2.3.5b rum crown st for cover .

Cover density is to be estimated

d - dominant; c - codominant; s - subdominant, a - associated.

SHEET D – Site/transect form Vegetation structure - crown cover measured

Jeanon	J		<u>.</u>	
Site No.	2 Recorder: REMC		Day/Date:	22mar 2011
Purpose	REMNANT TO NON REM	NANT		
	ing distance/direction to represe torum)	5KM WEST OF PIALBA		

Vegetation structure

Plant species

Median height of EDL is to be measured Cover density is to be estimated Record relative (numerical) dominance for each stratum; d - dominant; c - codominant; s - subdominant, a - associated. Height Est. cover Rel. Median Str. **Scientific Name** Stratum interval density (D,M,S,V) dom. height Е 8 6-10 m T1 4-8 Т1 D E. tereticormis 6 m

T2	6	4-8	S	Т2	с	M. quinquinervia
Т3		-		Т3	s	Allocasuarina glauca
S 1		-				
S2		_				
G		_				
Structura	I formation	including height	(estimated)			
Ecologic	ally domina	ant layer:	T1			

GPS coordinates:	Datum:	MGA 94	56Z Transect length: 1	NOOM	
Start point	Zone 5 E 0	4 7 9 6	1 5 N 7 2 0 4 4 4 6		
End point 2	zone 5 E	4 7 9 7	0 6 N 7 2 0 4 4 9 5	5	
Interval (metres)	Intercept Str.	Height	Summary:		
0-11	11 T1	8	Minimum height of plants included in the transect table:	4m	
17-25	8 T1	8	Intercept of EDL 0 - 50m:	32m	
38-53	15 T1	8	Intercept of EDL 50 -100m:	3m	
65-100	35m T2	6	Measured crown cover % of EDL 0 -100m:	35%	
-	m		Structural formation	OWL	
			Conclusions/notes:		
			Uniform Regrowth .Species present represent 12.3.5a which has a open forest structure , with a minimum crow cover of 26%, . This site passes the remnant test for cov but not height		
-	m				

SHEET D - Site/transect form Vegetation structure - crown cover measured

 Location

 Site No.
 M Recorder: REMC
 Day/Date: 22mar 2011

 Purpose
 REMNANT TO NON REMNANT

 Locality: (inc. distance/direction to nearest town)
 5KM WEST OF PIALBA

Vegetation structure Median height of EDL is to be measured Cover density is to be estimated

Plant species

Record relative (numerical) dominance for each stratum; d – dominant; c – codominant; s - subdominant, a – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)		Str.	Rel. dom.	Scientific Name
E							
T1	4	2-6			Т1	D	Allocasuarina glauca
G		-					
Structura	Structural formation including height: (estimated)						
Ecologica	Ecologically dominant layer:						

GPS coordinates:	Datum:	MGA 94 56Z	Transect length:	100M
Start point	Zone 5 6 E0 4	7 9 9 1 7	N 7 2 0 4 6 1	9
End point	Zone 56E04	7 9 8 2 3	N 7 2 0 4 6 6	4
Interval (metres)	Intercept Str.	Height	Summary:	
0-100	100 T1	4 ir	Ainimum height of plants notuded in the transect table:	3m
		Ir	ntercept of EDL 0 - 50m:	50m
		Ir	ntercept of EDL 50 -100m:	50m
-	m	N	leasured crown cover % of EDL 0 -100m:	100%
	m	S	Structural formation	OWI

Conclusions/notes:

Uniform Regrowth . Species present represent 12.3.5a which has a open forest structure , with a minimum crown cover of 26%, . This site passes the remnant test for cover . but not height

SHEET D - Site/transect form Vegetation structure - crown cover measured

m

	0					
Site No.	1	Recorder:	REMC		Day/Date:	22mar 2011
Purpose	RE/	UNANT TO	NON REM	INANT		
Locality, (inc. dista	nuce/direction to nea	rest town)	5KM WEST OF PIALBA		

Vegetation structure Median height of EDL is to be measured Cover density is to be estimated

