

**RIVER RED GUMS
IN THE
BACCHUS MARSH VALLEY
2007-2008**

A Survey conducted
for
Moorabool Shire
by
Friends of Werribee Gorge & Long Forest Mallee Inc.

Report by
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"Gibbons and Lindenmayer, 2002, suggest that three preconditions must be met before eucalypts form hollows. First the tree must be under some form of physiological stress or subjected to physical injury, often associated with age. Second heartwood decay must be present. Third a tree must be of sufficient size to persist when decayed. They suggest that hollows suitable for vertebrate fauna do not typically appear until a tree is at least 120 years old." See page 30.

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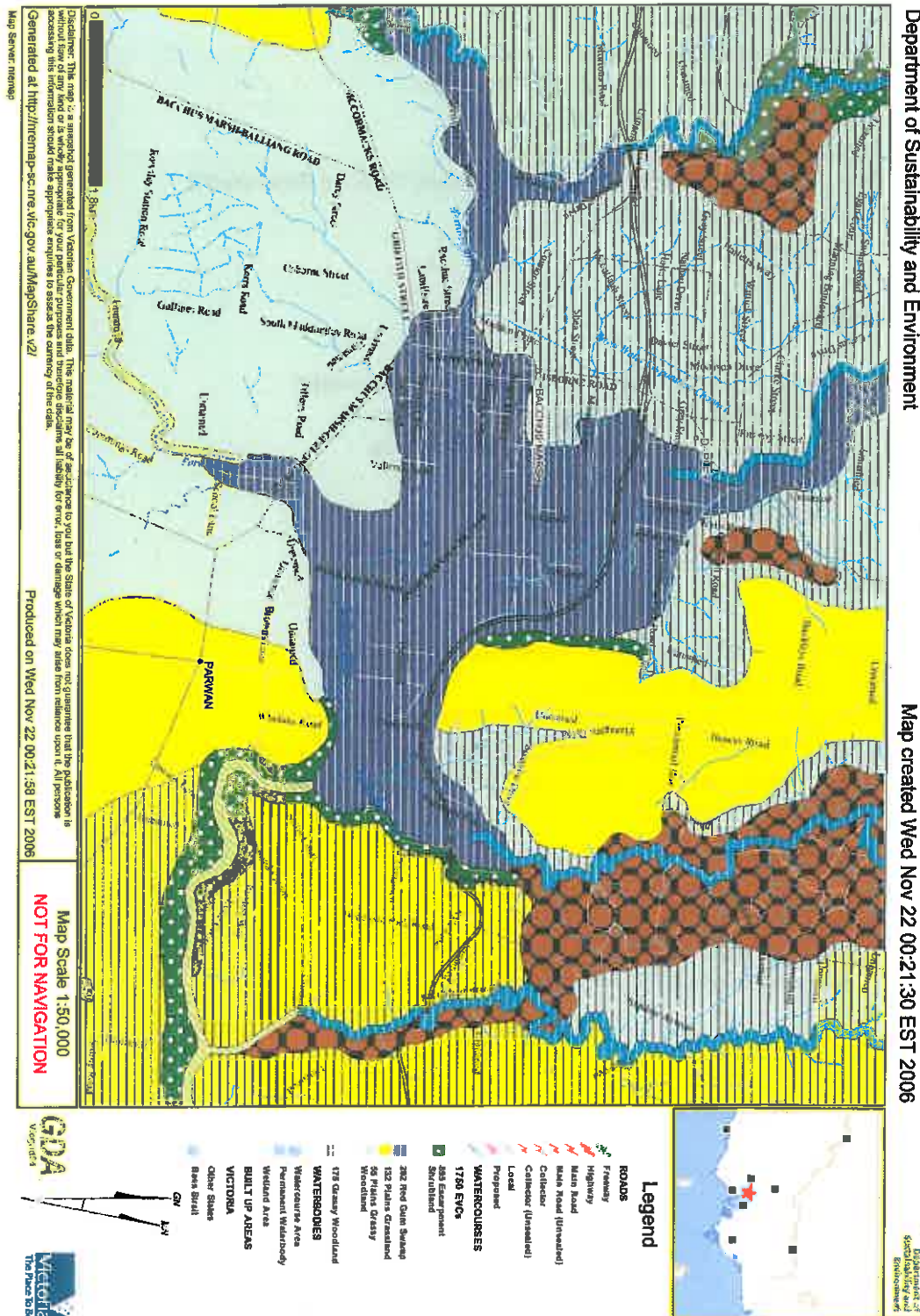
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Map1: Pre-1750 Ecological Vegetation Class (EVC) Bacchus Marsh valley

Department of Sustainability and Environment

Map created Wed Nov 22 00:21:30 EST 2006



RIVER RED GUM SURVEY

Introduction

River Red Gums, *Eucalyptus camaldulensis*, represent the oldest living natural heritage of Bacchus Marsh. They are a striking feature of the Bacchus Marsh valley. In addition to their beauty, River Red Gums are a priceless natural asset helping to sustain the biodiversity of Bacchus Marsh valley.

To quantify and locate River Red Gums, a survey was carried out for Moorabool Shire in 2007/8. River Red Gums within the Bacchus Marsh valley were located on foot and their location logged as a waypoint using a hand-held Global Positioning System. Over 1,400 River Red Gums, with a girth at chest height of over 300mm, were recorded.

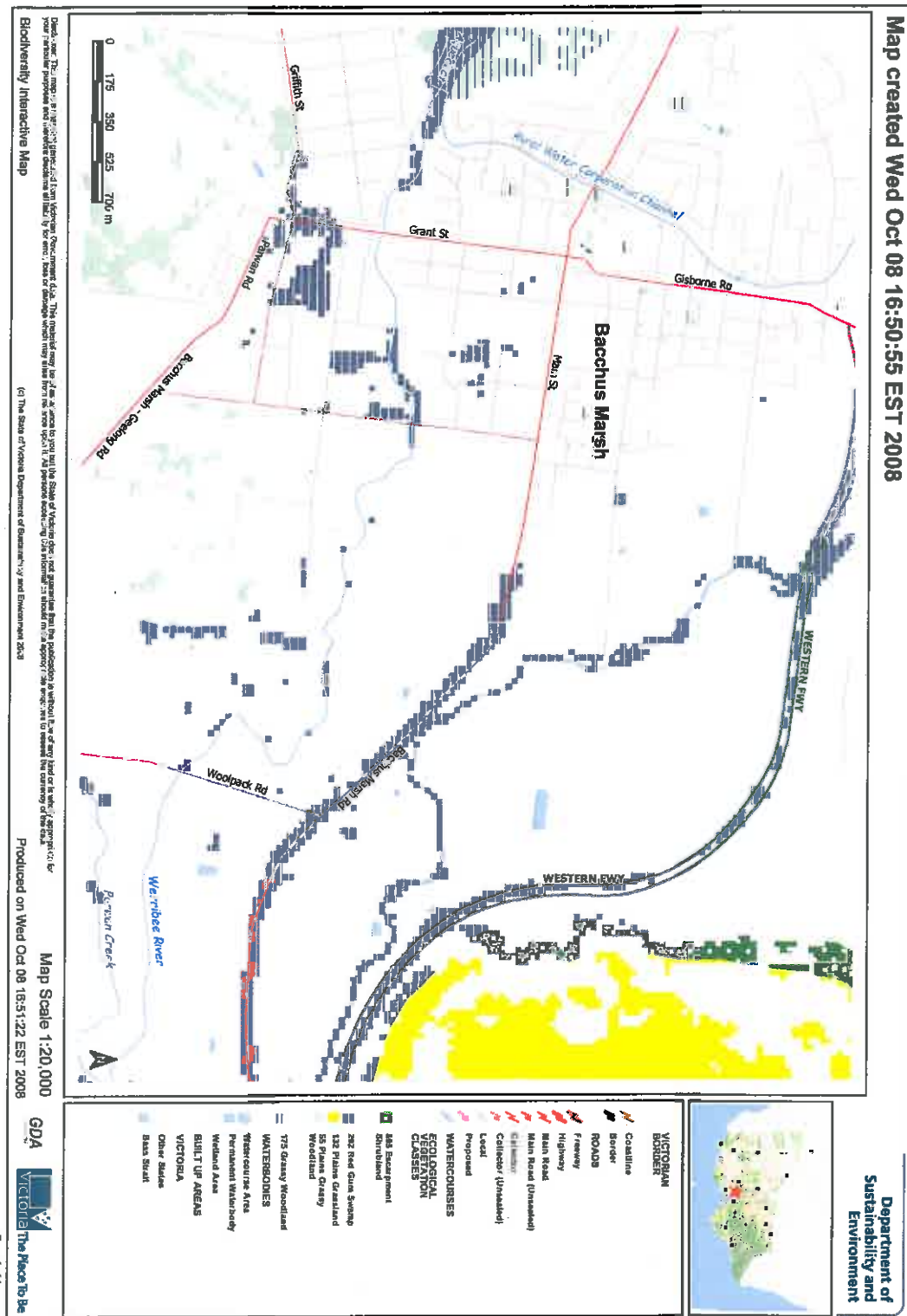
The survey found 122 River Red Gums with a girth of over 6 metres. Although size and age are not directly correlated, the most conservative projected age of these trees is over 250 years, taking their germination date back to at least 1758.

Bacchus Marsh valley was created by the Werribee River and its tributary Lerderderg River. This erosion process was accelerated by Port Phillip sunk-land and the uplift of the Ballan Plateau west of the Rowsley fault. Volcanic outflow from Mt Bullengarook and Mt Blackwood crossed the rivers and effected their course. By the time of European settlement the river valley at Bacchus Marsh had matured into swamps, crabholes, ill-defined river beds and billabongs.

Many surviving River Red Gums were here before Kenneth Scobie Clarke drove the first mob of 600 sheep into the valley in 1836. Prior to European settlement, much of Bacchus Marsh valley was a River Red Gum floodplain. This frustrated the fencing and road building efforts of early European settlers. Today the surviving River Red Gums are testament to this pre-alienation floodplain.

The Department of Sustainability and Environment have mapped vegetation communities in Victoria and written a profile for each. Their maps include extant (present) Ecological Vegetation Classes and Pre-1750 (pre-European) EVCs. Most of the Bacchus Marsh valley 1750 EVC is shown as River Red Gum Swamp. In the Victorian Volcanic Plain Bioregion the River Red Gum Swamp EVC is rated as endangered. This underlines the importance of remnant native flora in the valley.

Map 3: Extant (present) EVC 292, River Red Gum Swamp, Bacchus Marsh Valley



Mapping the flora communities for the whole of Victoria is a major task and errors do occur. Obvious errors in this map include mapping the present Avenue of Honour and the Western Freeway as River Red Gum Swamp locations. Map source: Department of Sustainability and Environment.

ACKNOWLEDGEMENTS

The following people and organizations have assisted in some way with the preparation of this survey and the preparation of the report on River Red Gums in the Bacchus Marsh valley.

Thank you to Dr Noel Schleiger, for advice about age assessment of River Red Gums; Janet Leversha, BEN Biodiversity Services, for advice on EVC mapping and for advice on alternative EVCs for Bacchus Marsh valley and for lists of contacts on related research; Alan May, Environmental Plantation Officer, Moorabool Shire Council, for initiating the survey; Michael McCarthy, Manager Strategic & Sustainable Development, Moorabool Shire Council, for consultation in report preparation; Michelle Hanslow and Adam Grey, GIS Mapping Officers, Moorabool Shire Council, for advice about GPS mapping and its translation to Moorabool Shire maps. Thank you to Michelle Hanslow for preparing Map 4 showing River Red Gums Locations in the Bacchus Marsh Valley; thank you to Judy Douglas for editorial assistance.

Permission of land owners to enter properties to survey River Red Gums is appreciated. These include: Frank and Angela Ruffo (Bacchus Marsh Fresh Produce), Minn (Market gardener) Neil McDonald, Carl and David Durham, Nick Dellios, the Riley family, Genetics Australia and Farm Manager, Brendan Vallence, Jo Failli of Westside Meats, Jeff Jones of Parkland Orchard, Graeme and Jenny Payne, orchardists, Ray Fincher of Lerderderg Park, Jo Erceg of Big River Farm, and Benny, Shannon and Steve, who I apologise to because I did not record your surnames!

Thank you also to National Trust Victoria for information from their Significant Tree Register, in particular on the size and age of River Red Gums, especially Anne Gibson, Information Officer, National Trust Victoria.

State Library Victoria, Melbourne University and Adelaide University provided access to text and research on River Red Gums. Bacchus Marsh and District Historical Society Inc. gave access to their Archives in particular their collection of *The Express*. Thank you all!

River Red Gums in the Bacchus Marsh valley 2007-2008

Summary of Recommendations

Recommendation 1

Include an Environmental Significance Overlay in the Moorabool Shire Planning Scheme that specifies the protection of River Red Gums in the Bacchus Marsh Valley. Incorporate RIVER RED GUMS IN THE BACCHUS MARSH VALLEY 2007-2008 (this document) and *Flora and Fauna Guarantee 1988*, Action Statement No 192, *Loss of hollow-bearing trees from Victorian native forests and woodlands*, into the schedule to the Moorabool Shire Planning Scheme.

Recommendation 2

Consult with the Bacchus Marsh Apiarists, the Bacchus Marsh Orchardists Association, Melbourne Water and DSE to devise and implement control methods to limit and reduce the spread of feral European bees in Bacchus Marsh valley.

Recommendation 3a

With Melbourne Water devise and implement a replanting program in association with removal of exotic species along the Lerderderg and Werribee Rivers, Coimadaí and Parwan Creeks in the Bacchus Marsh Valley.

Recommendation 3b

With Melbourne Water and DSE devise and carry out a rabbit eradication program along all stream-sides in the Bacchus Marsh Valley.

Recommendation 3c

Ensure that all replanting along stream-sides in the Bacchus Marsh valley are based on an agreed model of the species that make up EVC 292, Red Gum Swamp.

Recommendation 3d

Ensure that species planted in the Bacchus Marsh valley are grown from locally collected seed stock.

Recommendation 4

In partnership with local landholders seek Melbourne Water funding, or alternative funding, to fence a buffer zone around large River Red Gums where they are in danger of impact from grazing, traffic, spraying or agricultural activity. Include Buffer Zone protection in Moorabool, shire planning controls.

Recommendation 5

List locations of the largest and oldest River Red Gums on the schedule to the Heritage Overlay in the Moorabool Shire Planning Scheme. Investigate the possibility of further listings for the oldest trees with The National Trust Tree register and Heritage Victoria.

Recommendation 6a

Source or produce a brochure on the value of River Red Gums trees with hollows to wildlife and distribute these to landholders and other ratepayers.

Recommendation 6b

An edition of this report should be prepared and distributed it to landholders in Bacchus Marsh valley. An A4 colour laser copy is recommended.

Recommendation 6c

Provide a copy of this report to the Moorabool Trails Committee of Moorabool Shire Council asking that information on the importance of River Red Gums and hollow trees for wildlife be incorporated into interpretation of Bacchus Marsh trails.

Recommendation 6d

Moorabool Shire staff and contractors receive information on planning controls and policies about protection for River Red Gums and trees with hollows. Provide appropriate supervision to staff and contractors responsible for managing River Red Gums, spraying nearby or pruning trees.

Recommendation 7

Seek the cooperation of the Victorian Archeological Survey, or a body nominated by them, to check River Red Gums in Bacchus Marsh valley for cultural scars and related cultural importance. Include River Red Gums in any future study of Bacchus Marsh's heritage.

