



6.2 g Pond Apple Assessment on Littoral Rainforest 3D

Att: Rod Lamb **CC:** Kate Roper

Satori Resorts
Level 6, 344 Queen Street
Brisbane, 4001.

March 15, 2010

Subject: Site Inspection at the Ella Bay Integrated Resort Site

A site inspection was completed at the Ella Bay Integrated Resort Site on Thursday, February 11, 2010. The inspection was undertaken in the accompaniment of Adrian Hogg (Satori Resorts) for the purpose of:

- identifying the extent to which pond apple (*Annona glabbra*) has impacted EPBC listed littoral vine forest communities on the coastal dune and swale complex immediately behind the beachfront.
- determining whether the extent of pond apple is sufficient to warrant re-classification of heavily infested vegetation communities as non-remnant vegetation.

The survey utilised standard botanical data survey techniques including collection of basal area data for all vegetative structural layers. Six survey sites were assessed during the inspection.

Results

Dune Swale Sites: The location of survey sites relative to regional ecosystem mapping is indicated in **Figure 1** overleaf. Three survey sites (EQ1, EQ3, EQ5) were sampled on the seaward margin of the dune swale. This landform was inundated with brackish water at the time of the survey, the result of recent heavy rainfall. Varying dominance of pond apple was present in the sub-canopy layers, with typical specimens ranging in height from 12 -15m, often mixing with mangrove species (*brugiera* sp). In some locations, pond apple formed the sole sub-canopy constituent. *Melaleuca leucadendra* is the dominant canopy tree, ranging in height from 18m to 25m with canopy covers ranging from 25 – 50%. Summary information for the three sites are included in appended sections under 'Dune Swale Sites'.

Sites EQ1 and EQ3 have been classified in previous mapping exercises (3d Environmental, 2009) as RE 7.2.9 (*Melaleuca quinquenervia* swamp forest in dune swales). Evidence from this survey indicates that RE7.2.8 would provide a better classification (*Melaleuca leucadendra* swamp forest in dune swales). From a management perspective, it matters little as both ecosystems are currently classified as 'of concern' regional ecosystems and have similar ecological function.

Beach Ridge Sites: Three locations (EQ2, EQ4 and EQ6) were assessed on the stabilized beach ridge, located seaward from the dune swale. Sites EQ2 and EQ4 are developing low open forest communities comprising a range of pioneer vine forest species. The vegetation at Site EQ2 is currently recognised as RE7.2.7a (VMA, of concern) in mapping undertaken by 3d Environmental (February 2009). This low forest is however a transitional forest type with structural features developing towards a notophyll vine forest with affinities to RE 7.2.5. (VMA, of concern; EPBC, critically endangered). Sites EQ4 and EQ6 have both been correctly classified in previous mapping exercises where they are represented as RE 7.2.5.

Significance and Distribution of Pond Apple

Pond apple is currently classified as a *Weed of National Significance* (WONS) and a Class 2 exotic species under the states *Land (Pest and Stock Route) Protection Act (2002)*. This obliges landholders to undertake the necessary actions to control infestation.

Pond apple forms a sub-canopy cover of varying density to *Melaleuca leucadendra* woodland throughout the dune swale landform. In spite of sub-canopy cover of pond apple exceeding 50 % in some locations, it has little influence on remnant status of the vegetation as canopy cover of the taller *Melaleuca leucadendra* forest layer (the ecologically dominant taller layer) generally exceeds 40%. This is fairly typical of the ecosystems structure in other locations away from the development site.

Pond apple forms only a scattered tree in the vine forest communities on the more elevated beach ridge. Degradation associated with pond apple within this critically endangered ecosystem is minor.

Recommendations

Thinning of the pond apple infestation throughout the sub-canopy of the dune swale open forest can proceed without further authority provided that the thinning:

- does not involve removal or interference with native species in the community, particularly in the canopy layers (mostly *Melaleuca leucadendra* and *Bruigieria sp.*).
- does not involve impact to the beach ridge vine forest community other than removal of scattered occurrences of exotic species.

It should be noted that the removal of pond apple will have no impact on the remnant status of vegetation or ecological function of the dune swale wetland. It is stressed that under current regulations, the landowner is obliged to undertake some measure to control the current extent of weed infestation.