Plant species

Record relative (numerical) dominance for each stratum; *d* – dominant; *c* – codominant; *s* - subdominant, *a* – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)	Str.	Rel. dom.	Scientific Name
E		-				
T1	5	4-6	D	Т1	D	Allocasuarina glauca
Structura	I formation	including height	(estimated)			
Ecologica	ally domina	nt layer:				

GPS coordinates:	Datum: MGA 94 56Z Transect length: 100	M
Start point	Zone 5 6 E 4 7 8 7 4 1 N 7 2 0 4 5 4 8	
End point	Zone 5 6 E 0 4 7 8 8 3 9 N 7 2 0 4 5 5 0	
Interval (metres)	Intercept Str. Height Summary:	

Intercept	Str.	Height		
100	Т1	5		
	Intercept 100	Intercept Str. 100 T1	Intercept Str. Height 100 T1 5	Intercept Str. Height 100 T1 5

Summary:		
Minimum height of plants included in the transect table:	4m	
Intercept of EDL 0 - 50m:		50m
Intercept of EDL 50 -100m:		50m
Measured crown cover % of EDL 0 -100m:		100%
Structural formation	OWL	

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Conclusions/notes:

Uniform Regrowth . Species present represent 12.3.5a which has a open forest structure , with a minimum crown cover of 26%, . This site passes the remnant test for cover . but not height

SHEET D – Site/transect form Vegetation structure - crown cover measured

L	ocation					
		0				
	Site No.	2	Recorder:	REMC	Day/Date:	22mar 2011

Purpose REMNANT TO NON REMNANT

Locality: (inc. distance/direction to nearest town)

5KM WEST OF PIALBA

/egetatic Median heig Cover densit	on struct ht of EDL is ty is to be es	to be measured stimated		F c	Plant species Record relative (numerical) dominance for each stratum; <i>d</i> – dominant; <i>c</i> – codominant; <i>s</i> - subdominant, <i>a</i> – associated.					
Stratum	Median height	Height interval	Est. cover density (D,M,S,V)		Str.	Rel. dom.	Scientific Name			
Е	14	12-18	d		E	D	E.tereticornis			
T1	12	10-15	m		Т1	D	C. tessalaris			
T2	12	10-15-	m		Т2	с	C. collumelaris			
Т3		-								
S1		-								
S2		-								
G		-								
Structura	I formation	including heigh	t: (estimated)							
Ecologica	ally domina	nt layer:	E							

Transect - crown cover measured (transect intercept method)

GPS coordinates:		I	Datur	n:		Μ	GA	94	56	Z	Tr	anse	ect le	engtl	h:			1
Start point	Zone	56	E	0	4	7	8	8	1	0	N	7	2	0	4	5	9	1
End point	Zone	56	E	, 0	4	7	8	7	8	0	N	7	2	0	4	7	0	2

Interval (metres)	Intercept	Str.	Height
0-40	40	E	14
50-80	30	Т1	15
90-100	10	Т1	15
-	m		
-	m		

Summary:		
Minimum height of plants included in the transect table:	6m	
Intercept of EDL 0 - 50m:		40m
Intercept of EDL 50 -100m:		10m
Measured crown cover % of EDL 0 -100m:		50%
Structural formation	OF WL	
Conclusions/notes:		

Uniform Regrowth . Species present represent 12.2.11 which has a open forest structure , with a minimum crown cover of 26%, . This site fails the remnant test for crown cover .

SHEET D – **Site/transect form** Vegetation structure - crown cover measured

Location

Site No.	O 3 Recorder: REMO		Day/Date:	22mar 2011
Purpose	REMNANT TO NON R	EMNANT		
Locality: (inc. distance/direction to nearest town)	5KM WEST OF PIALBA		

/egetation structure Plant species Median height of EDL is to be measured Record relative (numerical) dominance for each stratum; Cover density is to be estimated d – dominant; c – codominant; s - subdominant, a – associated.				S umerical) dominance for each stratum; codominant; s - subdominant, a – associated.			
Stratum	Median height	Height interval	Est. cover density (D,M,S,V)		Str.	Rel. dom.	Scientific Name
E		-					
T1	8	6-10	D		Т1	D	M. guinguinervia
T2	6	4-8	c		Т2	с	M viridiflora
Т3		-					
<u>S1</u>		-					
<u>82</u>		-					
G		-					
Structural formation including height: (estimated)							
Ecologica	ally domina	nt layer:	T1	-			