THE STUDY

Method and Mapping

- A survey of River Red Gums in the Bacchus Marsh valley was carried out between February 2007 and February 2008.
- The location of 1,411 River Red Gums was recorded using a hand held Global Positioning System (Garmin GPS76). Only trees with a girth (circumference) of 300mm or more at 1.4 m above ground were included.
- Following advice from the Moorabool Shire's GIS Officer, the location format used was UTM 55 UPS with map datum WGS 84 using true north. Information from the hand held GPS was transferred to the Moorabool Shire mapping system by the Moorabool Shire GIS Officer.
- Location of each River Red Gum as a waypoint was recorded when standing as close as practical to the base of the trunk of each tree. Although a five metre aerial was used to improve GPS accuracy, generally waypoints were accurate to between 4 – 5 metres.
- In cases where close access to tree-trunks was inhibited by dense boxthorn or blackberry infestation (less than 2%), locations were recorded from the nearest practical point.
- Each waypoint, representing a River Red Gum location, was recorded using an alpha-numeric code. For example WE005 was a record for Werribee River, Eastern section, tree number 5.
- Waypoints, grid references for eastings and northings, were downloaded from the GPS to the Moorabool Shire GIS mapping system to allow the locations to be mapped. A hand written record of each tree's grid reference was kept during the survey and supplied in a table as an RTF data file. A printout of all recorded River Red Gum locations was also supplied to Moorabool Shire (see Appendix C).
- An estimate of girth at 1.4 metres above ground was recorded for each River Red Gum.
- A random check on girth estimates was made for trees with a large girth (above 5 metres) using either a tape measure or a piece of string marked into metre lengths. Accuracy of girth estimates was found to vary from actual measurement by up to 10%.
- Many titles to property in the Bacchus Marsh Valley were issued before the Land Act 1881 and gave title to the centre of the stream. While a stream frontage reserve exists in some locations it does not apply across the valley. River Red Gums were also located away from streams on freehold land. Permission from landholders for access was sought and freely given.
- Although observations of flora and fauna associated with River Red Gums and the Red Gum Swamp community were noted and commented on, systematic scientific study of associated flora and fauna was not part of this survey.

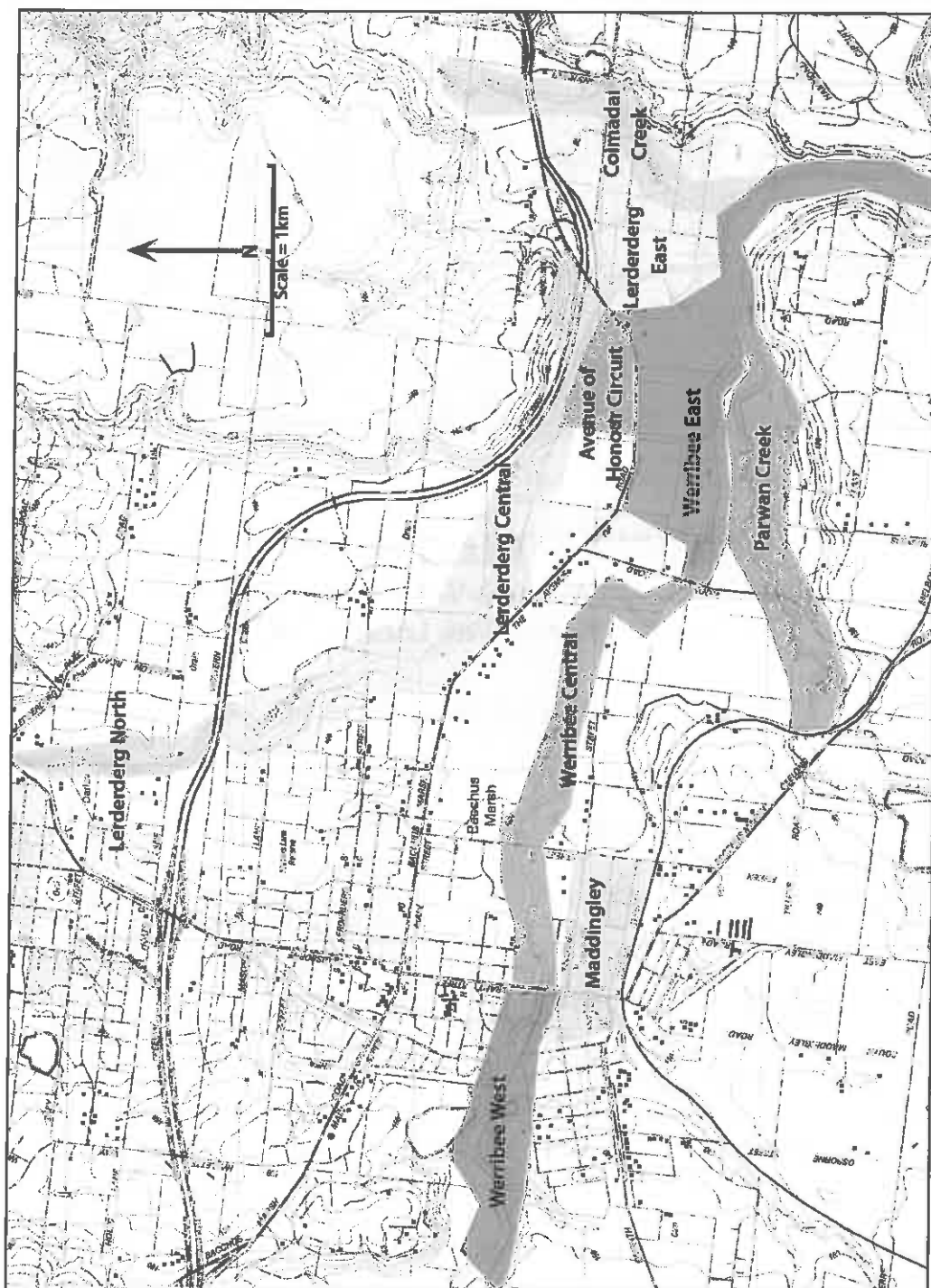
Areas Surveyed and Location of River Red Gums

Locations were recorded for 1,411 River Red Gums. In the table below the alpha code represents the area of the Bacchus Marsh valley where the tree was located. The numeric part of the code is a sequential number within each area of Bacchus Marsh valley (see Appendix C). The table also indicates the number of River Red Gums recorded in each area of the valley.

Table I: Key to Areas Surveyed and Number Recorded

ALPHA CODE	MEANING	DESCRIPTION OF AREA	NUMBER of River Red Gum
AHC	Avenue of Honour River Circuit	South of Lerderderg River west of Avenue of Honour	19
LC	Lerderderg Central	Lerderderg River south of the Western Freeway to the bridge over Lerderderg River at the eastern end of Avenue of Honour.	250
LE	Lerderderg East	From Avenue of Honour bridge over Lerderderg River around the Lerderderg River east and south-east to the junction with Werribee River.	166
LN	Lerderderg North	Lerderderg River north of the Western Freeway to Darley Bridge.	78
M	Maddingley	Area around Maddingley Park west to Bacchus Marsh College carpark and railway reserve north of rail line.	27
WC	Werribee Central	Werribee River between Grant Street Bridge and Woolpack Road.	148
WW	Werribee West	Werribee River west of Grant Street Bridge to Underbank Ford on the Werribee River.	74
PC	Parwan Creek	From the Melbourne/Ballarat railway line north-east through Genetics Australia 'Bull Farm' to the junction with the Werribee River.	131
CC	Coimadai Creek	From 500 metres north of the Western Freeway to the junction with Werribee River.	100
WE	Werribee East	Werribee River From Woolpack Road to the beginning of the backwaters of Melton Reservoir below Hopetoun subdivision.	418
Total Alpha-numeric Waypoints Recorded			1,411

Map 3: Areas Surveyed Bacchus Marsh Valley 2007-2008



Map Source: Modified from Lerderderg 7722-1-2, Department of Natural Resources & Environment 2001.



Girth at 1.4m was estimated and a sample measured. The girth of this River Red Gum in Taverner Street, opposite the Bacchus Marsh Lawn Tennis Club, was 5m.

Profile of River Red Gums 2007-2008

**Table II: Bacchus Marsh Valley River Red Gums,
Frequency Profile with Location and Size**

ALPHA AREA CODE	Estimate of River Red Gum girth at breast high 1.4m							NUMBER of River Red Gums
	>.3- .9m	1 - 2m	2.1- 3m	3.1- 4m	4.1- 5m	5.1- 6m	>6m	
AHC	6	4	2	1	0	2	4	19
LC	51	104	42	26	8	11	8	250
LE	31	50	30	25	13	5	12	166
LN	12	32	15	7	3	5	4	78
M	0	4	5	8	1	4	5	27
WC	12	63	35	20	7	8	3	148
WW	20	20	17	6	4	3	4	74
PC	15	63	28	13	8	3	1	131
CC	25	34	17	12	4	5	3	100
WE	62	111	57	63	29	18	78	418
	>234	485	248	181	77	64	122	
Total Alpha-numeric Waypoints - River Red Gums								1,411

Note: The <.3-.9m group are under represented in this table because where a group of small River Red Gums had regenerated the number in the group was noted and the location and size of the tree nearest the centre of the group was recorded.



Hollows in River Red Gum are important to animals for shelter and nesting. Damaged bark and exposed wood is evidence that the hollow on the left in this photograph has been enlargement by birds.

Observations Made During the Survey

1. Although the majority of remnant River Red Gums are located along creek and river banks in the Bacchus Marsh valley, there are many on what was the floodplain and on old water courses and billabongs.
2. Of the 1,411 River Red Gums recorded in the survey, the majority were located in the eastern section of the valley. Lerderberg East 166, Werribee East 418, Coimadai Creek 100, Parwan Creek 131. These 815 River Red Gums represent 58% of the total.
3. Although large River Red Gums occur in many locations, the majority of these larger trees are in the eastern sector of the Bacchus Marsh Valley (LE & WE = 74% of River Red Gums over 6m).
4. Of the River Red Gums surveyed in the Bacchus Marsh Valley almost 9%, or 122 trees, have a girth of over 6 metres. There are 38 trees with an estimated girth of 9m or more.
5. Regeneration of River Red Gums, indicated by the number of smaller girth River Red Gums, is occurring within the river and creek beds in the valley. Where trees are isolated from the present creek and river system, no regeneration was recorded. For example, in the Maddingley area, where some trees surveyed were away from the Werribee River on old water courses, no regeneration was recorded.
6. This survey has located 122 River Red Gums with an estimated girth of over 6m. Despite variable growth rates, all evidence and methods of estimating age would conclude that these trees are over 300 years old. Some would be much older! (See *Determining River Red Gum Age*, page 23).



Hives of Feral European Bees occupy many hollows in River Red Gums in the Bacchus Marsh valley. The hive photographed is one of at least eleven along the Werribee River in Peppertree Park. Bees cross-pollinate flowering plants, however feral hives occupy potential shelter and nesting sites and exclude native animals.

7. Most of the River Red Gums with a girth over 5 metres had several hollows. Many of these larger trees had 10 or more hollows in branches or the main trunk. Hollows form at different ages depending on damage that breaks branches or allows fungus and insects into the trunk.

8. In many areas of the valley about half the River Red Gums with hollows had Feral European Bee hives in at least one hollow. On the Peppertree Circuit Trail, along both sides of the Werribee River west of Grant Street, there are at least eleven feral bee hives in hollow trees over a river distance of 1.5km. Two of the feral bee hives are in Peppertree hollows, five are in live River Red Gum hollows, four are in hollows of dead River Red Gums. In the Bacchus Marsh valley there is about 12km of river along the Werribee and Lerderderg Rivers. If the frequency of feral bee hives is repeated along the rivers in the valley there would be $11 \times (12\text{km}/1.5)$ or 11×8 or 88 feral bee hives in the valley. This rough approximation reflects a loss of opportunity for native animals to use 88 tree hollows in the older River Red Gums of the valley. If a River Red Gum develops useful hollows when it has a girth greater than 4 metres, then there could be 263 trees with hollows in the valley. If 88 are taken over by feral bees then there would potentially be 175 trees with hollows available for native animals. This could represent a loss of up to 33%. Without management there is potential for an increase in feral bee hives, but no potential in the short term, for an increase in trees with hollows.

9. Galahs, Sulphur-crested Cockatoos and Red-rumped Parrots were observed using River Red Gum Hollows. Scats of both Brush-tail and Ring-tailed Possums were seen around River Red Gums but, as these animals are nocturnal, none were seen. Late one afternoon in

winter a bat was seen leaving a River Red Gum hollow, however it was not identified.

10. Galahs appear to be very active in the River Red Gums in Bacchus Marsh valley. There is substantial evidence of their 'work' in modifying tree hollows. Over the years from 1995-2008 the number of Galahs active in the valley appears to have increased. It is possible that in these dry years some flocks have moved into the valley. At least it is evident they are very regular visitors and they are nesting in River Red Gum tree hollows.

11. No accurate survey of companion vegetation was recorded. However there were areas observed where healthy native vegetation accompanied River Red Gums. This included, Tree Violet, *Hymenanthera dentata*; Sweet Bursaria, *Bursaria spinosa*; Fragrant Saltbush, *Rhagodia parabolica*; Ruby Saltbush, *Enchylaena tomentosa*; Nodding Saltbush, *Einadia nutans*; Woolly Tea-tree, *Leptospermum lanigerum*; River Bottlebrush, *Callistemon sieberi*; Blackwood, *Acacia melanoxylon*; Black Wattle, *Acacia mearnsii*; Common Reed,



Left: Galahs often work at modifying a tree hollow to make it suitable for a nest site. A pair of Galahs may return to a hollow for about five years to make changes. Working for several hours a day over spring and early summer they break away bark and dig out the hollow. If no other animal has occupied this hollow in the meantime they may eventually use it for nesting.

Below: A swarm of feral European honey bees in the hollow of a dead River Red Gum. This swarm may build a hive in this tree, where there are already three other feral bee hives, or may swarm to a tree hollow nearby. This swarm is within 100m of the River Red Gum shown in the photo above.



Phragmites australis; Cumbungi, *Typha domingensis*; Common Tussock-grass, *Poa labillardierei*; Grey Tussock-grass, *Poa sieberiana*. Manna Gums, *Eucalyptus viminalis*, are also found along the rivers in the Bacchus marsh valley but tend to be in isolated groups rather than generally distributed.

12. Exotic species crowded the under-storey of many River Red Gums. Major weeds observed were Carpet Weed, *Galenia pubescens*; Bridal Creeper, *Asparagus Asparagoides*; Boxthorn, *Lycium ferocissimum* and Blackberry, *Rubus fruticosus* spp..

13. Although no survey of rabbit numbers was conducted, the concentration of rabbits on all stream banks were observed to be very high. Many burrows and warrens were encountered. Rabbits, through digging, burrowing and removal of vegetation, pose the threat of increasing erosion, contributing to silting down stream and of harming regeneration of native plants. For these reasons they pose a serious threat to biodiversity in the Bacchus Marsh valley.

14. Despite lower than average rainfall in the Bacchus Marsh area for 1996–2008 the health of River Red Gums appears to depend on their location in the Bacchus Marsh valley. In 2008, most trees located toward the eastern end of the valley still appear to have healthy foliage. Along the central Lerderberg, young trees that have been planted after willows were removed were observed to have damaged fruit. This is possibly a fungal attack or a bacteria. Despite this, these trees appear to be growing well.



Four species that are part of the River Red Gum Swamp community in Bacchus Marsh valley. Top left clockwise, River Bottle Brush (pink flower form), Tree Violet with fruit, Common Reed with seed heads expended, Cumbungi shedding seeds (male pollen head at top of plant already dispersed to fertilise female).

