

CONSERVATION COMMISSION OF WESTERN AUSTRALIA – REPORT ON OLD-GROWTH NOMINATION WITHIN CHESTER FOREST BLOCK

Summary

- A request for a review of old-growth status over all of Chester forest block was received from a local conservation group in September 2005.
- It was determined at the time of receipt of the nomination to await the results of the DEC dieback interpretation prior to accepting the public nomination (areas infected with *Phytophthora cinnamomi* do not comply with the definition of jarrah old-growth forest).
- The dieback interpretation has now been undertaken over an area of approximately 200 hectares. The area designated as 'dieback free' within this interpreted area is approximately 70 hectares (22 hectares of which was directly sampled by the Conservation Commission for old-growth with additional visual inspection of other areas).
- Field sampling of the area which was identified as dieback free, within the overall area interpreted for dieback (and nominally indicative harvest area) yielded the following overall results:- an estimated 16 stumps per hectare; 41% mature or senescent trees in the upper canopy; 59% regrowth trees in the upper canopy.
- The coupe area (delimited by the area interpreted for dieback) does not meet the uncut or minimal disturbance requirements for jarrah old-growth forest.

Background

The basis for, and general description of, the Conservation Commission's role in assessing old-growth forest is provided in the Conservation Commission's paper *Assessment criteria and process for the Conservation Commission review of old-growth amendments*.

Of most relevance to consideration of old-growth within this forest type is the following old-growth definition for jarrah and jarrah/tingle forest:

"uncut forest or forest subject to minimal disturbance which is not known to be affected by *Phytophthora cinnamomi*".

The effects of disturbance are considered more than minimal where changes to the structure of the overstorey caused by these disturbances are still evident or where changes to the overstorey or understorey are irreversible.

Public nomination of old-growth

As required in the Forest Management Plan 2004-13 (FMP) and further detailed in the Conservation Commission's paper *Assessment criteria and process for the Conservation Commission review of old-growth amendments*, there is a process for persons to request the Conservation Commission to assess whether areas on an indicative timber harvest plan should be classified as old-growth in DEC's corporate database. Such a request was received from the Leeuwin Environment Group on 21 September 2005. The size of the nominated area was too large (5,137 hectares) to allow the Conservation Commission to proceed to undertake an assessment, given

the resources available and the lack of clear evidence presented in the request. It was also determined that the as yet undertaken dieback interpretation of the area would provide some guidance and potentially reduce the net area for potential sampling locations.

A significant proportion of the area in Chester Block is comprised of informal reserve, and a relatively smaller area (200 hectares) was interpreted for dieback (also delimits the area of harvest) by DEC staff. Upon finalization of the dieback interpretation the Conservation Commission determined to accept the nomination and proceed with an assessment and stratified field sampling of the 70 hectare area designated as dieback free (total coupe area 200 hectares).

This report summarises the Conservation Commission's findings based on its consideration of available records and inputs, and its own field survey.

Selection of sample locations and sampling process

As detailed in the background section, the total area of the nomination was 5,137 hectares. As it was not feasible for Conservation Commission field staff to undertake an assessment of the entire area, only the area intersected by the dieback interpretation (200 hectares) was assessed. The sample area was further refined through stratification using the following background information:-

- The DEC corporate records indicated that the entire proposed coupe area was harvested once in the 1950-1959 period.
- Digitised aerial photos and data layers were utilized to remotely confirm obvious forest and non-forest structural boundaries and the locations of tracks and roads (to avoid sampling tracks and roaded areas).
- Dieback mapping undertaken in 2006.
- The DEC Vegetation Health Service's (VHS) *Phytophthora* sample database was accessed to further verify *Phytophthora cinnamomi* presence.
- Known dieback affected areas and areas with mapped tracks were avoided.

The sampling plot locations can be seen with the other layers relevant to the stratification process as outlined in Map 1. The presence of *Phytophthora cinnamomi* is confirmed through the testing of tissue samples at the VHS facility in Perth. The dieback tissue-sampling locations and results are shown on Map 1. On the map a result of 'CIN' indicates a positive result for *Phytophthora cinamomi* and a result of 'NEG' indicates a negative result¹. The results confirm the dieback interpretation mapping. Therefore in accordance with the definitions for old-growth ("uncut forest or forest subject to minimal disturbance which is not known to be affected by *Phytophthora cinnamom*"), the areas mapped as dieback infected were not sampled as these areas will not satisfy the old-growth definitions.