Transect - crown cover measured (transect intercept method)

GPS coordinates:	Datum:	MGA 94	56Z Transect length:	100M	
Start point	Zone 5 6 E 0	4 7 9 9	8 3 N 7 2 0 4	8 6 5	
End point	Zone 5 6 E 0	4 7 8 8	7 4 N 7 2 0 4	969	
Interval (metres)	Intercept Str	. Height	Summary:		
0-100	100 T1	8	Minimum height of plar included in the transec	nts t table: 4m	
			Intercept of EDL 0 - 50	m:	50m
			Intercept of EDL 50 -10	00m:	50m
-	m		Measured crown cover of EDL 0 -100m:	%	100%
	m		Structural formation	OWI	

		1
		1
		1
		1
		1
		1
		1
	100	
-	ru	

Conclusions/notes:

Uniform Regrowth . Species present represent 12.2.7a or b which has a open forest structure , with a minimum crown cover of 26%, . This site passes the remnant test for cover . and height

APPENDIX F REGIONAL ECOSYSTEMS PLANT LISTINGS

Regional Ecosystem 12.1.2 Saltpan vegetation including grassland and herbland on marine clay plains Vegetation Management Act status (December 2005): Not of concern Biodiversity Status: Not of concern at present

Composite list based on information held in HBCC flora databases & expert local knowledge - G. Smyrell, M. Connell, A. van Kampen, R.M.Currie

Notes: ¹Status as per Queensland Nature Conservation Act 1992 (state government) ²Abundance = an indication of the most and least common species irrespective of stratum. ³Key revegetation species = recommended species for revegetation

Scientific Name	Common Name	Status ¹	Abundance ²	Key revegetation species ³
		E EndangeredR RareC Common	D Dominant O Occasional	R Revegetation
Aegiceras corniculatum	river mangrove	С		
Avicennia marina	grey mangrove	С		
Bacopa monnieri		С		
Bruguiera gymnorhiza	large-fruited orange mangrove	С	0	
Enchylaena tomentosa var. glabra	ruby saltbush	С		
Fimbristylis ferruginea		С		
Fimbristylis polytrichoides		С		
Halosarcia halocnemoides subsp. tenuis	samphire	С		
Halosarcia indica subsp. leiostachya	samphire	С		
Halosarcia pergranulata	samphire	С		
Ipomoea pes-caprae subsp. brasiliensis	goatsfoot	С		
Juncus kraussii	sea rush	С		
Lumnitzera racemosa		С		
Sarcocornia quinqueflora subsp. quinqueflora	samphire	С	D	
Sesuvium portulacastrum	sea purslane	С		
Sporobolus virginicus	marine couch	С		

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Suaeda arbusculoides	seablite	С		
Suaeda australis	seablite	С		
Scientific Name	Common Name	Status ¹	Abundance ²	Key revegetation species ³
Triglochin striatum	streaked arrowgrass	С		
Velleia spathulata	wild pansies	С		
Zoysia macrantha Desv. subsp. macrantha	coastal couch	С		
Regional Ecosystem 12.1.3	Mangrove shrubland to low closed forest on marine clay plains and estuaries			
Vegetation Management Act status (December 2005): Biodiversity Status:	Not of concern No concern at present			
Vegetation Management Act status (December 2005): Biodiversity Status: Composite list based on information held in HBCC flora da	Not of concern No concern at present Atabases & expert local knowledge - G. Smyrd	ell, M. Connell, A.	van Kampen, R.M.Curri	e