At the western end of the valley many older River Red Gums were observed to have extremely thin leaf cover. This appears to be associated with prolonged low rainfall, or a reduction in the availability of underground water. One big, old, tree on the corner of Meikle and Franklin Streets has died since the beginning of the survey. Other old River Red Gums in the Maddingley area show signs of extreme stress, indicated by thin leaf cover.

15. As older trees die, presumed to be those with a girth above 6m and which may be over 300 years old, they will continue to be useful refuges and homes for animals for at least another 150 years. In 2007–2008 River Red Gums with a girth between 4–5m and 5–6m seem to be least well represented in the survey. This suggests there will be a reduction in numbers of hollow trees for several hundred years because of low numbers of River Red Gums in the 4m–6m girth groups. This risk makes management of existing trees of vital importance for future biodiversity!

16. In 2008 there are 32 living River Red Gums in Bacchus Marsh valley with an estimated girth of 9 metres or more. These trees represent the oldest trees in the valley. A conservative estimate of age, regardless of variations in growth rates, would be over 400 years old (see *Determining River Red Gum age*, page 25).



Thin foliage on a River Red Gums is a sign of stress caused by lack of water. Very low rainfall in the Bacchus Marsh valley between 1996–2008 has resulted in lack of surface water, a low level of water in the Werribee River and diminishing underground water.



Near the Western Freeway, Hopetoun overpass, several old River Red Gums indicate the edge of old swamps and drainage lines. At the eastern end of Bacchus Marsh valley early travellers found wet and muddy conditions difficult before the Lerderderg River was confined to a channel in this area.

Why are River Red Gums Where They Are?

River Red Gum locations have been determined by natural events and human intervention. River Red Gum seeds generally germinate after flooding or during wet conditions, and trees can tolerate inundation with floodwater for several months. For this reason River Red Gums germinate along the edge of river beds, the edge of billabongs and swamps. This was true for the Bacchus Marsh valley. Historical records witness the swamps and their removal.



Left: From south of Bacchus Marsh College to Werribee River Kennedy's Gully has been moved underground through a large drain. River Red Gums outside the school and in Maddingly Park were once part of the Kennedy's Gully drainage system.

Below: Some River Red Gums that once grew along the flooding area of Kennedy's Gully still grow there, some almost unseen. This tree is between the school and the railway line. It is surrounded by Peppertrees and Boxthorn.



In early days of Bacchus Marsh, when the Hobbler family were here, Mr W. Lyle recalled 'At the time there used to be a lot of water about the Marsh. Between the mill and Border Inn it was nearly knee deep. At back of present A.N.A. Hall was a big swamp, covered with wild-fowl, which was generally called a lagoon' (Williams 1936. p91).

Early settlers started the process of draining the swamps and digging channels for the rivers. It is reputed that Jeremiah Ryan was one of the first to undertake flood control works on his farm adjacent to the Lerderderg River (Bacchus Marsh and District Historical Society 2003, page 79).

The Express of 31 January, 1874, advertised for tenders for a channel to be cut to define the southern end of the Lerderderg River. The river, shown in that area on early parish maps as a swamp, was a problem for road builders and farmers. Farmers in the area had already made several attempts at confining the Lerderderg to a channel. (*The Express* 31 January, 1874, Bacchus Marsh and District Historical Society. 2003).

SHIRE OF BACCHUS MARSH.

TENDERS, addressed to the President, will be received until 3 p.m. on **SATURDAY**, the 7th February, 1874, for

Cutting a new channel for the river Lerderderg, and raising and otherwise improving the Melbourne to Ballarat main road, at the east end of the Marsh. Four months allowed for the work.

Plans and specifications can be seen at the Border Inn, Bacchus Marsh.

The lowest or any tender not necessarily accepted.

W. E. STANDFIELD, Secretary.

January 24, 1874.

The Shire of Bacchus Marsh called for tenders to cut a channel to define the course of the Lerderderg River in 1874. Source: The Express, 31 January 1874. Courtesy of Bacchus Marsh and District Historical Society.

Swamps recorded in the historic record that were located north of Bennett Street and east of Manor Street have been drained. All but one of the River Red Gums that grew near these swamps have been removed.

Today some River Red Gums appear to be in strange places. For example north of the Western Freeway near the Hopetoun overpass. This was a drainage line and northern edge of the swamp, leading south-east across the Dellios orchard to the Lerderderg River.



Cut down in the 1960s these large River Red Gums could still be a valuable source of information in 2008. By studying growth rings it may be possible to determine their age and events in the valley during their life.

Further examples are the River Red Gums outside the Bacchus Marsh College in Grant Street, in Maddingley Park and opposite the Bacchus Marsh Tennis Club in Taverner Street. These grew on the banks of Kennedy's Gully, a creek that carried storm water north of the railway line, east across Grant Street and north to the Werribee River. The drainage is now controlled by a large underground pipe that directs flood water under Grant Street and along the western edge of Maddingley Park to the Werribee River.

Flood mitigation works included the construction of stone quoins along river beds and digging the river beds into channels. This process has sometimes left River Red Gums on old stream banks. There are also some natural cut-off meanders and billabongs with River Red Gums still on their banks. These can be seen at the eastern end of the valley. The desire to control floodwaters also led to the planting of willows along local rivers. Willows were planted to hold the river bank in place during a flood. Another desired outcome of this was to prevent loss of land where title was determined by the centre of the river (personal com. Gwyn Moore).



Solid surviving logs from River Red Gum cut down in the 1960s offer an opportunity for research by studying growth rings. This stump has a diameter of 1.8m and a girth of about 5.7m, and with bark would have a girth of around 6m. This tree would have probably been about 250-300 years old when cut down.

Despite the Western Freeway being built-up across parts of the old swamp in 1972, a group of old River Red Gums remain as evidence of the floodplain. These are still growing at the eastern end of the valley near the Hopetoun overpass.

Generation by generation River Red Gums were ring barked, cut down, burnt and grubbed out. In 2008 there are stumps and trunks of River Red Gums that were cut down more than 50 years ago. In several places there are still rows of giant River Red Gum logs.

However Bacchus Marsh ratepayers are fortunate to still have significant numbers of River Red Gums. The original swamp in the valley has been heavily modified, but some of the River Red Gums and the flora community that stood around these swamps and billabongs over 200 years ago still exist.

The River Red Gum Swamp Community

In March 1837 Governor Bourke travelled to Port Phillip in HMS Rattlesnake. He rode a horse from Geelong to Melbourne via the valley that was about to become Bacchus's Marsh. He recorded in his diary for 16 March 1837 –

'...then through a Wood of Box Trees 3 miles upon passing which a very beautiful valley appeared in sight and a fine prospect of the Ranges to the Westward & Northward. Descended into the valley and thence to the Weareaby 3 miles distance this day 21 miles. The Valleys of the Weareaby and its tributaries are here very beautiful and abound with herbage of a rich tho' coarse description & the enclosing slopes with good Sheep pasture. Upon the whole these (with the exception of part of Illawarra) are the finest I have seen in the Colony. The views from some of the surrounding heights are very picturesque.' (from Osborn p12, extracted from R. D. Boys, 1935, *First Years of Port Phillip*, p67.) At this stage Kenneth Scobie Clarke, the first European to occupy the valley, had spent just three months in the valley with 600 sheep owned by the Great Lake Company of Van Dieman's Land (Bacchus Marsh & District Historical Society, 2003)

Henry Bacchus recalled his impression of the valley when he arrived with his father in 1838, *'...the grass was long enough to conceal a flock of sheep a few minutes after they were turned out of the yard'* (Osborn, 1973, p12, W. H Bacchus, 1874, p128). Bacchus took a great interest in native grasses, sending many specimens to Baron von Mueller, the Government Botanist, for identification. In 1874 he published a paper on the subject. Beautiful drawings of over 30 native grasses, completed by his daughter Annie then 19 years old and her teacher Mrs G.M.B Gilbert, illustrate the article (Bacchus, 1874).

From descriptions by both Governor Bourke and Henry Bacchus it seems that the understorey of the valley was rich in grasses and 'herbage'. Although the landscape was described as very beautiful, there does not seem to be an early description of the River Red Gums that dominated the valley. Present age of these trees indicates that they were certainly an important part of the landscape prior to European settlement.

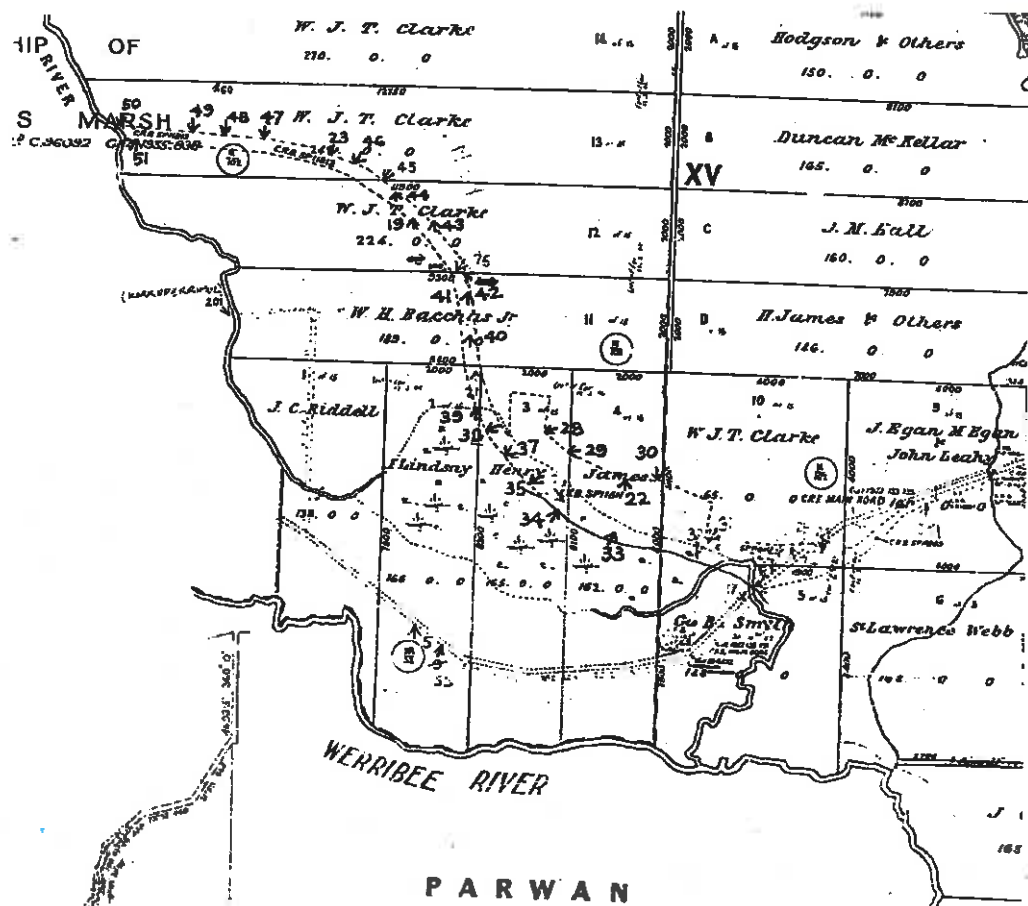
In mapping the vegetation communities of western Victoria for the Regional Forest Agreement in 2000, the DSE mapped the original vegetation, pre-1750, of the Bacchus Marsh valley as Red Gum Wetland. This flora community is now described as EVC 292, Red Gum Swamp (see map page 4).

In October 2005 the DSE published a Bioregion Benchmark for Vegetation Quality Assessment for Ecological Vegetation Class, EVC 292, Red Gum Swamp, for the Victorian Volcanic Plain bioregion. In the benchmark the Red Gum Swamp EVC is described as *Open woodland to 15 m tall. Occurs on alluvial plains in the seasonally wet depressions of shallow drainage lines or prior stream meanders, typically associated with heavy paludal soils, sometimes with gilgai development. The annual rainfall across its distribution is generally below 700 mm, and the period of inundation may range from 2 to 6 months. River Red Gum woodland with sedgy or grassy-herbaceous ground-layer, comprising various balances of true aquatics and species tolerant of intermittent to seasonal inundation.*

As well as River Red Gum, the benchmark lists the following flora species as typical of the Red Gum Swamp community on the Victorian Volcanic Plain –

Running Marsh-flower, Blue Devil, Floating Pondweed, Small Loosestrife, Pale Sundew, Rough Raspwort, Poison Lobelia, Smooth Solenogyne, Common Swamp Wallaby-grass, Hollow Sedge, Joint-leaf Rush, Common Blown-grass, Soft Bog-sedge, Floating Club-sedge, Common Spike-sedge (www.dse.vic.gov.au).

In the Bacchus Marsh valley it is probable that the River Red Gum Swamp community also contained some of the species found along the Werribee and Lerderderg Rivers today.

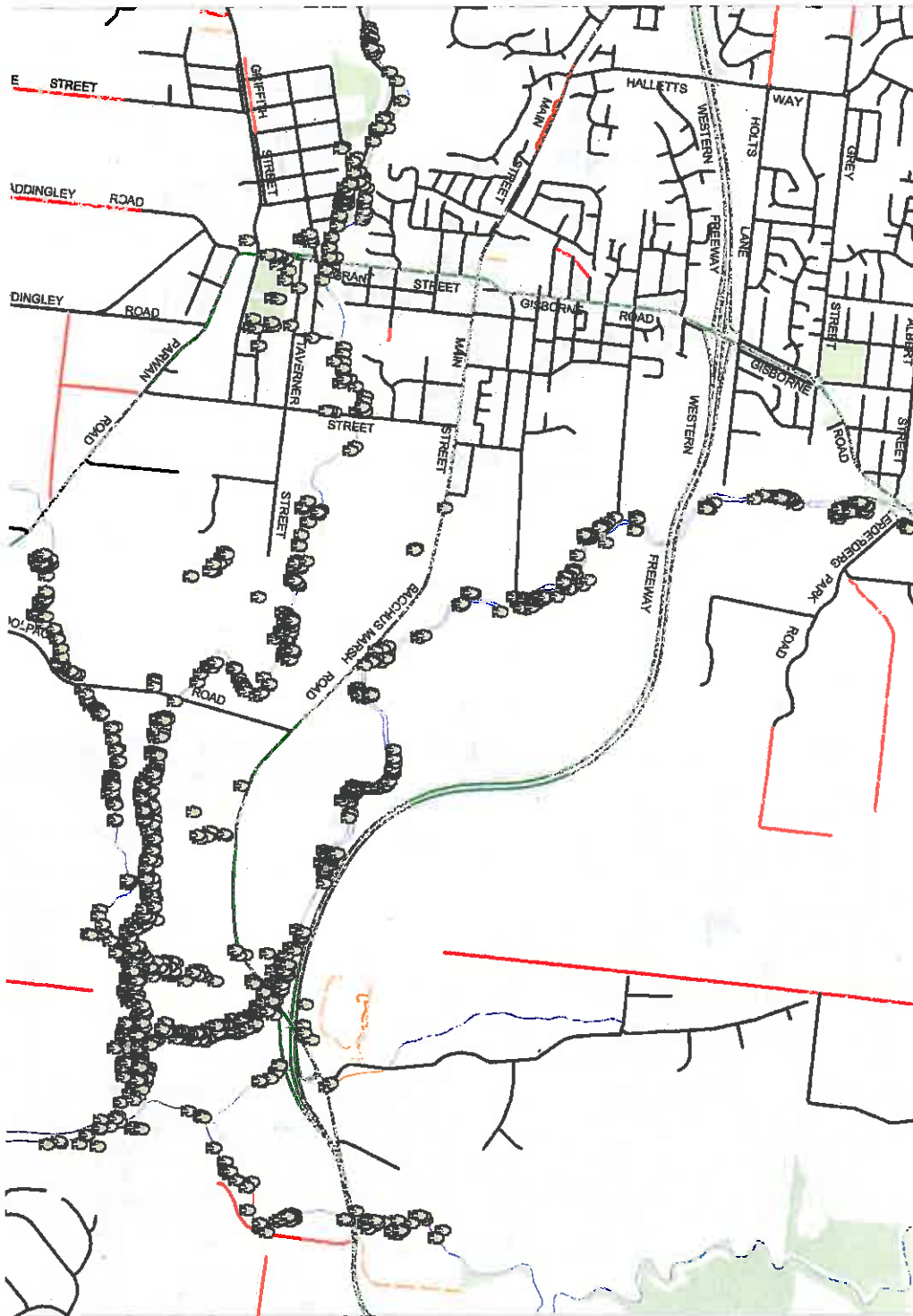


This extract from an early Merrimu Parish Crown Lands map of the eastern end of Bacchus Marsh valley shows a large area of swamp, mainly on land owned by John Lindsay and Henry James. The Avenue of Honour and the Western Freeway now pass through this area. Large River Red Gums that grew around this swamp still border the roads in this area. Map source: Land Victoria, courtesy of Bacchus Marsh and District Historical Society.