Sampling incorporated the process outlined in the document *Assessment criteria and process for the Conservation Commission review of old-growth amendments*. The areas were sampled at the higher of the documented intensities (approximately

¹ A negative result from a sample will not necessarily infer that *Phytophthora cinnamomi* is not present, as the tissue recovery process can be affected by sampling techniques and external factors. Issues such as the state of plant tissue, the species, seasonal differences and the time since a fire event can contribute to successful tissue recovery.

25 sample point/plots per two hectares). Observations from field staff indicate that the sample areas selected appear representative of the broader proposed coupe area.

Sample results

The four areas selected for sampling, the locations of the sample points and the raw data collected have been incorporated into Map 2. Area numbers 1 and 4 were visually inspected along the 'Visual inspection' route shown on the map due to their relatively small net areas (both areas are approximately 2-3 hectares in net size after discounting the areas of informal reserve within the areas). This visual inspection indicated that these sites had similar characteristics to the sampled areas (both in terms of ground disturbance and canopy effects), also indicating that harvesting activities appear to be across the area of interest, and in accord with the DEC harvesting records. Sampling in areas 2 and 3 yielded the following results:-

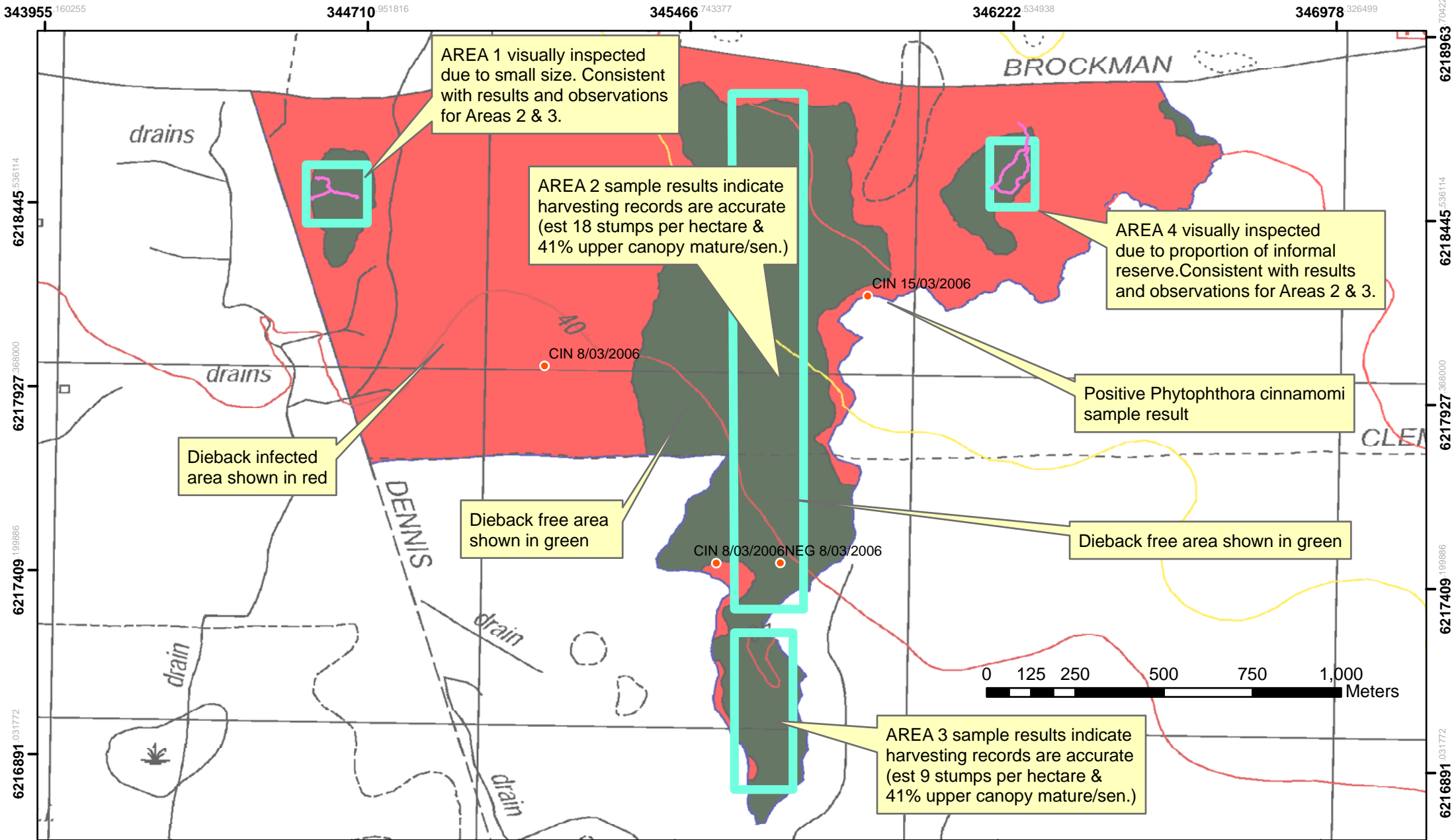
Sample Areas	Estimated total upper crown cover	Estimated upper crown proportion of mature or senescent trees	Estimated upper crown proportion of regrowth trees	Estimated number of stumps per hectare
AREA 2 (18 hectares)	58%	41%	59%	18
AREA 3 (4 hectares)	53%	41%	59%	9
TOTAL (22 hectares)	57%	41%	59%	16