Scientific Name	Common Name	Status ¹	Abundance ²	Key revegetation species ³
		E Endangered R Rare C Common	D Dominant O Occasional	R Revegetation
Aegialitis annulata	club mangrove	С		
Aegiceras corniculatum	river mangrove	С		
Aglaia brownii		С		
Alphitonia excelsa	soap tree	С		
Apium prostratum	sea celery	С		
Avicennia marina	grey mangrove	С	D	
Bruguiera gymnorhiza	large-fruited orange mangrove	С		
Callitris columellaris	white cypress pine	С		
Canavalia rosea	coastal jack bean	С		
Casuarina glauca	swamp she-oak	С		
Ceriops tagal	yellow mangrove	С	D	
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Commelina diffusa	wandering jew	С		
Corymbia tessellaris	Moreton Bay ash	С		
Cupaniopsis anacardioides	tuckeroo	С	D	
Cynanchum carnosum		С		
Cynodon dactylon	green couch	С		
Diospyros geminata	scaly ebony	С		
				T Z
Scientific Name	Common Name	Status ¹	Abundance ²	Key revegetation species ³
Drynaria x dumicola	basket fern	V		•
Einadia hastata	berry saltbush	С		
Enchylaena tomentosa	ruby saltbush	С		
Excoecaria agallocha	milky mangrove	С	D	
Exocarpos latifolius	broad-leaved cherry	С		
Fimbristylis ferruginea		С		
Glochidion ferdinandi	cheese tree	С		
Glochidion lobocarpum	small-leaved cheese tree	С		
Hibiscus tiliaceus	cotton tree	С		
Isolepis nodosa	knobby club rush	С		
Juncus kraussii	sea rush	С		
Mallotus discolor	white kamala	С	D	
Myoporum acuminatum	coastal boobialla	С		
Osbornia octodonta	myrtle mangrove	С		
Pandanus tectorius	screw pine	С		
Polyalthia nitidissima	polyalthia	С		
Quassia bidwilli	quassia	V		
Rhizophora stylosa	spotted mangrove	С		
Sesuvium portulacastrum	sea purslane	С		
Stephania japonica	tape vine	С		
Tetragonia tetragonioides	New Zealand spinach	С		
Xylocarpus granatum	cedar mangrove	С		

Regional Ecosystem 12.2.2

Microphyll/notophyll vine forest on beach ridges

Vegetation Management Act status (December 2005):Of concernBiodiversity Status:Endangered

Composite list based on information held in HBCC flora databases & expert local knowledge - G. Smyrell, M. Connell, A. van Kampen, R.M.Currie

Notes: ¹Status as per Queensland Nature Conservation Act 1992 (state government) ²Abundance = an indication of the most and least common species irrespective of stratum. ³Key revegetation species = recommended species for revegetation

Scientific Name	Common Name	Status ¹	Abundance ²	Key revegetation species ³
		E Endangered R Rare C Common	D Dominant O Occasional	R Revegetation
Acacia disparrima subsp. disparrima	southern salwood	С		
Acronychia imperforata	beach acronychia	С	D	
Agathis robusta	kauri pine	С		R
Ailanthus triphysa	white siris	С		R
Alectryon connatus	grey birds-eye	С		R
Alectryon tomentosus	hairy birds-eye	С		R
Alphitonia excelsa	soap tree	С		R
Aphananthe philippinensis	native elm	С		
Arytera divaricata	coogera	С	D	
Arytera foveolata	pitted coogera	С		R
Brachychiton populneus	kurrajong	С		
Breynia oblongifolia	coffee bush	С		R
Bridelia leichhardtii	small-leaved brush ironbark	С		
Callitris columellaris	white cypress pine	С		
Canthium odoratum	shiny-leaved canthium	С		
Carissa ovata	currantbush	С		
Celtis paniculata	native celtis	С		
Centella asiatica	pennywort	С		