Woolly Tea-tree occurs with River Red Gum in the Bacchus Marsh valley. It flowers in late spring to early summer. The woolly coating on the fruit helps give this species its name.

Map 4: River Red Gum Locations Bacchus Marsh Valley



Tree symbols show locations of River Red Gums with a girth of 300mm or more in the Bacchus Marsh valley in 2007-2008. Map prepared by Michelle Hanslow, GIS Officer Moorabool Shire.



Accurately measuring the girth of this semi-recumbent River Red Gum near the cricket nets in Maddingley Park is difficult. The germination of this tree predates European settlement and the use of the area as Police Paddocks.

These include Cumbungi, Common Reed, River Bottlebrush, Woolly Tea-tree and Common Tussock Grass. As Tangled Lignum occurs around swampy areas on the plains south and south east of Bacchus Marsh valley, it is likely that it once occurred around the swamps and billabongs within the valley. From the early descriptions it is probable that prior to disruption by sheep grazing the valley had a large range of native grasses and herbs both between and within its swampy areas. These dominated by River Red Gums of varying ages.

It is possible that some parts of the Bacchus Marsh valley could be better described using the *Floodplain Riparian Woodland* EVC (Janet Leversha, pers. com.). The *Biodiversity Assessment* for the Commonwealth and Victorian Regional Forest Agreement, 2000, described EVC 56 for Pre-1750 areas of the lower Werribee (page 151). EVC 56 *Floodplain Riparian Woodland*, covers '... the lowest, most frequently flooded terraces and generally encompasses a network of former channels and intermittent and permanent wetlands.' The description of EVC 56 includes many species noted during this survey.

Floodplain Riparian Woodland, EVC 56, is described in these terms. 'The overstorey is a tall woodland dominated by Red Gum *Eucalyptus camaldulensis* with occasional Manna Gum *E. viminalis* and Swamp Gum *E. ovata*. The shrub stratum is patchy and includes Silver Wattle *Acacia dealbata*, Black Wattle *A. meamsii*, Tree Violet *Hymenathera dentata*, River Bottlebrush *Callistemon sieberi*, and Woolly Tea-tree *Leptospermum lanigerum*. The ground layer is dominated by Common Tussock-grass *Poa labillardierei* on the drier elevated areas, with Common Reed *Phragmites australis*, Tall Sedge *Carex appressa*, Rushes *Juncus* spp., Spike Sedges *Eleocharis* spp. and Water-ribbons *Triglochin procerum* on inundated soils beside rivers. Herbs range from dryland herbs on the banks to aquatics in the river and wetland areas' (Commonwealth and Victorian RFA Steering Committee, 2000, page 151).

While Swamp Gum and Silver Wattle are not typical components of the current streamside vegetation in the Bacchus Marsh valley, the description above, with the addition of Blackwood and Cumbungi, would usefully describe the valley's vegetation.

However a further complexity is that using the system of flora community descriptions, the immediate river and creek edges should probably be described using a riparian or creekline EVC. *Creekline Grassy Woodland*, EVC 68, for example, has been used to describe the flora for creeks just outside the Bacchus Marsh valley. *Creekline Grassy Woodland*, EVC 68, is described as, '... overstorey ... dominated by Red Gum *Eucalyptus camaldulensis* with a scattered shrub layer of Black Wattle *Acacia meamsa*, Blackwood *A. melanoxylon* and Sweet Bursaria *Bursaria spinosa*. The ground layer is dense with grasses and sedges, most commonly Common Tussock-grass *Poa labillardierei*, Weeping Grass *Microleana stipoides*, Kangaroo Grass *Themeda triandra*, Common Wheat-grass *Elymus scabra*, Common Blown-grass *Agrostis avenacea*, Tall Sedge *Carex appressa* and Rushes *Juncus* spp.' (Janet Leversha, pers. com., Commonwealth and Victorian RFA Steering Committee, 2000, page 151).

Whether *Creekline Grassy Woodland* could or should be applied to the riparian vegetation of the Lerderderg and Werribee rivers within the valley requires further investigation.

Floodplain Riparian Woodland EVC 56, *Creekline Grassy Woodland* EVC 68 and *Red Gum Swamp* EVC 292, are each assessed as 'Endangered' communities in the Victorian Volcanic Plain Bioregion (see EVC Benchmarks at www.dse.vic.gov.au/dse/nrence.nsf/).



Despite major damage this old River Red Gum has survived and has for over 300 hundred years provided food and shelter for bats, birds, possums, insects and spiders.

The current survey confirms that remnant Red Gum Swamp EVC 292 (and/or potential complex of EVCs discussed above), is now found mostly along and adjacent to the rivers and creeks in the Bacchus Marsh valley. Although elements of the flora community exist, there are few places where the original community is intact.

The present day DSE mapping of the flora communities of the Bacchus Marsh valley is inaccurate. In particular the mapping of the remnant Red Gum Swamp community does not match the field data and needs to be reviewed along with the overall mapping of EVCs within the valley (see map page 6).

Determining River Red Gum Age

Methods of determining the age of River Red Gums include counting growth rings, carbon dating and extrapolating from external measurements such as girth at chest height. Recent measurements at Bundoora Park (Melbourne, Victoria) have combined these methods.

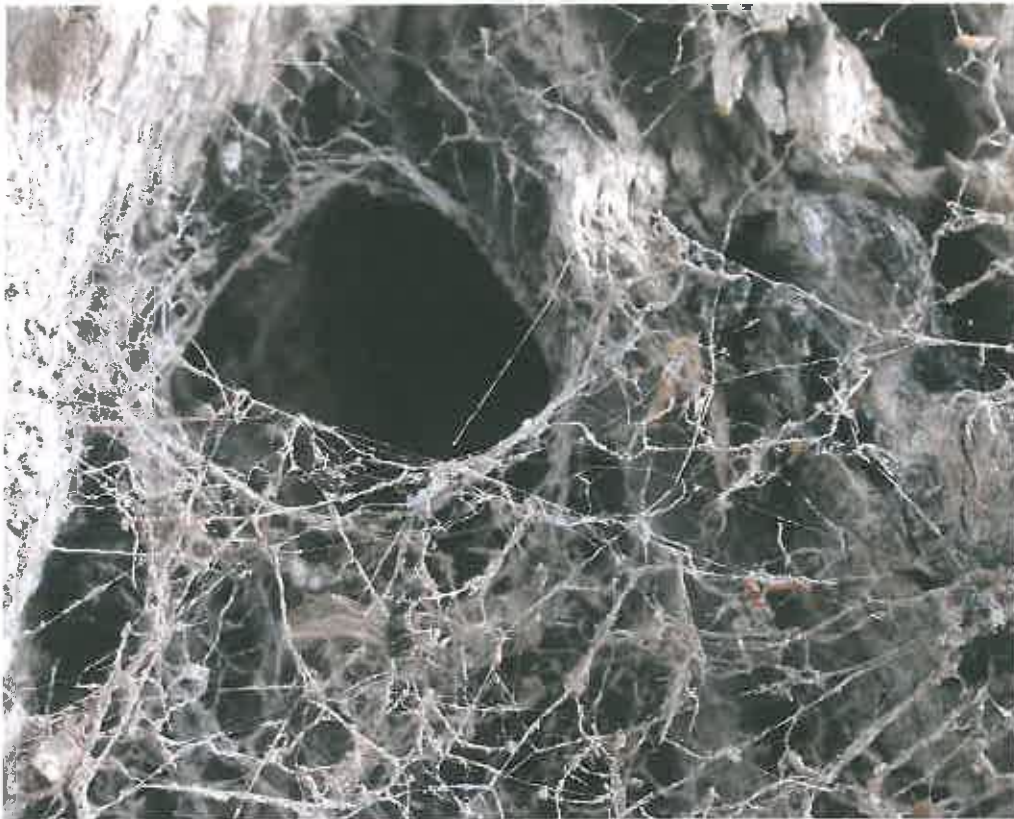
For the Bundoora Park study tree girth was measured and using core samples, growth rings counted. Inner and outer core samples were sent to Lucas Heights, Sydney, for radio-carbon dating. The results were compared and a rule of thumb method of estimating age devised. It was concluded that the approximate age of a River Red Gum, plus or minus 110 years, was its girth at breast height in centimetres (Dr Noel Schleiger, pers. com.) For example a River Red Gum with a girth of 5600mm would be 560 years old give or take 110 years.

Uncertainty in the confidence of age prediction for River Red Gums is attributed to differences in availability of water at the site where a tree is growing, the type of soil in which it is growing and the nutrients available, droughts and floods during the trees life, the occurrence of insect and fungal attack and other external factors. It is also possible that there is genetic variation in growth rates within the species.

Although there is evidence that at least one tree in Tasmania could be 43,000 years old, which is a King's Holly, *Lomatia tasmanica*, scientific evidence for ages greater than 800 years for River Red Gums is difficult. (Beale, 2007, Robinson 1992, Ambrose 1982). Some argue that a eucalyptus like Jarrah, *Eucalyptus marginata*, native to Western Australia, would be unlikely to be older than 450 years (Whitford 2002).

Kim Whitford examined growth rings in tree stumps from fallen trees and related the annual growth rings to tree diameter. Using the diameter in centimetres over the bark at 1.3m above ground, Whitford established the formula $\text{Age} = 2.345 \times \text{DOB} + 6.968$. Using the example from above of a girth of 5600 mm and applying Whitford's formula would require the girth to be converted to diameter of about 178 cm. So $\text{Age} = 2.345 \times 178 + 6.968$ which gives an age of about 424.4 years. Compared with Schleiger's rule of thumb this formula gives a slightly more conservative result for age. Whitford also points out that growth rates fluctuate wildly and that for trees with diameters greater than 150 cm, the formula probably over-estimates tree age (Whitford 2002). Whitford also points out that research into tree age using core samples probably does great damage to living trees and that growth rings extracted are hard to count compared with cross-sections.

A recent study (George 2004) confirmed an age and size relationship in River Red Gums at Banrock station, South Australia. Dendrochronological methods applied to floodplain trees were compared with known tree ages. A strong correlation was found between known ages and age determined by counting annual growth rings. Growth patterns in River Red Gums were found to relate to seasonal patterns and moderate flooding rather than rainfall. However, this is not a simple picture. There is a suggestion that once a River Red Gum has developed and has a source of water, it may not be able to change to another source. *'These findings suggest that these trees have not changed their water use strategies over*



Spiders find shelter and a rich hunting area in River Red Gum bark and hollows. Insects trapped in this web are a source of food for the spider.



Cicada nymphs spend many years underground. After emerging these two nymphs have climbed a River Red Gum attaching themselves to the bark where the adult Cicada emerged from a slit in the back of the nymph. The adult Cicadas can fly and use foliage for camouflage.

time, despite the changes in the environment. This lack of availability to change water use strategies could be why these forests are showing signs of deterioration despite access to fresh groundwater.' (Akeroyd, 2002, p163). This conclusion relates to evidence of growth rings of the main trunk. Despite this conclusion it is still possible that the health of foliage could be improved when surface water is available.

**Table III: Projected River Red Gum Age
Bacchus Marsh Valley 2007-2008**

Alternative projections of River Red Gum Age				
Girth @ 1.4m		Schleiger +-110yrs	Whitford	Conservative Age
2m		200 yrs	155 yrs	50 – 100 yrs
3m		300 yrs	232 yrs	100 – 150 yrs
4m		400 yrs	304 yrs	150 – 200 yrs
5m		500 yrs	380 yrs	200 – 250 yrs
6m		600 yrs	453 yrs	250 – 300 yrs
7m		700 yrs	530 yrs	300 – 350 yrs

Despite differences in growth rates, on even the most conservative measure of age, the River Red Gums in Bacchus Marsh valley with a girth over 7m are estimated to be over 300 years old.

An interesting question remains. What age should be assigned to the 32 living River Red Gums in Bacchus Marsh valley with an estimated girth of 9 metres or more? It is probable that these trees are over 400 years old!



Laughing Kookaburras use River Red Gum tree hollows as nesting sights if they are suitable.

The Value of River Red Gums – Why Should They be Protected?

Although River Red Gums are protected as part of the Red Gum Swamp EVC, and also protected under native vegetation legislation and by the *Flora and Fauna Guarantee Act 1988*, awareness and protection under the Moorabool Shire Planning Scheme needs to be improved.

Many of the River Red Gums are of great age and are a tangible connection with the past. As such they represent an important aspect of Bacchus Marsh's heritage.

Remaining River Red Gums in the Bacchus Marsh valley are part of the remnant Red Gum Swamp community. They are part of an endangered plant community 'EVC No 292, Red Gum Swamp'. They have an 'Endangered' status in the Victorian Volcanic Plain Bioregion.

All River Red Gums provide habitat for animals. Older River Red Gums provide greater shelter and food to a wide range of animals. As River Red Gums age they develop hollows. Gibbons and Lindenmayer, 2002, suggest that three preconditions must be met before eucalypts form hollows. First the tree must be under some form of physiological stress or subjected to physical injury, often associated with age. Second heartwood decay must be present. Third a tree must be of sufficient size to persist when decayed. They suggest that hollows suitable for vertebrate fauna do not typically appear until a tree is at least 120 years old. Formation of hollows useful for larger species of animal take a little longer and generally are usable after a tree is 220 years old (Gibbons & Lindenmayer 2002, page 34).

This process continues and the value of the tree hollows remains after the tree is dead. Gibbons and Lindenmayer, 2002, estimate that 303 native vertebrate species, or 15% of all terrestrial species use hollows. The list includes 27 amphibians, 79 reptiles, 114 birds and 83 mammals.

In the Bacchus Marsh valley this means that birds like Pacific Black Duck, Galah, Sulphur-crested Cockatoo, Crimson Rosella, Eastern Rosella, Red-rumped Parrot, Southern Boobook, Tawny Frogmouth, Australian Owlet-nightjar, Laughing Kookaburra and White-throated Treecreeper are nesting or roosting in suitable River Red Gum hollows. Other animals that live in the valley using River Red Gum hollows include – Gould's Wattled Bat, Chocolate Wattled Bat, Lesser Long-eared Bat, Large Forest Bat, Southern Forest Bat, Little Forest Bat, White-striped Freetail Bat, Agile Antechinus, Common Ringtail Possum, Sugar Glider and Common Brushtail Possum. Reptiles that occur in Bacchus Marsh area that use tree hollows include, Marbled Gecko, Jacky Lizard, Spencer's Skink and Common Bearded Dragon (Gibbons and Lindenmayer, 2002, Hewish, Ward, Bugg and Munday, 2006, Wilson and Swan, 2008).