Finding

Both the sample data and the general observations made by Conservation Commission field staff while traversing the nominated area indicate that the DEC corporate records in relation to the old-growth status are accurate. Ground evidence of disturbance is clear from the presence of stumps (approximately 16 stumps per hectare) and logging debris. This disturbance appears to be from logging in the decade of the 1950s.

The result of this past disturbance is still evident in the upper canopy of the inspected forest, with a high estimated proportion of regrowth (59%) and a low estimated proportion of mature or senescent trees (41%). These figures contrast with the proportion of mature or senescent trees in uncut jarrah forest which consistently represents at least 50% of the upper canopy. Milyeanup Block (approximately 12 kilometres east of Chester Block) was sampled as part of the benchmarking process for old-growth areas. The results from Milyeanup block yielded a relatively high estimated proportion of mature senescent crowns in the upper canopy (an estimated 70%). The coupe area (delimited by the area interpreted for dieback) does not meet the uncut or minimal disturbance requirements for jarrah old-growth forest.

Map 1. Chester block - stratification for old-growth sampling



AREA 1 visually inspected due to small size. Consistent with results and observations for Areas 2 & 3.

AREA 2 sample results indicate harvesting records are accurate (est 18 stumps per hectare & 41% upper canopy mature/sen.)

AREA 4 visually inspected due to proportion of informal reserve. Consistent with results and observations for Areas 2 & 3.

Dieback infected area shown in red

Dieback free area shown in green

Positive *Phytophthora cinnamomi* sample result

Dieback free area shown in green

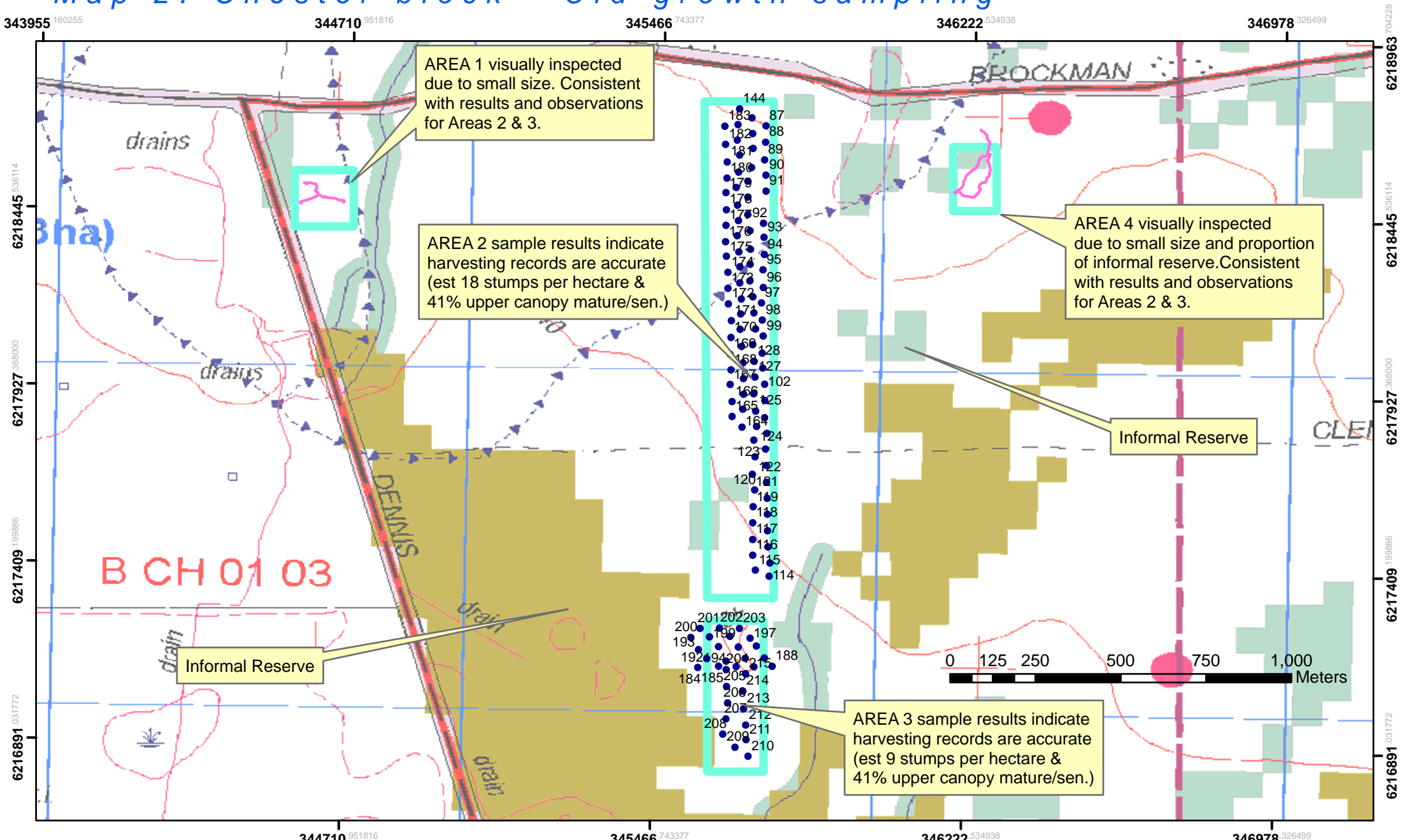
AREA 3 sample results indicate harvesting records are accurate (est 9 stumps per hectare & 41% upper canopy mature/sen.)