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Scientific Name	Common Name	Status ¹	Abundance ²	Key revegetation species ³
Cissus antarctica	water vine	С		
Cleistanthus cunninghamii	omega	С		
Clerodendrum floribundum	lollybush	С		R
Commersonia bartramia	brown kurrajong	С		R
Corymbia intermedia	pink bloodwood	С		
Corymbia tessellaris	Moreton Bay ash	С		
Crinum pedunculatum	river lily	С		
Cryptocarya triplinervis var. pubens	hairy three-veined laurel	С		
Cupaniopsis anacardioides	tuckeroo	С	D	R
Cyperus polystachyos	bunchy sedge	С		
Dendrocnide photinophylla	shiny-leaved stinging tree	С		
Diospyros fasciculosa	grey ebony	С	D	R
Diospyros geminata	scaly ebony	С	D	
Dodonaea lanceolata	hop bush	С		
Dodonaea triquetra	large-leaved hop bush	С		
Doodia aspera	prickly rasp fern	С		
Drypetes deplanchei	grey boxwood	С		R
Duboisia myoporoides	corkwood	С		
Elaeocarpus obovatus	blueberry ash	С		
Elattostachys nervosa	green tamarind	С		
Embelia australiana	embelia	С		
Endiandra sieberi	hard corkwood	С		
Eucalyptus exserta	Queensland peppermint	С		
Eucalyptus tereticornis	Queensland blue gum	С		
Euroschinus falcatus	ribbon wood	С		R
Eustrephus latifolius	wombat berry	С		
Exocarpos latifolius	broad-leaved cherry	С	D	
Ficus obliqua	small-leaved Moreton Bay fig	С		R
Ficus opposita	sandpaper fig	С		R
Ficus rubiginosa	Port Jackson fig	С		R
Ficus virens var. sublanceolata	white fig	С		R
Fitzalania heteropetala	fitzalania	С		
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Scientific Name	Common Name	Status ¹	Abundance ²	Key revegetation species ³
Flagellaria indica	whip vine	С		
Flindersia bennettiana	Bennetts Ash	С		
Flindersia schottiana	bumpy ash	С	D	R
Geitonoplesium cymosum	scrambling lily	С		
Glochidion lobocarpum	small-leaved cheese tree	С	D	R
Harpullia hillii	blunt-leaved tulip	С		R
Harpullia pendula	Queensland tulip wood	С		
Hibiscus splendens	pink hibiscus	С		
Hibiscus tiliaceus	cotton tree	С		
Hoya australis subsp. australis	native hoya	С		
Jagera pseudorhus var. pseudorhus	foambark	С		R
Jasminum didymum subsp. didymum	native jasmine	С		
Jasminum simplicifolium subsp. australiense	stiff jasmine	С		
Lastreopsis decomposita	trim shield fern	С		
Lindsaea ensifolia	fern	С		
Livistona decipiens	weeping cabbage palm	С		R
Lophostemon suaveolens	swamp box	С		
Mallotus claoxyloides	green kamala	С		
Mallotus discolor	white kamala	С	D	R
Mallotus philippensis	red kamala	С		R
Melaleuca dealbata	swamp tea-tree	С		
Melaleuca salicina	white bottlebrush	С		
Melia azedarach	white cedar	С		
Microsorum punctatum	sword fern	С		
Monococcus echinophorus	burr bush	С		
Mucuna gigantea	burny bean	С		
Notelaea longifolia	large mock olive	С		
Olea paniculata	native olive	С		R
Pandorea jasminoides	bower plant	С		
Pandorea pandorana	wonga vine	С		
Parsonsia straminea	monkey rope	С		
Pellaea falcata var. nana	dwarf sickle fern	С		
EPRC2013/7038 APPENDICES C-E		T	REMC	

Scientific Name	Common Name	Status ¹	Abundance ²	Key revegetation species ³
Pittosporum revolutum	yellow pittosporum	С		
Pittosporum viscidum	black-fruited thornbush	С		
Planchonia careya	cockatoo apple	С		
Pleiogynium timorense	Burdekin plum	С	D	R
Pleogyne australis	wiry grape	С		
Pleurostylia opposita	pleurostyla	С		
Plumbago zeylanica	native plumbago	С		
Podocarpus elatus	she pine	С		
Polyalthia nitidissima	polyalthia	С	D	
Polyscias elegans	celery wood	С		
Pouteria myrsinoides var. myrsinoides	blunt-leaved coondoo	С		
Pouteria pohlmaniana	yellow boxwood	С		
Pteridium esculentum	common bracken	С		
Pyrrosia confluens	robber fern	С		
Rapanea variabilis	muttonwood	С		R
Rhodamnia acuminata	cooloola ironwood	С		R
Rhodamnia dumicola	rib-fruited malletwood	С		R
Sarcopetalum harveyanum	pearl vine	С		
Scolopia braunii	flintwood	С	D	R
Secamone elliptica	milkvine	С		
Smilax australis	barb wire vine	С		
Stephania japonica	tape vine	С		
Sterculia quadrifida	peanut tree	С	D	R
Tetrastigma nitens	shining grape	С		
Trophis scandens subsp. scandens	burneyvine	С		
Vitex melicopea	vitex	С		
Wikstroemia indica	tie bush	С		