Observation of the bark and hollows of older River Red Gums quickly reveals the variety of insect and spider species that they support. Invertebrate species such as insects and spiders are vital to the biodiversity of Bacchus Marsh valley. Their role in pollination, in the food web, in control of would-be pests and their fascinating life cycles make them of extreme interest and value in the Red Gum Swamp environment.

Although the availability of tree hollows is an essential element in sustaining biodiversity the picture is not as simple as it may seem. Some exotic species and some native species with increased populations and range represent a threat to other hollow using fauna. Gibbons and Lindenmayer (2002) list the exotic species Feral European Honeybees, Common Myna, Common Starling, and Black Rats as the greatest threat to native hollow using fauna. They also list native species that are greatest threat to other indigenous species as Common Brushtail Possum, Galah and Little Corella. These species outcompete other native species

for available hollows. After reviewing the research, Gibbons and Lindenmayer conclude that these species have greatest impact in disturbed or naturally open habitats. The remnant River Red Gum Swamp community of Bacchus Marsh valley is one such habitat. This increased competition makes protection of the older trees in the valley of vital importance.

Erosion and salinity are reduced by River Red Gums. River Red Gums obtain water from three main sources, ground water, rainfall and river flooding. The retention of larger River Red Gums with their deep root system gathers underground water and helps control the water table. This prevents minerals, particularly salt, rising to the soil surface. The species is considered to be a major contributor to maintenance of water tables at depth. (CSIRO, 2004, *Taxon Attribute Profiles, Eucalyptus camaldulensis – River Red Gum*) In floods large trees help hold soil and slow destructive soil erosion from flowing water.

River Red Gums are protected under Victoria's Native Vegetation Management regulations. (NRE/DSE, 2002, *Victoria's Native Vegetation Management—a Framework for Action*, NRE).

Loss of hollow bearing trees is listed as a threatening process in the Victorian *Flora and Fauna Guarantee Act 1988*. The Victorian Flora and Fauna Guarantee Act 1988, Action Statement No 192 identifies '*Loss of hollow-bearing trees from Victorian native forests and woodlands*' as a threatening process. This Action Statement specifically refers to the important role of River Red Gum hollows and the need to preserve older trees to maintain biodiversity. The action statement mandates that local government authorities map and protect significant stands of trees and hollow bearing trees on public and private land and to incorporate this into local government planning mechanisms. (DSE, 2003, Action Statement No 192, *Loss of hollow-bearing trees from Victorian native forests and woodlands*, Flora and Fauna Guarantee Act 1988)

River Red Gums are majestic, they inspire scientists, artists, photographers and poets.

ISSUES AND RECOMMENDATIONS

Planning Scheme Protection

River Red Gums and the Red Gum Swamp EVC have general protection under clause 11 and 15.09 of the State Planning Framework. These clauses require Moorabool Shire to have regard to *Victoria's Native Vegetation Management—A Framework for Action*. However further protection is needed.

Limited protection of River Red Gums by Moorabool Shire has been part of the Planning Scheme. However the inclusion of specific River Red Gum locations and River Red Gum profiles to the overlay and schedule to the overlay would assist planners. River Red Gums in the Bacchus Marsh valley are part of the remnant Red Gum Swamp community mapped by DSE in 2005 as '*EVC No 292, Red Gum Swamp*'. This community has '*Endangered*' status in the Victorian Volcanic Plain Bioregion. As such it needs protection in the Moorabool Shire Planning Scheme.

Because of their contribution to biodiversity, hollow River Red Gums, dead or alive, should be protected in Moorabool Shire Planning Scheme overlays and schedules to these overlays.

Flora & Fauna Guarantee 1988—Action Statement No 192—Loss of hollow-bearing trees from Victorian native forests and woodlands, describes the ecological role of tree hollows

and the factors influencing their loss. It outlines management options and applies to both public and private land. It mandates local government to identify and map trees with hollows and to protect them with Vegetation Protection and Environmental Significance overlays. In the Bacchus Marsh valley the trees with significant hollows are the River Red Gums.

Planning and protection should in particular be given to River Red Gums with 4-6m girth as these are the trees with developing hollows needed as habitat for the next several hundred years. They are also the group of trees that have been identified as the least common in the present survey.

Victorian Planning Provisions and planning schemes now include amendment VC49, introducing the requirement in Clause 52.17 and the Environmental Significance Overlay, that a planning permit be applied for to remove dead vegetation (Advisory Note, Department of Planning and Community Development, September 2008).

Recommendation 1

Include an Environmental Significance Overlay in the Moorabool Shire Planning Scheme that specifies the protection of River Red Gums in the Bacchus Marsh valley. Incorporate RIVER RED GUMS IN THE BACCHUS MARSH VALLEY 2007-2008 (this document) and *Flora and Fauna Guarantee 1988*, Action Statement No 192. *Loss of hollow-bearing trees from Victorian native forests and woodlands*, into the schedule to the Moorabool Shire Planning Scheme.

Feral European Bees

European feral bees have occupied many River Red Gum tree hollows in Bacchus Marsh valley. Feral beehives may be useful to orchardists as pollinators of orchard blossom. In some areas of the Bacchus Marsh valley almost half of the River Red Gums with hollows have Feral European beehives in them. This reduces nesting sites for hollow-using birds and the possible shelter sites for all animals. Evidence from research in other parts of Victoria suggest that concern about the impact of feral bees on hollow-using birds and mammals is well founded (Trainer 1995). The spread of feral European beehives represents a threat to the habitat of many other animals and is a threat to biodiversity in the Bacchus Marsh valley.

Recommendation 2

Consult with the Bacchus Marsh Apiarists, the Bacchus Marsh Orchardists Association, Melbourne Water and DSE to devise and implement control methods to limit and reduce the spread of feral European bees in Bacchus Marsh valley.

Regeneration and Replanting

Natural regeneration of River Red Gums is occurring in some places within the Lerderderg and Werribee River banks. Local landholders have undertaken replanting of River Red Gums along river banks in several areas of the Bacchus Marsh valley. Where Willows have been removed some of the trees replanted have been River Red Gums. In some areas thick infestation of weeds such as Galenia, Bridal Creeper, Boxthorn and Horehound are competing for space. Heavy infestations of rabbits also restrict regeneration.

To preserve genetic diversity, seedlings grown for replanting should be from local seed. This means from seed collected within the Bacchus Marsh valley. River Red Gums seed is relatively easy to collect and clean, and provided the collectors have a licence and permission from the landholder or land manager, seed stock should not be a problem. Collectors should

be aware of the protocols of seed collecting, such as the need to collect from a wide range of trees, rather than from a small group. River Red Gums are relatively easy to propagate. The only issue is the need to collect seed 12 months ahead of planting to allow time for seed to be grown prior to the planned planting date.

Where exotic species such as Willows and Pepper Trees are removed from along and near the Werribee and Lerderberg Rivers, local River Red Gums should be planted in their place. These along with shrubs such as Woolly Tea-tree, Sweet Bursaria, Kangaroo Apple and Lignum should be planted. Blackwood, Black Wattle and Manna Gum are also local riverside species.

Recommendation 3a

With Melbourne Water devise and implement a replanting program in association with removal of exotic species along the Lerderberg and Werribee Rivers, Coimadai and Parwan Creeks in the Bacchus Marsh valley.

Recommendation 3b

With Melbourne Water and DSE devise and carry out a rabbit eradication program along all stream-sides in the Bacchus Marsh valley.

Recommendation 3c

Ensure that all replanting along stream-sides in the Bacchus Marsh valley are based on an agreed model of the species that make up EVC 292, Red Gum Swamp, or the agreed EVC for that part of Bacchus Marsh valley.

Recommendation 3d

Ensure that species planted in the Bacchus Marsh valley are grown from locally collected seed stock.

Buffer Zones

Trees may be destroyed by damage to roots from ploughing and other significant disturbance close to the trunk. Spray drift may effect leaves and eventually the trees, heavy traffic may damage roots, farm animals may ringbark trees. Protection around large trees on farmland would help prevent damage. Farmers and farm managers are more likely to protect old trees with fencing if funding is made available to cover the cost. Issues of the value of old trees on farmland and their increased protection should be undertaken with a clear model of how costs associated with protection are to be covered.

Recommendation 4

In partnership with local landholders seek Melbourne Water funding, or alternative funding, to fence off a buffer zone around River Red Gums where they are in danger of impact from grazing, traffic, spraying or agricultural activity. Include Buffer Zone protection in Planning controls.

Listing and Registration

The status of old River Red Gums is important to their protection. Old trees that receive recognition are more likely to be valued locally. Listing of significant old River Red Gums

on heritage lists flags their important status as part of Bacchus Marsh heritage. Landholders who have old River Red Gums on their land will display them with pride. Listing on the Moorabool Shire Heritage Overlay and schedule to the overlay and the National Trust Australia (Victoria) Tree Register are possible options. Heritage Victoria may be able to provide assistance regarding possible listings. At least 30 shires or cities have significant old River Red Gums already listed with the National Trust on their Significant Tree Register (see Appendix B, page 38).

Recommendation 5

List the locations of the oldest River Red Gums on the schedule to the Heritage Overlay in the Moorabool Shire Planning Scheme. Investigate the possibility of nominating the oldest River Red Gums with The National Trust Tree Register and Heritage Victoria.

Increasing Awareness

The cooperation of landholders in the conservation of River Red Gums and the River Red Gum Swamp community is an important part of ensuring their conservation. It is especially important that landholders who gave permission for River Red Gums on their land to be surveyed be offered a copy of this report. The GPS location tables could be omitted from the public document if considered important. A brochure or wildlife notes on the value of River Red Gums and trees with hollows would help explain why these trees are important.

Education is an important aspect of maintaining a sustainable environment. Interpretation associated with local walks is one part of this. The track signs and interpretative material about River Red Gums could be an interesting aspect of a walk. River Red Gum heritage and natural history could be incorporated into one of Bacchus Marsh's Trails interpretation.

Moorabool Shire staff advising ratepayers and supervising field staff need to be aware of protection extended to River Red Gums and to trees with hollows. They need also to be aware of reasons for this. Contractors working for the Shire also need to be made aware of the value and need for protection of River Red Gums and trees with hollows. In particular contractors who have responsibility for managing older River Red Gums should be advised how to manage pruning tasks without removing new growth from trees that are already highly stressed through lack of water or old age.

Recommendation 6a

Source or produce a brochure on the value of River Red Gums and trees with hollows in Bacchus Marsh valley and distribute these to landholders and other ratepayers.

Recommendation 6b

An edition of this report should be prepared and distributed to landholders. An A4 colour laser copy is recommended.

Recommendation 6c

Provide a copy of this report to the Moorabool Trails Committee of Moorabool Shire Council asking that information on the importance of River Red Gums and hollow trees for wildlife be incorporated into interpretation of Bacchus Marsh trails.

Recommendation 6d

Ensure that Moorabool Shire staff and contractors receive information on planning controls and policies about protection for River Red Gums and trees with hollows. Provide appropriate supervision to staff and contractors responsible for managing River Red Gums, spraying nearby or pruning trees.

Cultural Investigation

During the survey of Red Gums in Bacchus Marsh valley no record was made of scar trees or trees having cultural significance. Further investigation of heritage issues associated with older River Red Gums is required and should include a study of their cultural significance for both Aboriginal and non-Aboriginal people.

Recommendation 7

Seek the cooperation of the Victorian Archeological Survey, or a body nominated by them, to check River Red Gums in Bacchus Marsh valley for cultural scars and related cultural importance. Include River Red Gums in any future study of Bacchus Marsh's heritage.

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Appendix A

Identification of River Red Gums

River Red Gum, *Eucalyptus camaldulensis*, grow throughout Australia along waterways and on floodplains. *Eucalyptus camaldulensis*: is named after Camalduli, an estate near Naples in Italy where a tree was grown in the estate garden in the early 19th. century. Material from this tree was used by Frederick Dehnhardt, Chief Gardener for the Count of Camalduli, to be first to describe this species in his catalogues in 1829. Seed to grow the tree in Italy is believed to have arrived from France. River Red Gums are native to Australia. (Euclidsample: chabg.gov.au/cpbr/cd-keys/euclid3/euclidsample/html/, Zacharin 1978).



Tree to 40 metres tall generally with a single trunk and dense crown. Bark usually rough at the base of the trunk but soon smooth with mottled grey, copper, brown and cream bark that flakes in patches



Leaves are narrow and pointed up to 20cm long. Flowers are cream and occur in late spring early summer.



Buds have distinctive pointed caps and vary between 7-9 per cluster on narrow stalks.



Fruit are smooth and hemispherical with a protruding disk and projecting valves generally divided into four usually giving a 'phillips head screw' shape (Costermans 2006, Walsh & Entwistle 1996).

Appendix B
***Eucalyptus camaldulensis* – River Red Gum Registered**
Extract National Trust of Victoria Tree Register

File No.	Location	Shire/City	Canopy	Girth	Height	Est. Years
T11002	Guildford	Mt Alexander	34m	9.35m	30m	518
T11001	Casterton	Glenelg	30m	7.5m	44m	500
T11177	Talbot	Cent. Goldfields	26m	12.2m	18.4m	500
T11488	Gunbower Island	Gannawarra	24.3m	8m	46m	500
T11490	Gunbower Island	Gannawarra	-	9m	52m	500
T11842	Lockwood South	Greater Bendigo	36m	9m	36m	500
T11929	Colignan	Mildura	39m	17m	29m	500
T11969	Myrtleford	Alpine	26m	9m	23m	500
T11162	Mandurang	Grtr. Bendigo	23.5m	10.54m	37m	400
T11273	Wonwondah	Horsham	17m	6m	22m	400
T11539	Wyperfeld NP	Hindmarsh	-	-	-	400
T11771	Apsley	West Wimmera	32.5m	7m	40m	400
T11852	Botanic Gardens	Melbourne	23m	3.83m	24m	400
T11887	East Melbourne	Melbourne	13m	4m	18m	400
T11968	Dunkeld	Sth Grampians	43m	4m	11m	400
T12015	Newstead		23m	6m	26m	400
T12027	Mt Elgin Swamp	Hindmarsh	25m	11m	42m	400
T11089	Snake Valley	Pyrenees	23m	5.5m	20m	300
T11152	St Kilda junction	Port Phillip	14m	4.85m	15m	300
T11288	Bairnsdale	East Gippsland	25m	4m	20m	300
T11543	Bulleen	Manningham	18m	6m	18m	300
T11544	Templestowe	Manningham	28.8m	5m	33m	300
T11545	Templestowe	Manningham	22.5m	5m	38m	300
T11735	Eaglemont	Banyule	17m	5m	21m	300
T11769	Casterton	Glenelg	34.5m	6m	38m	300
T11770	Edenhope/Apsley	West Wimmera	38m	6m	37m	300
T11853	Botanic Gardens	Melbourne	27m	6.25m	27m	300
T11855	Jolimont	Melbourne	13m	3m	15m	300
T11100	Wahgunyah	Indigo	25.4m	5.9m	23m	250
T11146	Noble Park	Grtr. Dandenong	18m	3.65m	22m	250
T11251	?Princes Hwy	Surf Coast Shire	26m	5.5m	25m	250
T11760	Kew East Golf C.	Boroondara	12m	3m	36m	210
T11081	Bundoora	Darebin	20m	3.3m	17.5m	200
T11145	Keysborough	Grtr. Dandenong	16m	3.3m	16.3m	200
T11365	Benalla	Delatite	20m	5m	20m	200
T11422	Diggers Rest	Melton	17m	2m	7.6m	200
T11484	Caulfield North	Glen Eira	26m	5m	20m	200
T11560	Strathmore	Moonee Valley	25m	4m	28m	200
T11801	Bundoora Park	Darebin	14m	3m	25m	200
T11959	Ellerslie	Moyne	20m	4m	20m	200
T11970	Myrtleford	Alpine	23m	7m	29m	200
T11986	Reedy Lakes	Moir	8.2m	3m	47m	200
T11987	Barmah Forest	Moir	13.5m	3m	49m	200
T11988	Barmah Forest	Moir	17.1m	3m	41m	200
T11989	Barmah Forest	Moir	10.5m	4m	43m	200
T11990	Barmah Forest	Moir	18m	3m	41m	200
T11991	Barmah Forest	Moir	18.2m	4m	39m	200
T12013	Wunghnu	Moir	45m	5m	25m	200
T11175	Piambie Forest	Swan Hill	20m	2.92m	24.9m	150
T11540	Lake Albacutya	Hindmarsh	10.3m	2m	5.8m	150
T11489	Gunbower Island	Campaspe	12.5m	2m	45m	60