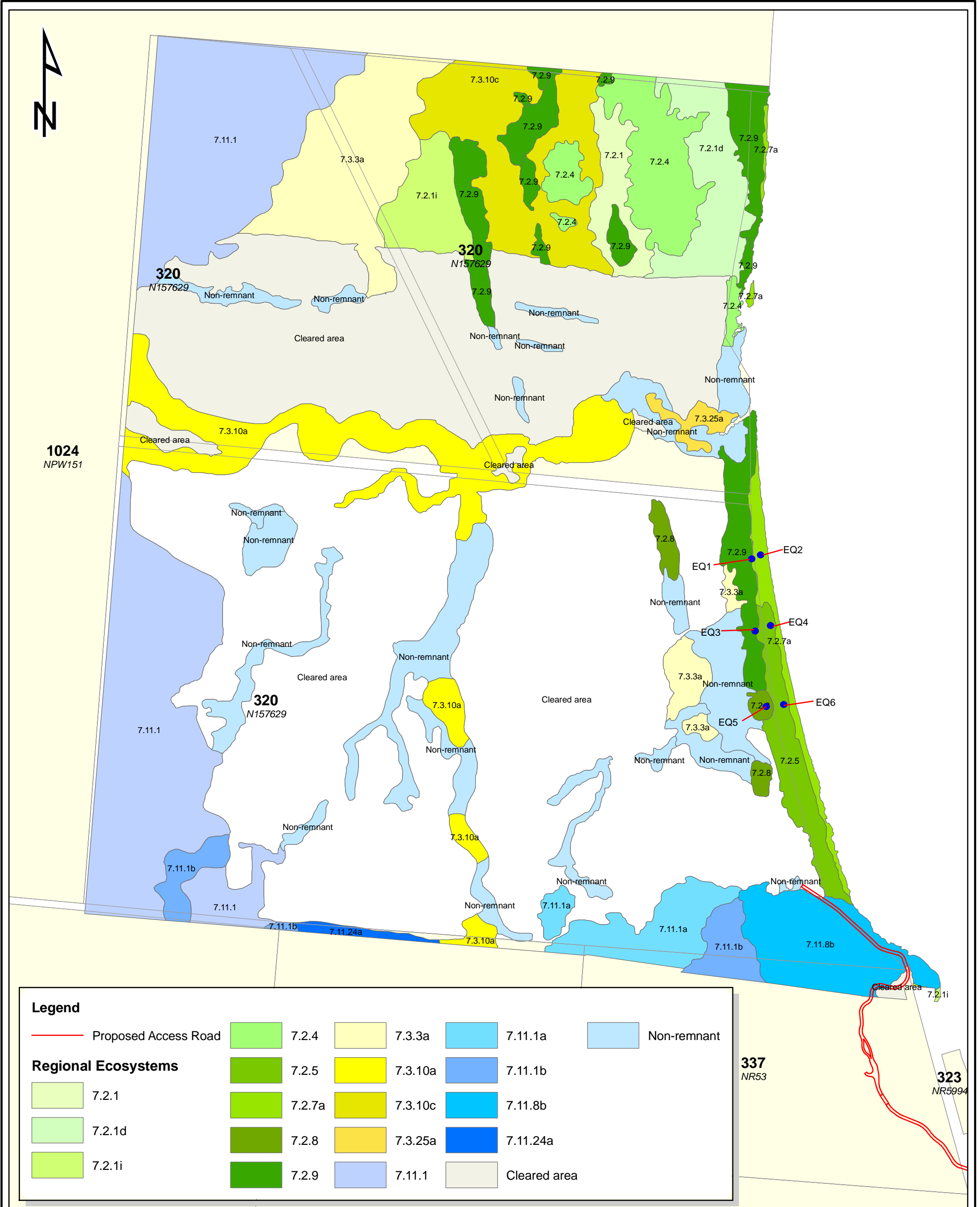
Yours Sincerely,



David Stanton

3d Environmental

Ph: 0447822119



Legend

	Proposed Access Road		7.2.4		7.3.3a		7.11.1a		Non-remnant
Regional Ecosystems			7.2.5		7.3.10a		7.11.1b		7.11.8b
	7.2.1		7.2.7a		7.3.10c		7.11.24a		Cleared area
	7.2.1d		7.2.8		7.3.25a		7.11.1		
	7.2.1i		7.2.9		7.11.1				

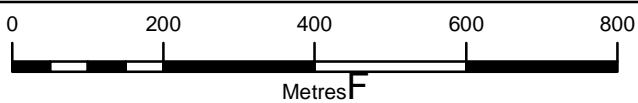
NOTES:

(i) This plan has been produced for exclusive use of the client and 3D Environmental
 DIGITAL CADASTRAL DATA BASE
 © The State of Queensland (Department of Natural Resources) [2008]

Figure 1. Site Survey Locations (11.02.2010) - Regional Ecosystems

Client

Satori Resorts



Scale 1:10,000

Drawn By DG

Checked DS

File Path

C:\3D Environmental\Ella_Bay\Ellabay2\ella2_mapping_A3P.mxd

Date

13/02/09

A3


3D Environmental

Vegetation Assessment & Mapping Specialists

P. O. Box 959
 Kenmore, Qld 4069
 Phone: (07) 3411 9072
 Phone: (07) 3878 4344
 Mobile: 0404 577 285
 Mobile: 0409 426 916
 www.3denvironmental.com.au