Corymbia spp., Eucalyptus spp., Acacia spp. Open forest to low closed forest on beach ridges in northern half of bioregion

Regional Ecosystem 12.2.11

EPBC2013/7038 APPENDICES C-F

REMC

Vegetation Management Act status (December 2005):Not of concernBiodiversity Status:No concern at present

Composite list based on information held in HBCC flora databases & expert local knowledge - G. Smyrell, M. Connell, A. van Kampen R.M.Currie,

Notes: ¹Status as per Queensland Nature Conservation Act 1992 (state government) ²Abundance = an indication of the most and least common species irrespective of stratum. ³Key revegetation species = recommended species for revegetation

Scientific Name	Common Name	Status ¹	Abundance ²	Key revegetation species ³
		E Endangered R Rare C Common	D Dominant O Occasional	R Revegetation
Acacia disparrima subsp. disparrima	southern salwood	С	D	R
Acacia flavescens	toothed wattle	С		R
Acacia leiocalyx	Brisbane black wattle	С		R
Allocasuarina torulosa	rose she-oak	С		R
Alphitonia excelsa	soap tree	С		R
Banksia integrifolia	coast banksia	С		R
Casuarina glauca	swamp she-oak	С		
Cissus opaca	small-leaved water vine	С		
Corymbia intermedia	pink bloodwood	С	D	R
Corymbia tessellaris	Moreton Bay ash	С		R
Dianella caerulea	blue flax lily	С		
Eucalyptus exserta	Queensland peppermint	С	D	R
Eucalyptus tereticornis	Queensland blue gum	С	D	R
Eustrephus latifolius	wombat berry	С		
Glycine tomentella	woolly glycine	С		
Imperata cylindrica	blady grass	С		
Kennedia rubicunda	red Kennedy pea	С		
Scientific Name	Common Name	Status ¹	Abundance ²	Key revegetation species ³
Lomandra confertifolia subsp. pallida	matrush	С		
EPBC2013/7038 APPENDICES C-F		REMC		

Lomandra longifolia	spinyhead mat rush	С	
Lophostemon suaveolens	swamp box	С	R
Melaleuca dealbata	swamp tea-tree	С	R
Melaleuca quinquenervia	swamp paperbark	С	R
Melastoma malabathricum subsp. malabathricum	black-mouth bush	С	
Myoporum acuminatum	coastal boobialla	С	
Parsonsia straminea	monkey rope	С	
Planchonia careya	cockatoo apple	С	
Polyscias elegans	celery wood	С	
Pteridium esculentum	common bracken	С	
Stephania japonica	tape vine	С	
Themeda triandra	kangaroo grass	С	
Xerochrysum bracteatum	golden everlasting	С	

Regional Ecosystem 12.3.5b

Melaleuca quniquenervia open forest on coastal alluvium

EPBC2013/7038 APPENDICES C-F

REMC

Vegetation Management Act status (December 2005): Not of concern **Biodiversity Status:** Of concern

Composite list based on information held in HBCC flora databases & expert local knowledge - G. Smyrell, M. Connell, A. van Kampen R.M.Currie,

Notes: ¹Status as per Queensland Nature Conservation Act 1992 (state government) ²Abundance = an indication of the most and least common species irrespective of stratum. ³Key revegetation species = recommended species for revegetation