Source: www.natrust.com.au/trust_register/search_the_register/eucalyptus_camaldulensis

Appendix C

C. River Red Gum GPS Data Bacchus Marsh Valley

DATE	IDNT	GDA_X_FINAL	GDA_Y_FINAL	Size
2/9/2007 14:48	AHC001	277654	5825963	6.7m
2/9/2007 14:53	AHC002	277666	5825961	5.8m
2/9/2007 15:03	AHC003	277709	5825977	1.5m x5
2/9/2007 15:10	AHC004	277665	5825998	3m x3
2/9/2007 15:14	AHC005	277654	5825998	3m
2/9/2007 15:16	AHC006	277624	5826013	6.5m
2/9/2007 15:23	AHC007	277604	5826016	2m x5
2/9/2007 15:26	AHC008	277580	5825987	6m
2/9/2007 15:30	AHC009	277516	5826043	7m
2/9/2007 15:34	AHC010	277562	5826039	1m
2/9/2007 15:37	AHC011	277563	5826035	4m
2/9/2007 15:42	AHC012	277544	5826045	1m
2/9/2007 15:46	AHC013	277539	5826037	.5m x10
2/9/2007 15:52	AHC014	277500	5826059	.3m
2/9/2007 15:56	AHC015	277457	5826084	.3m
2/9/2007 16:00	AHC016	277361	5826118	.3m x 25
2/9/2007 16:08	AHC017	276996	5826248	3m+20
2/9/2007 16:12	AHC018	276931	5826263	.4m x40
4/4/2007 14:25	LC160	277552	5826076	.4m
3/30/2007 13:12	LC001	275877	5826582	1.2
3/30/2007 13:19	LC003	275859	5826605	1.2m
3/30/2007 13:26	LC004	275777	5826775	3m
3/30/2007 13:29	LC005	275777	5826775	1.2m
3/30/2007 13:32	LC006	275765	5826805	5.5m
3/30/2007 13:40	LC007	275606	5826998	2.6m
3/30/2007 13:43	LC008	275591	5827011	5m
3/30/2007 13:45	LC009	275597	5827012	3m
3/30/2007 13:50	LC010	275594	5827015	4m
3/30/2007 14:07	LC012	275625	5827358	3m
3/30/2007 14:17	LC013	275615	5827336	?
3/30/2007 14:22	LC014	275586	5827313	1m
3/30/2007 14:27	LC015	275564	5827345	.6m
3/30/2007 14:29	LC016	275573	5827355	.9m
3/30/2007 14:34	LC017	275592	5827408	1.2m
3/30/2007 14:36	LC018	275595	5827407	1.5m
3/30/2007 14:38	LC019	275595	5827408	4m
3/30/2007 14:40	LC020	275593	5827410	3.3m
3/30/2007 14:46	LC021	275584	5827400	1.6m
3/30/2007 14:49	LC022	275576	5827401	3m
3/30/2007 14:51	LC023	275576	5827402	1.5m
3/30/2007 14:54	LC024	275570	5827394	2m
3/30/2007 14:56	LC025	275573	5827407	2m
3/30/2007 14:58	LC026	275582	5827412	4m

3/30/2007 15:00	LC027	275571	5827417	1m
3/30/2007 15:03	LC029	275579	5827419	2m
3/30/2007 15:06	LC030	275576	5827411	1.9m
3/30/2007 15:09	LC031	275577	5827425	5m
3/30/2007 15:11	LC032	275590	5827419	4m
3/30/2007 15:13	LC033	275574	5827428	4.7m
3/30/2007 15:19	LC034	275574	5827448	9m
3/30/2007 15:21	LC035	275571	5827454	6m
3/30/2007 15:24	LC036	275566	5827453	2.7m
3/30/2007 15:29	LC037	275562	5827423	4m
3/30/2007 15:27	LC038	275562	5827419	1.1m
3/30/2007 15:33	LC039	275562	5827427	2m
3/30/2007 15:32	LC040	275570	5827434	3.5m
3/30/2007 15:38	LC041	275553	5827434	2.2m
3/30/2007 15:40	LC042	275549	5827441	2.m
3/30/2007 15:48	LC043	275558	5827466	1m
3/30/2007 15:42	LC044	275611	5827394	2.5m
3/30/2007 15:52	LC045	275555	5827531	2m
3/30/2007 15:55	LC046	275519	5827596	1.9m
3/30/2007 15:56	LC047	275517	5827586	2m
3/30/2007 15:59	LC048	275512	5827604	2.5m
3/30/2007 16:05	LC049	275497	5827671	2m
3/30/2007 16:09	LC050	275466	5827703	6m
3/30/2007 16:20	LC051	275265	5827798	2.2m
3/30/2007 16:25	LC052	275198	5827962	1.2m
3/30/2007 16:26	LC053	275200	5827954	1m
4/2/2007 11:28	LC054	275127	5827847	5m
4/2/2007 11:39	LC055	275120	5827963	4m
4/2/2007 11:44	LC056	275136	5827969	1m
4/2/2007 12:04	LC057	275154	5827806	6m
4/2/2007 12:10	LC058	275174	5827785	1.5m
4/2/2007 12:11	LC059	275170	5827789	1.5m
4/2/2007 12:13	LC060	275172	5827788	1.1m
4/2/2007 12:16	LC061	275181	5827770	1.2m
4/2/2007 12:21	LC062	275180	5827773	2m
4/2/2007 12:23	LC063	275182	5827769	1.5m
4/2/2007 12:27	LC064	275175	5827776	1.5m
4/2/2007 12:28	LC065	275184	5827767	.8m
4/2/2007 12:30	LC066	275179	5827768	1.2m
4/2/2007 12:33	LC067	275194	5827764	.3m
4/2/2007 12:35	LC068	275195	5827771	1.5m
4/2/2007 12:49	LC069	275215	5827705	.7m
4/2/2007 12:53	LC070	275220	5827749	2.4m
4/2/2007 12:56	LC071	275219	5827732	.2m x 5
4/2/2007 12:59	LC072	275219	5827720	.4m
4/2/2007 13:02	LC073	275227	5827710	.2m x 3
4/2/2007 13:04	LC074	275236	5827712	.3m

4/2/2007 13:07	LC075	275239	5827703	1.2m
4/2/2007 13:09	LC076	275234	5827710	1.3m
4/2/2007 13:11	LC077	275239	5827698	1.6m
4/2/2007 13:14	LC078	275237	5827700	.4m
4/2/2007 13:17	LC079	275237	5827709	2m
4/2/2007 13:18	LC080	275241	5827703	1.2m
4/2/2007 13:24	LC081	275244	5827685	2.3m
4/2/2007 13:28	LC082	275235	5827686	2m
4/2/2007 13:31	LC083	275219	5827699	4m x 4
4/2/2007 13:33	LC084	275218	5827693	.3m
4/2/2007 13:40	LC085	275220	5827678	3.6m
4/2/2007 13:46	LC086	275333	5827640	2.6m
4/2/2007 13:54	LC087	275436	5827629	.8m
4/2/2007 13:56	LC088	275411	5827619	.5m
4/2/2007 13:59	LC089	275409	5827623	1.2m
4/2/2007 14:01	LC090	275420	5827616	.6m
4/2/2007 14:05	LC091	275442	5827596	3.5m
4/2/2007 14:07	LC092	275444	5827582	2.8m
4/2/2007 14:09	LC093	275449	5827575	7m
4/2/2007 14:11	LC094	275478	5827566	.3m x 4
4/2/2007 14:15	LC095	275489	5827566	.3m x 3
4/2/2007 14:54	LC096	275556	5827296	3m
4/2/2007 15:04	LC097	275539	5827073	4m
4/2/2007 15:06	LC098	275540	5827066	3.5m
4/2/2007 15:08	LC099	275534	5827062	.4m
4/2/2007 15:10	LC100	275536	5827052	.7m
4/2/2007 15:13	LC101	275531	5827048	.4m x 5
4/2/2007 15:33	LC102	275073	5826918	8m
4/2/2007 15:43	LC103	275836	5826568	2.4m
4/2/2007 15:46	LC104	275825	5826607	3m
4/2/2007 15:48	LC105	275821	5826605	1.2m
4/2/2007 15:50	LC106	275840	5826580	2m
4/2/2007 15:53	LC107	275848	5826540	2m
4/2/2007 15:56	LC108	275885	5826604	1m
4/2/2007 15:59	LC109	275888	5826598	1m
4/2/2007 16:03	LC110	275887	5826541	.4m
4/2/2007 16:07	LC112	275900	5826525	2.5m
4/2/2007 16:09	LC113	275904	5826529	.5m
4/2/2007 16:11	LC114	275906	5826522	.5m
4/2/2007 16:14	LC115	275925	5826481	3.5m
4/2/2007 16:22	LC116	276094	5826490	.5m
4/2/2007 16:26	LC118	276091	5826480	.3m
4/2/2007 16:28	LC119	276105	5826478	.3m x 2
4/2/2007 16:32	LC120	276059	5826431	3m
4/2/2007 16:36	LC121	276047	5826442	2m
4/2/2007 16:37	LC122	276052	5826446	2.5m
4/2/2007 16:41	LC123	276075	5826446	1.2m

4/2/2007 16:43	LC124	276071	5826444	2m
4/2/2007 16:45	LC125	276083	5826455	1.8m
4/2/2007 16:46	LC126	276086	5826451	2m
4/2/2007 16:49	LC127	276092	5826450	2m
4/2/2007 16:52	LC128	276086	5826453	2m
4/2/2007 16:56	LC129	276096	5826518	1.2m
4/2/2007 16:58	LC130	276085	5826506	1.4m
4/2/2007 17:00	LC131	276079	5826508	3m
4/2/2007 17:03	LC132	276086	5826521	4m
4/2/2007 17:04	LC133	276086	5826519	4m
4/4/2007 12:12	LC134	275291	5826760	6m
4/4/2007 12:17	LC135	275301	5826749	3m
4/4/2007 12:41	LC136	277943	5826170	6.2m
4/4/2007 12:50	LC138	277763	5826167	5.5m
4/4/2007 12:54	LC139	277879	5826156	6m
4/4/2007 12:58	LC140	277957	5826202	3m
4/4/2007 13:07	LC141	278213	5826282	2m
4/4/2007 13:10	LC142	278193	5826306	5.2m
4/4/2007 13:47	LC143	277741	5826006	.6m
4/4/2007 13:49	LC144	277738	5825997	1m
4/4/2007 13:51	LC145	277722	5825999	2.3m
4/4/2007 13:53	LC146	277713	5826010	1.1m
4/4/2007 13:55	LC147	277694	5826026	2.1m
4/4/2007 13:57	LC148	277681	5826025	4m
4/4/2007 13:59	LC149	277686	5826037	1.8m
4/4/2007 14:01	LC150	277655	5826041	7m
4/4/2007 14:03	LC151	277657	5826039	1m
4/4/2007 14:06	LC152	277618	5826055	1.5m
4/4/2007 14:11	LC154	277605	5826057	2.5m
4/4/2007 14:15	LC155	277606	5826067	2.2m
4/4/2007 14:17	LC156	277585	5826060	.6m
4/4/2007 14:19	LC157	277587	5826057	.3m x 6
4/4/2007 14:21	LC158	277578	5826048	.6m
4/4/2007 14:22	LC159	277584	5826052	.3m x 3
4/4/2007 14:26	LC161	277549	5826070	2.5m
4/4/2007 14:30	LC162	277472	5826107	3m
4/4/2007 14:33	LC163	277410	5826138	.5m
4/4/2007 14:35	LC164	277401	5826144	2.2m
4/4/2007 14:37	LC165	277377	5826152	.5m
4/4/2007 14:44	LC167	277107	5826266	.4mx2
4/4/2007 14:49	LC168	277050	5826269	1.2m
4/4/2007 14:50	LC169	277053	5826270	2m
4/4/2007 14:52	LC170	277049	5826268	.3mx4
4/4/2007 14:54	LC171	277038	5826262	1m x 4
4/4/2007 14:57	LC172	277018	5826275	.4m x22
4/4/2007 15:00	LC173	277003	5826277	.2m x30
4/4/2007 15:03	LC174	277007	5826299	3.3m

4/4/2007 15:07	LC175	276980	5826304	1m
4/4/2007 15:08	LC176	276986	5826299	1m
4/4/2007 15:10	LC177	276980	5826302	1m
4/4/2007 15:12	LC178	276970	5826301	1m
4/4/2007 15:15	LC179	276970	5826280	1.3m
4/4/2007 15:19	LC180	276945	5826289	1.2m
4/4/2007 15:22	LC181	276942	5826290	1.2m
4/4/2007 15:24	LC182	276942	5826292	1.2m
4/4/2007 15:26	LC183	276958	5826282	2m
4/4/2007 15:28	LC184	276960	5826284	1m
4/4/2007 15:30	LC185	276945	5826289	4m
4/4/2007 15:32	LC186	276947	5826308	.3mx8
4/4/2007 15:35	LC187	276955	5826325	1m
4/4/2007 15:37	LC188	276951	5826316	1m
4/4/2007 15:38	LC189	276954	5826319	.8m
4/4/2007 15:40	LC190	276946	5826335	4m
4/4/2007 15:47	LC191	276732	5826408	1m
4/4/2007 15:50	LC192	276753	5826395	1.2m
4/4/2007 15:51	LC193	276754	5826395	1m
4/6/2007 11:26	LC194	276666	5826406	1.2m
4/6/2007 11:27	LC195	276665	5826404	1.2m
4/6/2007 11:29	LC196	276663	5826399	1.2m
4/6/2007 11:31	LC197	276666	5826398	1.2m
4/6/2007 11:34	LC198	276657	5826361	1.2m
4/6/2007 11:37	LC199	276660	5826361	1.2m
4/6/2007 11:41	LC200	276640	5826407	1.2m
4/6/2007 11:44	LC201	276620	5826393	.7m
4/6/2007 11:46	LC202	276618	5826394	1.3m
4/6/2007 11:47	LC203	276618	5826391	2.2m
4/6/2007 11:49	LC204	276614	5826405	1m
4/6/2007 11:51	LC205	276614	5826403	1.5m
4/6/2007 11:53	LC206	276608	5826405	.3m
4/6/2007 11:54	LC207	276609	5826409	1m
4/6/2007 11:56	LC208	276613	5826411	.9m
4/6/2007 11:58	LC209	276610	5826412	1.2m
4/6/2007 12:00	LC210	276614	5826409	1.2m
4/6/2007 12:02	LC211	276623	5826418	.5m
4/6/2007 12:04	LC212	276625	5826423	1.1m
4/6/2007 12:07	LC213	276616	5826436	1.2m
4/6/2007 12:11	LC214	276601	5826429	1.3m
4/6/2007 12:14	LC215	276605	5826426	4m
4/6/2007 12:19	LC216	276579	5826418	.4m
4/6/2007 12:24	LC217	276594	5826425	.2mx4
4/6/2007 12:28	LC218	276596	5826448	.5m
4/6/2007 12:30	LC219	276598	5826445	.5m
4/6/2007 12:32	LC220	276598	5826446	.2m
4/6/2007 12:34	LC221	276592	5826449	2m