Legend

- Visual inspection
- Sample Area
- *Phytophthora* sample result

Map produced by the Conservation Commission of Western Australia. Background data layers provided by the Forest Products Commission. The Conservation Commission does not guarantee that the information depicted is without flaw of any kind and disclaims all liability for any loss, error or other consequence which may arise from relying on any information depicted. 19-12-06 4

Map 2. Chester block - Old-growth sampling



Legend

- Sample points
- Visual inspection
- Sample Area

Map produced by the Conservation Commission of Western Australia. Background data layers provided by the Forest Products Commission. The Conservation Commission does not guarantee that the information depicted is without flaw of any kind and disclaims all liability for any loss, error or other consequence which may arise from relying on any information depicted. 19-12-06 5

**Map 2 detail -
Field Sample Points - raw data**

FID	CANOPY	SPECIES	Diameter	DEVELOPMENT	STUMPS	DISTURBANCE	QUALITATIVE	COMMENT
87	NO	GAP	0	GAP	0		MIXED	
88	YES	JARRAH	35	REGROWTH	0		MIXED	
89	NO	GAP	0	GAP	1		MIXED	
90	NO	GAP	0	GAP	0		MIXED	
91	YES	JARRAH	25	REGROWTH	0		MOSTLY LOWER	
92	YES	JARRAH	50	MATURE/SENESCENT	0		MIXED	
93	NO	GAP	0	GAP	0		MOSTLY UPPER	
94	YES	JARRAH	40	MATURE/SENESCENT	0		MIXED	
95	YES	JARRAH	50	MATURE/SENESCENT	0		MIXED	
96	YES	JARRAH	55	MATURE/SENESCENT	0		MOSTLY UPPER	
97	YES	JARRAH	25	REGROWTH	1	X-CUT LOG_	MOSTLY LOWER	landing...
98	NO	GAP	0	GAP	1		MIXED	
99	YES	JARRAH	25	REGROWTH	0		MOSTLY LOWER	
100	YES	MARRI	15	REGROWTH	0		MIXED	
101	YES	MARRI	10	REGROWTH	0		MOSTLY LOWER	
102	YES	MARRI	60	MATURE/SENESCENT	1	X-CUT LOG_	MIXED	
103	YES	MARRI	120	MATURE/SENESCENT	0	X-CUT LOG_	MIXED	
104	NO	GAP	0	GAP	1	X-CUT LOG_	MOSTLY LOWER	
105	YES	MARRI	20	REGROWTH	2		MOSTLY LOWER	
106	YES	JARRAH	35	REGROWTH	0		MIXED	swamp edge
107	NO	GAP	0	GAP	1		GAP	swamp edge
108	NO	GAP	0	GAP	0		MIXED	
109	YES	JARRAH	45	MATURE/SENESCENT	0		MIXED	
110	YES	JARRAH	20	REGROWTH	0		MIXED	
111	YES	JARRAH	50	MATURE/SENESCENT	0		MIXED	
112	YES	MARRI	15	REGROWTH	0		MIXED	stump 10m
113	YES	JARRAH	45	MATURE/SENESCENT	0		MIXED	
114	NO	GAP	0	GAP	0		MIXED	
115	NO	GAP	0	GAP	1	TREEHEAD	MOSTLY LOWER	
116	NO	GAP	0	GAP	0		MIXED	stumps outside
117	YES	MARRI	20	REGROWTH	0		MIXED	
118	YES	JARRAH	45	REGROWTH	1		MIXED	
119	YES	JARRAH	30	REGROWTH	0		MIXED	