Dune Swale Vegetation Sites

Site Number AQ1: Open Swamp Forest		
Canopy Height Range: 23-28m , Sub-Canopy Height Range; 8 -12m, Canopy Cover: 50% Sub-canopy cover: 60%		
Landform: inundated dune swale GPS Location: -17.4585, 146.0636		
Species	Basal Area: Canopy	Basal Area: Sub-Canopy
<i>Annona glabra</i> (pond apple)	0	2
<i>Melaleuca leucadendra</i> (weeping tea tree).	14	0
<i>Brugiera sp.</i> (mangrove)	0	14
		

Site Number AQ3: Open Swamp Forest		
Canopy Height Range: 23-28m , Sub-Canopy Height Range; 10 -18m, Canopy Cover: 40% Sub-canopy cover: 60%		
Landform: inundated dune swale GPS Location: -17.4606, 146.0639		
Species	Basal Area: Canopy	Basal Area: Sub-Canopy
<i>Annona glabra</i> (pond apple)	0	32
<i>Melaleuca leucadendra</i> (weeping tea tree).	12	0
<i>Brugiera sp.</i> (mangrove)	0	4



Site Number EQ5: Open Swamp Forest.

Canopy Height Range: 18 - 238m , **Sub-Canopy Height Range;** 8-15m, **Canopy Cover:** 40%
Sub-canopy cover: 50%

Landform: inundated dune swale **GPS Location:** -17.4629 N 146.0641

Species	Basal Area: Canopy	Basal Area: Sub-Canopy
<i>Annona glabra</i> (pond apple)	0	23
<i>Melaleuca leucadendra</i> (weeping tea tree).	10	0
<i>Atractocarpus fitzalanii</i> (brown gardenia)	0	1



Beach Ridge Vegetation Sites

Site Number EQ2: Low open forest.

Canopy Height Range: 6 - 10m **Canopy Cover:** 40%

Shrub layer: 3 - 8m

Landform: Beach Ridge **GPS Location:** -17.4584 N 146.0639

Species	Basal Area: Canopy	Basal Area: Sub-Canopy
<i>Acacia crassicarpa</i>	1	No records
<i>Calophyllum australianum</i> (beach calophyllum)	1	-
<i>Terminalia arenicola</i> (beach almond)	2	-
<i>Morinda citrifolia</i>	4	-
<i>Syzygium forte</i> subsp. <i>forte</i>	1	-
<i>Chionanthus ramiflora</i> (native olive)	3	-
<i>Alstonia scholaris</i> (milky pine)	1	-



Site Number EQ4: Low open forest.

Canopy Height Range: 6 - 12m **Canopy Cover:** 40%

Shrub layer: 3 - 8m

Landform: Beach Ridge **GPS Location:** -17.4605, 146.0642

Species	Basal Area: Canopy	Basal Area: Sub-
---------	--------------------	------------------

		Canopy
<i>Acacia crassicarpa</i>	1	No records
<i>Calophyllum australianum</i> (beach calophyllum)	1	-
<i>Chionanthus ramiflora</i> (native olive)	2	-
<i>Annona glabra</i> (pond apple)	2	-
<i>Euroschinus falcatus</i>	2	-
<i>Dillenia alata</i>	2	-
<i>Pittosporum ferrugineum</i>	1	-
<i>Milletia pinnata</i>	1	-
<i>Melaleuca leucadendra</i>	1	-
<i>Polyscias elegans</i>	1	-
<i>Dillenia allata</i>	2	-



Site Number EQ6: Notopyll vine forest (disturbed)		
Canopy Height Range: 18 - 28m Canopy Cover: 60%		
Shrub layer: 3 – 8m		
Landform: Beach Ridge GPS Location: -17.4631, 146.0647		
Species	Basal Area: Canopy	Basal Area: Sub-Canopy
<i>Acacia crassicarpa</i>	1	No records
<i>Calophyllum australianum</i> (beach calophyllum)	8	-
<i>Chionanthus ramiflora</i> (native olive)	1	-
<i>Euroschinus falcatus</i>	5	-
<i>Ficus racemosa</i>	1	-
<i>Alstonia scholaris</i>	1	-

<i>Melaleuca leucadendra</i> (weeping tea tree)	1	-
<i>Carallia brachiata</i> (freshwater mangrove)	2	-
<i>Syzygium forte</i> subsp. <i>forte</i> .	1	-
<i>Cocos nucifera</i> *	1	-