Scientific Name	Common Name	Status ¹ E	Abundance ²	Key revegetation species ³
		Endangered R Rare C Common	D Dominant O Occasional	R Revegetation
Acacia disparrima subsp. disparrima	southern salwood	С		
Acacia leiocalyx	Brisbane black wattle	С		
Acacia maidenii	Maiden's wattle	С		
Acacia penninervis	mountain hickory	С		
Acrostichum speciosum	mangrove fern	С		
Allocasuarina littoralis	black she-oak	С		
Alphitonia excelsa	soap tree	С		
Artanema fimbriatum	purple bells	С		
Baloskion tetraphyllum subsp. meiostachyum	cord-rush	С		
Banksia integrifolia	coast banksia	С		
Banksia robur	broad-leaved banksia	С		
Baumea articulata	jointed twigrush	С		
Baumea juncea	bare twigrush	С		
Blechnum indicum	swamp water fern	С	D	
Breynia oblongifolia	coffee bush	С		R
Carissa ovata	currantbush	С		
Cassytha pubescens	downy devil's twine	С		
Casuarina glauca	swamp she-oak	С		
Centella asiatica	pennywort	С		
Scientific Name	Common Name	Status ¹	Abundance ²	Ley revegetation species ³
Cissus opaca	small-leaved water vine	С		

EPBC2013/7038 APPENDICES C-F			REMC	
Melastoma malabathricum subsp. malabathricum	black-mouth bush	С		R
Scientific Name	mmon Name	Status ¹	Abundance ²	Ley revegetation species ³
Melaleuca salicina	white bottlebrush	С		
Melaleuca quinquenervia	swamp paperbark	C	D	R
Lygodium microphyllum	snake fern	C	_	_
Ludwigia octovalvis	willow primrose	C		
Lophostemon suaveolens	swamp box	С	D	R
Lobelia purpurascens	white root	С		
Livistona decora	weeping cabbage palm	С		
Livistona australis	cabbage tree palm	С		
Lepironia articulata	jointed reed	С		
Juncus usitatus	common rush	С		
Juncus continuus	a rush	С		
Imperata cylindrica	blady grass	С		
Hypoxis pratensis	golden star	С		
Hibiscus diversifolius	swamp hibiscus	С		
Glycine clandestina	twining glycine	С		
Glochidion sumatranum	umbrella cheese tree	С		
Glochidion ferdinandi	cheese tree	С		
Geitonoplesium cymosum	scrambling lily	С		
Gahnia clarkei	tall sawsedge	С		
Gahnia aspera	sawsedge	С		
Eustrephus latifolius	wombat berry	С		
Euroschinus falcatus	ribbon wood	С		
Eucalyptus molucanna	Gum top box	С		
Eucalyptus latisinensis	broad-leaved white mahogany	С		
Endiandra sieberi	hard corkwood	С		
Elaeocarpus reticulatus	ash quandong C			
Elaeocarpus obovatus	blueberry ash	С		
Cyclophyllum coprosmoides	coast canthium	С		
Corymbia tessellaris	Moreton Bay ash	С		
Corymbia intermedia	pink bloodwood	С		

Oplismenus hirtellus	shade grass	С
Ottochloa nodosa	ottochloa grass	С
Parsonsia straminea	monkey rope	С
Persicaria attenuata	tall geebung	С
Philydrum lanuginosum	frogsmouth	С
Pimelea linifolia subsp. linifolia	queen of the bush	С
Pittosporum revolutum	yellow pittosporum	С
Polyscias elegans	celery wood	С
Pteridium esculentum	common bracken	С
Stephania japonica	tape vine	С
Viola betonicifolia	purple violet	С

APPENDIX F QLD OESR POPULATIONN STATISTICS FCRC



Population and Dwelling Profile

Fraser Coast Regional Council

Estimated resident population

The preliminary estimated resident population of Fraser Coast Regional Council at 30 June 2011 was 103,358 persons, an increase of 1,468 persons or 1.4 per cent over the year. This compares with an increase of 2,377 persons or 2.4 per cent in the year to June 2010 (Table 1 and Figure 1).

Components of population change

In the year to June 2009, natural increase (births minus deaths) accounted for an increase of 359 persons while assumed net migration resulted in a gain of 3,144 persons (Table 1 and Figure 2).

Population projections

Projections released in 2011 indicate that by 2016 the expected population of Fraser Coast Regional Council will be between 112,764 and 118,847 persons (Table 2 and Figure 3). By 2031 this is expected to change to between 147,619 and 178,503 persons (low and high series).