FID	CANOPY	SPECIES	Diameter	DEVELOPMENT	STUMPS	DISTURBANCE	QUALITATIVE	COMMENT
120	YES	JARRAH	85	MATURE/SENESCENT	0	TREEHEAD	MIXED	
121	NO	GAP	0	GAP	0		MOSTLY LOWER	swamp
122	NO	GAP	0	GAP	0		GAP	swamp
123	NO	GAP	0	GAP	0		MIXED	
124	YES	JARRAH	30	REGROWTH	0	TREEHEAD	MIXED	
125	NO	GAP	0	GAP	0		MIXED	
126	YES	MARRI	20	REGROWTH	0		MIXED	
127	NO	GAP	0	GAP	2	X-CUT LOG_	MOSTLY LOWER	
128	NO	GAP	0	GAP	2	TREEHEAD	MIXED	
129	NO	GAP	0	GAP	0		MOSTLY UPPER	
130	YES	MARRI	85	MATURE/SENESCENT	0		MOSTLY UPPER	
131	NO	GAP	0	GAP	1		MOSTLY LOWER	
132	YES	JARRAH	35	REGROWTH	0		MIXED	
133	NO	GAP	0	GAP	0		MOSTLY LOWER	
134	NO	GAP	0	GAP	1	TREEHEAD	MIXED	
135	NO	GAP	0	GAP	0		MOSTLY LOWER	
136	YES	JARRAH	40	REGROWTH	0		MOSTLY UPPER	
137	NO	GAP	0	GAP	1	X-CUT LOG_	MOSTLY LOWER	
138	YES	MARRI	90	MATURE/SENESCENT	0		MIXED	track
139	NO	GAP	0	GAP	0		GAP	
140	YES	JARRAH	50	MATURE/SENESCENT	0		MIXED	
141	NO	GAP	0	GAP	0		MOSTLY LOWER	
142	YES	JARRAH	40	REGROWTH	0	X-CUT LOG_	MIXED	
143	YES	JARRAH	40	REGROWTH	1		MIXED	
144	NO	GAP	0	GAP	0		MOSTLY LOWER	
145	YES	JARRAH	40	REGROWTH	0		MOSTLY LOWER	
146	YES	JARRAH	60	MATURE/SENESCENT	2		MOSTLY LOWER	
147	YES	MARRI	30	REGROWTH	0		MOSTLY LOWER	
148	NO	GAP	0	GAP	1		MOSTLY LOWER	
149	YES	JARRAH	30	REGROWTH	1		MIXED	
150	YES	JARRAH	30	REGROWTH	0		MIXED	
151	NO	GAP	0	GAP	3		MOSTLY LOWER	
152	NO	GAP	0	GAP	0		MIXED	
153	YES	JARRAH	20	REGROWTH	0		MIXED	
154	YES	JARRAH	55	MATURE/SENESCENT	0		MIXED	