4/6/2007 12:36	LC222	276587	5826445	.5m
4/6/2007 12:39	LC223	276591	5826457	4m
4/6/2007 12:42	LC224	276601	5826447	5m
4/6/2007 12:44	LC225	276596	5826476	5m
4/6/2007 12:48	LC226	276594	5826490	3m
4/6/2007 12:50	LC227	276593	5826502	3.5m
4/6/2007 12:53	LC228	276594	5826507	.3-1m x 12
4/6/2007 12:56	LC229	276597	5826522	.2-1m x 10
4/6/2007 12:59	LC230	276594	5826555	3m
4/4/2007 14:38	LC166	277373	5826152	3m
3/21/2007 14:06	LN071	275096	5829159	5m
3/21/2007 14:45	LN076	275181	5829435	4m
3/21/2007 10:34	LN001	275102	5829201	5m
3/21/2007 10:37	LN002	275087	5829186	6m
3/21/2007 10:42	LN003	275090	5829177	7m
3/21/2007 10:45	LN004	275063	5829199	2m
3/21/2007 10:46	LN005	275067	5829203	2m
3/21/2007 10:48	LN006	275065	5829208	1.5m
3/21/2007 10:49	LN007	275064	5829200	1.2m
3/21/2007 10:51	LN008	275062	5829201	1.2m
3/21/2007 10:55	LN009	275052	5829178	3m
3/21/2007 10:57	LN010	275043	5829166	1.5m
3/21/2007 11:01	LN011	275042	5829146	.8m
3/21/2007 11:03	LN012	275057	5829151	3m
3/21/2007 11:08	LN013	275062	5829112	3m
3/21/2007 11:10	LN014	275078	5829126	5.5m
3/21/2007 11:12	LN015	275080	5829121	4m
3/21/2007 11:14	LN016	275060	5829124	2.5m
3/21/2007 11:16	LN017	275065	5829117	2.2m
3/21/2007 11:19	LN018	275082	5829114	1.5m
3/21/2007 11:21	LN019	275072	5829102	3m
3/21/2007 11:23	LN020	275096	5829117	6m
3/21/2007 11:25	LN021	275092	5829102	1.2m
3/21/2007 11:30	LN022	275094	5829106	3m
3/21/2007 11:32	LN023	275098	5829101	2.5m
3/21/2007 11:35	LN024	275083	5829088	3m
3/21/2007 11:37	LN025	275079	5829088	.8m
3/21/2007 11:39	LN026	275085	5829069	6m
3/21/2007 11:42	LN027	275102	5829082	2m
3/21/2007 11:44	LN028	275102	5829084	7m
3/21/2007 11:46	LN029	275092	5829085	1.8m
3/21/2007 11:47	LN030	275085	5829075	3.5m
3/21/2007 11:53	LN031	275068	5829068	1.5m
3/21/2007 11:56	LN032	275088	5829077	1.2m
3/21/2007 12:00	LN033	275081	5829061	.5m
3/21/2007 12:02	LN034	275081	5829056	2m
3/21/2007 12:05	LN035	275135	5829047	5m

3/21/2007 12:07	LN036	275109	5829064	4m
3/21/2007 12:10	LN037	275111	5829049	7m
3/21/2007 12:14	LN038	275107	5829034	3m
3/21/2007 12:23	LN039	275059	5828818	?
3/21/2007 12:26	LN040	275033	5828799	1.2m
3/21/2007 12:28	LN041	275033	5828796	2m
3/21/2007 12:35	LN042	275030	5828800	.6m
3/21/2007 12:37	LN043	275027	5828794	1m
3/21/2007 12:39	LN044	275030	5828792	1.2m
3/21/2007 12:41	LN045	275027	5828791	1m
3/21/2007 12:43	LN046	275020	5828790	1m
3/21/2007 12:49	LN049	275021	5828774	3.5m
3/21/2007 12:53	LN050	275025	5828757	.8m
3/21/2007 12:55	LN051	275028	5828752	.6m
3/21/2007 12:57	LN052	275023	5828745	.6m
3/21/2007 12:59	LN053	275023	5828740	.4m
3/21/2007 13:01	LN054	275009	5828755	2m
3/21/2007 13:02	LN055	275009	5828758	1.7m
3/21/2007 13:04	LN056	275009	5828743	1.6m
3/21/2007 13:06	LN057	275022	5828742	.3m
3/21/2007 13:08	LN058	275021	5828695	3m
3/21/2007 13:10	LN059	275012	5828683	.4m
3/21/2007 13:12	LN060	275011	5828688	1.8m
3/21/2007 13:13	LN061	275011	5828671	3.5m
3/21/2007 13:18	LN062	275007	5828653	.4m
3/21/2007 13:21	LN063	275028	5828604	1m
3/21/2007 13:25	LN064	275048	5828383	8m
3/21/2007 13:29	LN065	275084	5828356	3m
3/21/2007 13:31	LN066	275079	5828339	3m
3/21/2007 13:33	LN067	275084	5828353	2m
3/21/2007 13:36	LN068	275068	5828346	1.4m
3/21/2007 13:37	LN069	275080	5828340	1m
3/21/2007 13:39	LN070	275080	5828338	6m
3/21/2007 14:38	LN072	275162	5829411	4m
3/21/2007 14:40	LN073	275168	5829428	2.5m
3/21/2007 14:41	LN074	275172	5829436	3m
3/21/2007 14:43	LN075	275177	5829446	3m
3/21/2007 14:46	LN077	275185	5829440	2m
3/21/2007 14:48	LN078	275187	5829433	2m
2/13/2007 14:46	M001	273877	5826113	7m
2/13/2007 14:53	M002	274079	5826068	4m
2/13/2007 14:57	M003	274081	5825973	3.2m
2/13/2007 15:00	M004	274060	5825966	4m
2/13/2007 15:03	M005	273930	5825969	6m
2/13/2007 15:06	M006	273934	5826000	5.5m
2/13/2007 15:09	M007	273831	5826036	7m
2/13/2007 15:12	M008	273781	5826055	9m

2/13/2007 15:16	M009	273740	5826009	3.5m
2/13/2007 15:18	M010	273748	5825994	2.5m
2/13/2007 15:25	M011	273720	5826039	5.5m
2/13/2007 15:28	M012	273708	5826012	3.5m
2/13/2007 15:30	M013	273704	5826005	3m
2/13/2007 15:33	M014	273698	5826001	3.5m
2/13/2007 15:41	M015	273694	5825983	4m
2/13/2007 15:44	M016	273696	5825945	5m
3/27/2007 16:27	WC018	274541	5826476	1.4m
3/27/2007 15:22	WC001	273765	5826294	5.5m
3/27/2007 15:25	WC002	273765	5826294	2.6m
3/27/2007 15:28	WC003	273793	5826285	4m
3/27/2007 15:41	WC004	274199	5826358	8.5m
3/27/2007 15:45	WC005	274233	5826354	6m
3/27/2007 15:48	WC006	274276	5826353	2m
3/27/2007 15:50	WC007	274279	5826359	1.2m
3/27/2007 15:53	WC008	274320	5826356	5.5m
3/27/2007 15:55	WC009	274314	5826354	.2-.3m x 8
3/27/2007 16:02	WC010	274371	5826360	1.2m
3/27/2007 16:10	WC012	274412	5826424	.3m x2
3/27/2007 16:13	WC013	274467	5826478	3m
3/27/2007 16:17	WC014	274463	5826470	2m
3/27/2007 16:20	WC015	274491	5826472	1m
3/27/2007 16:24	WC016	274549	5826468	2m
3/27/2007 16:26	WC017	274543	5826478	2m
3/27/2007 16:28	WC019	274549	5826476	2m
3/27/2007 16:32	WC020	274553	5826449	2mm
3/27/2007 16:51	WC021	274524	5826464	2.5m
3/27/2007 17:12	WC022	274552	5826309	9m
3/27/2007 17:16	WC023	274543	5826284	8m
3/27/2007 17:18	WC024	274543	5826264	6m
3/28/2007 14:55	WC025	273768	5826257	1.2m x2
3/28/2007 14:58	WC026	273779	5826257	0.3
3/28/2007 15:01	WC027	273833	5826237	.3m x4
3/28/2007 15:10	WC028	274275	5826306	3.6m
3/28/2007 15:17	WC029	274393	5826339	4m
3/28/2007 15:26	WC030	274146	5826185	2m
3/28/2007 15:44	WC031	274550	5826430	.3m x2
3/28/2007 15:58	WC032	274739	5826422	3.7m
3/28/2007 16:03	WC033	274758	5826397	3.6m
3/20/2007 13:35	WW001	273722	5826303	2.5m
3/20/2007 13:38	WW002	273709	5826312	4m
3/20/2007 13:49	WW003	273506	5826456	.3m
3/20/2007 13:51	WW004	273488	5826463	.7m
3/20/2007 13:54	WW005	273477	5826473	2m
3/20/2007 13:57	WW006	273456	5826465	.5m x8
3/20/2007 14:00	WW007	273417	5826468	.7m x12

3/20/2007 14:06	WW009	273334	5826482	1 - .5m x15
3/20/2007 14:22	WW011	272581	5826530	1 - .2m
3/20/2007 14:26	WW012	272498	5826485	3m
3/20/2007 14:28	WW013	272477	5826490	4m
3/20/2007 14:31	WW014	272458	5826487	.3m x4
3/20/2007 14:34	WW015	272480	5826496	.2m x8
3/20/2007 14:37	WW016	272515	5826504	.3-.7m x2
3/20/2007 14:40	WW017	272538	5826488	5m
3/20/2007 14:45	WW018	272537	5826490	.15m x7
3/20/2007 14:47	WW019	272548	5826494	5m
3/20/2007 14:49	WW020	272557	5826491	3.5m
3/20/2007 14:52	WW021	272568	5826501	6m
3/20/2007 14:54	WW022	272571	5826502	4.5m
3/20/2007 14:57	WW023	272589	5826507	1.2m
3/20/2007 14:58	WW024	272608	5826517	1 3m
3/20/2007 15:03	WW025	272704	5826602	.2-.8m x20
3/20/2007 15:06	WW026	272753	5826644	.3m x2
3/20/2007 15:10	WW027	272859	5826667	.3-.1m x5
3/20/2007 15:14	WW028	272946	5826588	6m
3/20/2007 15:16	WW029	272959	5826569	3m
3/20/2007 15:18	WW030	273004	5826546	.35m x20
3/20/2007 15:20	WW031	273020	5826539	3.5m
3/20/2007 15:23	WW032	273017	5826533	.4m x7
3/20/2007 15:25	WW033	273080	5826514	.2m x2
3/20/2007 15:30	WW034	273276	5826461	.3m x20
3/20/2007 15:32	WW035	273294	5826456	2.5m
3/20/2007 15:34	WW036	273320	5826458	.3m x8
3/20/2007 15:40	WW037	273503	5826328	6.5m
3/20/2007 15:42	WW038	273539	5826320	6m
3/20/2007 15:44	WW039	273601	5826289	7m
3/20/2007 15:46	WW040	273657	5826277	3m
3/20/2007 15:47	WW041	273711	5826279	4m
3/24/2007 14:45	WW042	273483	5826330	7m
3/24/2007 14:49	WW043	273418	5826342	1.8m
3/24/2007 14:51	WW044	273422	5826337	1.7m
3/24/2007 14:52	WW045	273416	5826339	1.8m
3/24/2007 14:54	WW046	273395	5826344	5m
3/24/2007 14:56	WW047	273427	5826353	2m
3/24/2007 14:57	WW048	273424	5826352	3m
3/24/2007 14:59	WW049	273424	5826355	2m
3/24/2007 15:00	WW050	273425	5826358	2.2m
3/24/2007 15:02	WW051	273422	5826372	3.6m
3/24/2007 15:04	WW052	273408	5826358	1.5m
3/24/2007 15:05	WW053	273400	5826359	.9m
3/24/2007 15:07	WW054	273398	5826364	3m
3/24/2007 15:11	WW055	273390	5826363	2.2m
3/24/2007 15:14	WW056	273385	5826371	2.5m

3/24/2007 15:16	WW058	273366	5826363	2m
3/24/2007 15:18	WW059	273370	5826371	9m
3/24/2007 15:20	WW060	273359	5826371	1m
3/24/2007 15:21	WW061	273353	5826371	3m
3/24/2007 15:28	WW062	273301	5826435	5.5m
3/24/2007 15:30	WW063	273242	5826436	2.2m
3/24/2007 15:34	WW064	273168	5826427	2.2m
3/24/2007 15:39	WW065	273188	5826406	4m
3/24/2007 15:41	WW066	273109	5826349	3m
3/24/2007 15:42	WW067	273111	5826342	3m
3/24/2007 15:44	WW068	273120	5826338	2m
3/24/2007 15:48	WW069	273250	5826407	2m
3/24/2007 15:51	WW070	273277	5826410	2m
3/24/2007 15:54	WW071	273306	5826396	3m
3/24/2007 15:56	WW072	273310	5826388	2.2m
3/24/2007 15:58	WW073	273329	5826358	2m
3/24/2007 16:00	WW074	273335	5826366	2.2m
3/20/2007 14:03	WW008	273391	5826471	1 - 5m x 10
3/20/2007 14:13	WW010	273008	5826593	4.5m
4/24/2007 15:05	AHC019	277495	5825836	8m
5/10/2007 14:41	CC001	278993	5826921	6m
5/10/2007 14:46	CC002	279035	5826884	3m
5/10/2007 14:48	CC003	279031	5826884	6m
5/10/2007 14:50	CC004	279032	5826884	4m
5/10/2007 14:54	CC005	278937	5826823	4m
5/10/2007 14:57	CC006	278918	5826813	2m
5/10/2007 14:58	CC007	278917	5826813	4.5m
5/10/2007 15:02	CC008	278911	5826796	2.5m
5/10/2007 15:05	CC009	278914	5826774	2m
5/10/2007 15:08	CC010	278939	5826674	1m
5/10/2007 15:10	CC011	278951	5826751	1m
5/10/2007 15:12	CC012	278985	5826702	2m
5/10/2007 15:14	CC013	278996	5826691	0.4m
5/10/2007 15:17	CC014	278993	5826696	0.3m
5/10/2007 15:15	CC015	278993	5826696	1.4m
5/10/2007 15:20	CC016	278993	5826691	1.2m
5/10/2007 15:22	CC017	278997	5826672	1m
5/10/2007 15:32	CC018	279012	5826673	6m
5/10/2007 15:34	CC019	279013	5826665	5m
5/10/2007 15:37	CC020	278998	5826653	0.3m
5/10/2007 15:41	CC021	278989	5826661	1m
5/10/2007 15:42	CC022	278991	5826661	0.8m
5/10/2007 15:44	CC023	278991	5826662	0.3m
5/10/2007 15:45	CC024	278994	5826662	0.4m
5/10/2007 15:46	CC025	278995	5826654	1m
5/10/2007 15:47	CC026	278996	5826651	1.3m
5/10/2007 15:49	CC027	278993	5826651	1.5m