Table 1: Estimated resident population and components of change

Popu	Population trends		Annu	al population ch	ange	
As at	Est resident	Year to	Natural	Assumed net	Annual	change
30 Jun	population	30 Jun	increase	migration	Total	Per cent
2003	78,978	2,003	-10	3,014	3,004	4.0
2004	82,334	2004	109	3,247	3,356	4.2
2005	85,638	2005	75	3,229	3,304	4.0
2006	89,247	2006	179	3,430	3,609	4.2
2007	92,565	2007	212	3,106	3,318	37
2008	96,010	2008	242	3,203	3,445	3.7
2009	99,513	2009	359	3,144	3,503	3.6
2010r	101,890	2010r	n.y.a.	n.y.a	2,377	2.4
2011p	103,358	2011p	n.y.a.	n.y.a.	1,468	1.4
the second se	the second s					

p = preliminary r = revised n.y.a. = not available

Table 2: Population projections

Projected population			Average annu	al change	
	Low	Medium	High	(medium :	series)
	series	series	series	Number	Per cent
2011	103,979	104,855	105,463	3,122	3.3
2016	112,764	115,991	118,847	2,227	2.0
2021	123,172	130,005	136,212	2,803	2.3
2026	134,942	146,304	156,454	3,260	2.4
2031	147,619	164,143	178,503	3,568	2.3



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B BL

C = City S = Shire R = Regional Council T = Town Figure 1: Estimated resident population



p = preliminary r = revised



p = preliminary r = revised



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Table 3: Population by age group, Fraser Coast (R)

	14	. E	Age group			Median
	0-14	15-24	25-44	45-84	65+	age
2006	17,281	9,660	19,987	25,366	16,949	43.1
	19.4%	10.8%	22.4%	28.4%	19.0%	
2031*	29,855	15,901	38,466	41,545	38,383	44.0
	18.2%	9.7%	23.4%	25.3%	23.4%	

* Medium series

Age structure

The median age of Fraser Coast Regional Council's population is projected to increase by 0.9 years from a median age of 43.1 years in 2006 to a median age of 44.0 years in 2031 (Table 3 and Figure 4). The median age of Queensland in 2031 is projected to be 40.2 years, under the medium series (Table 4).

Dwelling approvals

There were 413 new dwelling approvals in Fraser Coast Regional Council over the year ending December 2011, a decrease of 54.7 per cent from the previous year (911) (Table 5). Separate houses made up 96.6 per cent of all new dwelling approvals over the year ending December 2011 (Figure 5).

Table 5: New dwelling approvals*

Year ending	New dwelling approvals		
December	Houses	Other	Total
2005	1,086	329	1,415
2006	1,070	421	1,491
2007	1,167	265	1,432
2008	961	107	1,068
2009	742	49	791
2010	599	312	911
2011	399	14	413
Mar qtr 2011	106	6	112
Jun gtr 2011	84	0	84
Sep qtr 2011	121	4	125
Dec qtr 2011	88	4	92
* Excludes alterations/addi	tions		

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Table 4: Population by age group, Queensland

		_	Age group			Median
1	0-14	15-24	25-44	45-64	65+	age
2006	834,682	578,600	1,169,244	1,013,986	494,396	36.1
	20.4%	14.1%	28.6%	24.8%	12.1%	
2031*	1,205,836	814,668	1,703,235	1,578,741	1,290,350	40.2
	18.3%	12.4%	25,8%	23.9%	19.6%	
* Media	im series					

Figure 4: Age distribution, Fraser Coast (R), 2006 and 2031*



* Medium series

Household size

In 2006, the average household size for all occupied private dwellings in Fraser Coast Regional Council was 2.4 persons. This compares with an average household size of 2.6 for all of Queensland in the same year (Table 6).

Table 6: Average household size by dwelling type

	Ave	rage hous	sehold siz	e
Dwelling type	Fraser Coast (R)			
	1996	2001	2006	2006
Separate house	27	2.6	2.6	2.8
Semi-detached, flats, etc	1.7	1.6	1.7	1.8
Other dwellings inc caravans	2.0	1.8	2.0	1.8
All occupied private dwellings	25	2.4	24	26

Sources for the Population and Dwelling Profile

ABS cat nos 3201.3, 3218.0, 3235.3, 8731.0 (preliminary as at December 2011); ABS unpublished births and deaths data, Census of Population and Housing, 1996, 2001 and 2006; Queensland Government Population Projections, 2011.

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