FID	CANOPY	SPECIES	Diameter	DEVELOPMENT	STUMPS	DISTURBANCE	QUALITATIVE	COMMENT
155	YES	JARRAH	25	REGROWTH	0		MOSTLY LOWER	
156	NO	GAP	0	GAP	0		MOSTLY LOWER	
157	YES	JARRAH	25	REGROWTH	2	X-CUT LOG_	MIXED	
158	YES	JARRAH	40	REGROWTH	1	X-CUT LOG_	MIXED	
159	YES	JARRAH	30	REGROWTH	1	X-CUT LOG_	MOSTLY LOWER	
160	NO	GAP	0	GAP	1	X-CUT LOG_	GAP	
161	NO	GAP	0	GAP	0		GAP	
162	NO	GAP	0	GAP	0		MIXED	
163	YES	MARRI	30	REGROWTH	0		MIXED	
164	YES	JARRAH	90	MATURE/SENESCENT	0		MIXED	
165	NO	GAP	0	GAP	0		MIXED	
166	YES	MARRI	65	MATURE/SENESCENT	1	TREEHEAD	MIXED	
167	NO	GAP	0	GAP	0	X-CUT LOG_	MOSTLY LOWER	
168	NO	GAP	0	GAP	1		MOSTLY LOWER	
169	YES	MARRI	110	MATURE/SENESCENT	0	TREEHEAD	MIXED	
170	YES	JARRAH	90	MATURE/SENESCENT	0		MOSTLY UPPER	
171	YES	MARRI	110	MATURE/SENESCENT	0		MOSTLY UPPER	
172	YES	MARRI	30	REGROWTH	1	X-CUT LOG_	MIXED	
173	YES	MARRI	70	MATURE/SENESCENT	0		MOSTLY UPPER	
174	NO	GAP	0	GAP	0		MOSTLY LOWER	
175	NO	GAP	0	GAP	1	X-CUT LOG_	MOSTLY LOWER	
176	YES	JARRAH	100	MATURE/SENESCENT	0		MOSTLY UPPER	
177	NO	GAP	0	GAP	0		MIXED	
178	YES	MARRI	40	REGROWTH	1	TREEHEAD	MIXED	
179	YES	JARRAH	60	MATURE/SENESCENT	0	TREEHEAD	MIXED	
180	YES	MARRI	25	REGROWTH	0		MIXED	
181	YES	JARRAH	60	REGROWTH	0		MIXED	
182	NO	GAP	0	GAP	0		MIXED	
183	NO	GAP	0	GAP	0		MOSTLY LOWER	
184	NO	GAP	0	GAP	0		MIXED	
185	YES	JARRAH	25	REGROWTH	1	TREEHEAD	MIXED	
186	NO	GAP	0	GAP	0		MOSTLY UPPER	
187	YES	JARRAH	50	MATURE/SENESCENT	0		MIXED	
188	NO	GAP	0	GAP	0		MIXED	
189	YES	JARRAH	65	MATURE/SENESCENT	0		MIXED	

FID	CANOPY	SPECIES	Diameter	DEVELOPMENT	STUMPS	DISTURBANCE	QUALITATIVE	COMMENT
190	NO	GAP	0	GAP	0		MIXED	
191	YES	JARRAH	45	MATURE/SENESCENT	0		MIXED	
192	YES	JARRAH	60	MATURE/SENESCENT	0		MIXED	
193	NO	GAP	0	GAP	0		MIXED	
194	YES	MARRI	25	REGROWTH	0		MIXED	
195	NO	GAP	0	GAP	1		MIXED	
196	YES	JARRAH	55	MATURE/SENESCENT	0		MIXED	
197	YES	JARRAH	35	REGROWTH	0		MIXED	
198	NO	GAP	0	GAP	0	TREEHEAD	MIXED	
199	NO	GAP	0	GAP	1		MOSTLY LOWER	
200	YES	JARRAH	20	REGROWTH	0	TREEHEAD	MOSTLY LOWER	
201	NO	GAP	0	GAP	0		MIXED	
202	YES	MARRI	20	REGROWTH	0	X-CUT LOG_	MIXED	
203	YES	JARRAH	65	MATURE/SENESCENT	0		MIXED	
204	YES	MARRI	20	REGROWTH	2	TREEHEAD	MIXED	
205	YES	MARRI	80	MATURE/SENESCENT	0		MIXED	
206	YES	MARRI	40	REGROWTH	0		MIXED	
207	NO	GAP	0	GAP	0		MIXED	
208	YES	MARRI	40	REGROWTH	0	TREEHEAD	MIXED	stumps outside plot
209	YES	JARRAH	50	REGROWTH	1		MIXED	
210	NO	GAP	0	GAP	0		GAP	
211	NO	GAP	0	GAP	0		GAP	
212	NO	GAP	0	GAP	0		GAP	
213	YES	MARRI	35	REGROWTH	0		MOSTLY LOWER	low density canopy
214	NO	GAP	0	GAP	0		GAP	low canopy density
215	NO	GAP	0	GAP	0		GAP	low canopy density