5/10/2007 15:51	CC028	278994	5826643	6m
5/10/2007 15:54	CC029	278944	5826600	1m
5/10/2007 15:56	CC030	278947	5826565	1m
5/10/2007 15:57	CC031	278951	5826564	0.3m
5/10/2007 15:59	CC032	278936	5826554	7m
5/10/2007 16:01	CC033	278939	5826537	6m
5/10/2007 16:03	CC034	278956	5826549	0.4m
5/10/2007 16:04	CC035	278962	5826551	0.3m
5/10/2007 16:06	CC036	278983	5826515	4.2m
5/10/2007 16:10	CC037	278955	5826498	8m
5/10/2007 16:12	CC038	278932	5826513	0.8m
5/10/2007 16:14	CC039	278932	5826512	0.7m
5/10/2007 16:15	CC040	278931	5826514	0.3m
5/10/2007 16:22	CC041	278887	5826447	2.5m
5/8/2007 13:51	LE070	277732	5825961	4m
4/24/2007 13:30	LC231	276586	5826593	2m
4/24/2007 13:32	LC232	276582	5826594	4.5m
4/24/2007 13:34	LC233	276576	5826603	4m
4/24/2007 13:37	LC234	276556	5826617	3m
4/24/2007 13:42	LC235	276514	5826638	2.5m
4/24/2007 13:44	LC236	276513	5826635	2m
4/24/2007 13:46	LC237	276508	5826639	1.5m
4/24/2007 13:48	LC238	276506	5826635	1m
4/24/2007 13:51	LC239	276502	5826636	3m
4/24/2007 13:54	LC240	276489	5826639	3m
4/24/2007 13:58	LC241	276452	5826644	1.5m
4/24/2007 14:00	LC242	276456	5826644	1.5m
4/24/2007 14:04	LC243	276431	5826643	4m
4/24/2007 14:06	LC244	276433	5826640	3m
4/24/2007 14:09	LC245	276405	5826640	4m
4/24/2007 14:12	LC246	276385	5826640	2m
4/24/2007 14:13	LC247	276385	5826640	1.2m
4/24/2007 14:24	LC248	276088	5826521	4m
4/24/2007 14:30	LC249	276078	5826517	3m
4/24/2007 14:33	LC250	276083	5826515	4m
4/30/2007 14:26	LE001	277797	5825996	9m
4/30/2007 14:28	LE002	277807	5825991	2.2m
4/30/2007 14:30	LE003	277818	5825997	2m
4/30/2007 14:32	LE004	277821	5825996	3m
4/30/2007 14:36	LE005	277803	5825961	8m
4/30/2007 14:41	LE006	277870	5825897	2m
4/30/2007 14:43	LE007	277882	5825888	1.5m
4/30/2007 14:45	LE008	277884	5825884	2.5m
4/30/2007 14:46	LE009	277888	5825880	1.3m
4/30/2007 14:48	LE010	277885	5825867	3.2m
4/30/2007 14:51	LE011	277889	5825865	3.5m
4/30/2007 14:53	LE012	277897	5825848	4m

4/30/2007 14:58	LE013	277908	5825821	2.2m
4/30/2007 15:00	LE014	277915	5825817	2.7m
4/30/2007 15:04	LE015	277921	5825796	2.2m
4/30/2007 15:07	LE016	277919	5825802	3m
4/30/2007 15:11	LE017	277917	5825793	7m
4/30/2007 15:13	LE018	277914	5825786	2.5m
1/24/2008 13:09	CC043	278931	5826386	2.5m
1/24/2008 13:05	CC042	278939	5826400	2m
1/24/2008 13:12	CC044	278929	5826385	4m
1/24/2008 13:19	CC045	278904	5826109	4m
1/24/2008 13:21	CC046	278901	5826099	3m
1/24/2008 13:23	CC047	278905	5826095	3m
1/24/2008 13:24	CC048	278906	5826092	2m
1/24/2008 13:26	CC049	278910	5826091	1m
1/24/2008 13:27	CC050	278914	5826083	1m
1/24/2008 13:29	CC051	278914	5826080	2.5m
1/24/2008 13:30	CC052	278914	5826075	0.4m
1/24/2008 13:31	CC053	278915	5826071	0.6m
1/24/2008 13:33	CC054	278919	5826069	0.5m
1/24/2008 13:35	CC055	278921	5826067	2m
1/24/2008 13:36	CC056	278922	5826065	0.3m
1/24/2008 13:38	CC057	278921	5826064	1.6m
1/24/2008 13:39	CC058	278929	5826046	3m
1/24/2008 13:41	CC059	278932	5826037	3m
1/24/2008 13:44	CC060	278943	5826014	2m
1/24/2008 13:52	CC061	278728	5825879	4.5m
1/24/2008 13:58	CC062	278617	5825735	1.5m
1/24/2008 14:23	CC063	278403	5825158	2.5m
1/24/2008 14:25	CC064	278423	5825104	1m
1/24/2008 14:30	CC065	278439	5825229	2.5m
1/24/2008 14:31	CC066	278438	5825228	3.5m
1/24/2008 14:32	CC067	278430	5825233	4m
1/24/2008 14:39	CC068	278434	5825278	3.2m
1/24/2008 14:40	CC069	278439	5825280	4m
1/24/2008 14:48	CC070	278341	5825534	1m
1/24/2008 14:51	CC071	278365	5825603	0.7m
1/24/2008 14:52	CC072	278367	5825606	0.3m
1/24/2008 14:53	CC073	278370	5825607	1.5m
1/24/2008 14:54	CC074	278371	5825606	1m
1/24/2008 14:56	CC075	278372	5825610	0.6m
1/24/2008 14:57	CC076	278377	5825616	0.8m
1/24/2008 15:01	CC077	278543	5825672	2m
1/24/2008 15:03	CC078	278541	5825672	0.4m
1/24/2008 15:06	CC079	278660	5825738	2.5m
1/24/2008 15:07	CC080	278667	5825745	4m
1/24/2008 15:10	CC081	278686	5825762	6.5m
1/24/2008 15:12	CC082	278690	5825764	3m

1/24/2008 15:13	CC083	278689	5825762	0.5m
1/24/2008 15:17	CC084	278673	5825762	0.6m
1/24/2008 15:19	CC085	278669	5825760	0.6m
1/24/2008 15:35	CC086	278928	5826113	3m
1/24/2008 15:36	CC087	278930	5826103	0.8m
1/24/2008 15:38	CC088	278933	5826091	2m
1/24/2008 15:39	CC089	278933	5826093	3m
1/24/2008 15:41	CC090	278936	5826089	2m
1/24/2008 15:42	CC091	278939	5826079	2m
1/24/2008 15:43	CC092	278941	5826086	4m
2/27/2008 10:07	CC093	278971	5825924	3m
2/27/2008 10:09	CC094	278981	5825935	4m
2/27/2008 10:10	CC095	278951	5825924	2m
2/27/2008 10:13	CC096	278880	5825857	1.4m
2/27/2008 10:17	CC097	278755	5825853	1.5m
2/27/2008 10:18	CC098	278756	5825854	1.6m
2/27/2008 10:23	CC099	278719	5825795	3.6m
2/27/2008 10:49	CC100	279001	5825962	2.4m
2/21/2008 11:00	PC001	275968	5824916	1.2m
2/21/2008 11:04	PC002	275977	5824911	1m
2/21/2008 11:07	PC003	275965	5824895	4.5m
2/21/2008 11:08	PC004	275953	5824877	3m
2/21/2008 11:13	PC005	275918	5824835	0.3m
2/21/2008 11:11	PC006	275929	5824837	2m
2/21/2008 11:14	PC007	275935	5824823	4m
2/21/2008 11:16	PC008	275932	5824823	0.4m
2/21/2008 11:18	PC009	275925	5824822	1m
2/21/2008 11:19	PC010	275924	5824824	1m
2/21/2008 11:22	PC011	275918	5824808	6m
2/21/2008 11:24	PC012	275905	5824810	1.5m
2/21/2008 11:26	PC013	275884	5824822	1.2m
2/21/2008 11:28	PC014	275876	5824828	1.2m
2/21/2008 11:31	PC015	275827	5824825	1.2m
2/21/2008 11:34	PC016	275777	5824802	2m
2/21/2008 11:35	PC017	275776	5824806	0.5m
2/21/2008 11:37	PC018	275750	5824794	1.5m
2/21/2008 11:38	PC019	275721	5824787	1.8m
2/21/2008 11:41	PC020	275694	5824726	2m
2/21/2008 11:45	PC021	275649	5824683	3m
2/21/2008 11:46	PC022	275650	5824688	2.7m
2/21/2008 11:47	PC023	275648	5824682	3.5m
2/21/2008 11:48	PC024	275643	5824679	3m
2/21/2008 11:49	PC025	275646	5824688	1.8m
2/21/2008 11:56	PC026	275637	5824704	2m
2/21/2008 12:05	PC027	275594	5824707	5m
2/21/2008 12:06	PC028	275586	5824718	0.4m
2/21/2008 12:10	PC029	275578	5824709	3m

2/21/2008 12:11	PC030	275572	5824728	1m
2/21/2008 12:14	PC031	275561	5824730	2m
2/21/2008 12:15	PC032	275564	5824734	2m
2/21/2008 12:17	PC033	275564	5824736	2m
2/21/2008 12:18	PC034	275562	5824738	2m
2/21/2008 12:24	PC035	275541	5824745	1.6m
2/21/2008 12:26	PC036	275531	5824745	2.2m
2/21/2008 12:27	PC037	275526	5824743	2.3m
2/21/2008 12:28	PC038	275520	5824741	2.5m
2/21/2008 12:33	PC039	275434	5824744	2.2m
2/21/2008 12:38	PC040	275380	5824752	4m
2/21/2008 12:40	PC041	275370	5824767	3m
2/21/2008 12:42	PC042	275356	5824753	1.2m
2/21/2008 12:43	PC043	275357	5824757	2.8m
2/21/2008 12:44	PC044	275343	5824764	3m
2/21/2008 12:46	PC045	275357	5824737	2.5m
2/21/2008 12:47	PC046	275356	5824730	1.4m
2/21/2008 12:51	PC047	275356	5824733	1.8m
2/21/2008 12:53	PC048	275368	5824721	3.2m
2/21/2008 12:55	PC049	275374	5824720	2.7m
2/21/2008 12:56	PC050	275368	5824716	2m
2/21/2008 12:58	PC051	275383	5824746	3.5m
2/21/2008 13:01	PC052	275332	5824707	0.7m
2/21/2008 13:02	PC053	275328	5824714	3.5m
2/21/2008 13:04	PC054	275315	5824729	3.8m
2/21/2008 13:06	PC055	275343	5824685	2m
2/21/2008 13:12	PC056	275389	5824730	3.5m
2/21/2008 13:14	PC057	275382	5824710	2.5m
2/21/2008 13:16	PC058	275381	5824702	2.3m
2/21/2008 13:18	PC059	275377	5824700	2m
2/21/2008 13:20	PC060	275372	5824699	2.3m
2/21/2008 13:22	PC061	275352	5824692	2.2m
2/22/2008 12:18	PC062	276140	5824988	1.5m
2/22/2008 12:20	PC063	276117	5824976	1.2m
2/22/2008 12:22	PC064	276113	5824972	1.8m
2/22/2008 12:24	PC065	276103	5824969	1m
2/22/2008 12:26	PC066	276077	5824964	0.5m
2/22/2008 12:29	PC067	276152	5825021	2.6m
2/22/2008 12:32	PC068	276163	5825031	1.3m
2/22/2008 12:34	PC069	276174	5825038	5m
2/22/2008 12:36	PC070	276183	5825049	4m
2/22/2008 12:40	PC071	276258	5825120	1.2m
2/22/2008 12:43	PC072	276317	5825110	1.4m
2/22/2008 12:47	PC073	276325	5825110	1.8m
2/22/2008 12:51	PC074	276373	5825138	3m
2/22/2008 12:55	PC075	276519	5825105	1m
2/22/2008 12:57	PC076	276525	5825101	1m

2/22/2008 12:58	PC077	276530	5825105	4m
2/22/2008 13:00	PC078	276538	5825107	0.5m
2/22/2008 13:01	PC079	276542	5825109	0.7m
2/22/2008 13:03	PC080	276546	5825109	1.2m
2/22/2008 13:04	PC081	276552	5825110	1m
2/22/2008 13:05	PC082	276554	5825110	1.2m
2/22/2008 13:07	PC083	276555	5825111	1.2m
2/22/2008 13:09	PC084	276564	5825112	1.4m
2/22/2008 13:12	PC085	276576	5825114	1.4m
2/22/2008 13:16	PC086	276612	5825107	1.2m
2/22/2008 13:19	PC087	276654	5825114	1.2m
2/22/2008 13:20	PC088	276658	5825116	1m
2/22/2008 13:22	PC089	276663	5825116	2m
2/22/2008 13:23	PC090	276667	5825120	1.4m
2/22/2008 13:25	PC091	276675	5825123	1.1m
2/22/2008 13:27	PC092	276678	5825125	1.1m
2/22/2008 13:35	PC093	277092	5825213	3m
2/22/2008 13:45	PC094	277246	5825043	1.5m
2/22/2008 13:50	PC095	277281	5825036	2.5m
2/22/2008 13:54	PC096	277283	5825038	2m
2/22/2008 13:59	PC097	277328	5825059	2.7m
2/22/2008 14:02	PC098	277388	5825073	1m
2/22/2008 14:03	PC099	277392	5825071	2.2m
2/22/2008 14:05	PC100	277418	5825105	2.7m
2/22/2008 14:08	PC101	277483	5825158	2m
2/22/2008 14:10	PC102	277506	5825177	3.5m
2/22/2008 14:12	PC103	277512	5825181	3m
2/22/2008 14:13	PC104	277511	5825182	2.5m
2/22/2008 14:15	PC105	277534	5825201	6.5m
2/22/2008 14:17	PC106	277547	5825215	4.5m
2/22/2008 14:21	PC107	277563	5825218	0.8m
2/22/2008 14:22	PC108	277565	5825223	0.8m
2/22/2008 14:24	PC109	277583	5825226	1.6m
2/22/2008 14:29	PC110	277618	5825195	5.7m
2/22/2008 14:52	PC111	277484	5825136	0.6m
2/22/2008 14:57	PC112	277378	5824984	0.5m
2/22/2008 14:59	PC113	277380	5824985	0.8m
2/22/2008 15:00	PC114	277385	5824996	0.5m
2/22/2008 15:09	PC115	277111	5825197	3.5m
2/22/2008 15:11	PC116	277099	5825198	4.2m
2/22/2008 15:13	PC117	277087	5825195	5m
2/22/2008 15:20	PC118	276768	5825123	4, 5m
2/22/2008 15:22	PC119	276760	5825124	0.4m
2/22/2008 15:26	PC120	276618	5825089	5.5m
2/22/2008 15:29	PC121	276566	5825099	1.2m
2/22/2008 15:30	PC122	276563	5825096	1.3m
2/22/2008 15:31	PC123	276553	5825095	1m

2/22/2008 15:33	PC124	276547	5825096	1.2m
2/22/2008 15:38	PC125	276449	5825136	2.1m
2/22/2008 15:39	PC126	276441	5825146	2m
2/22/2008 15:43	PC127	276380	5825128	1m
2/22/2008 15:48	PC128	276261	5825103	4m
2/22/2008 15:51	PC129	276193	5825038	1m
2/22/2008 15:54	PC130	276177	5825027	5m
2/22/2008 15:58	PC131	276052	5824943	3m
2/28/2008 13:09	WC611	275370	5826101	3m
2/21/2008 8:49	WC500	275970	5825588	2.5m
2/21/2008 8:52	WC501	275937	5825627	3m
2/21/2008 8:54	WC502	275929	5825625	2m
2/21/2008 8:55	WC503	275926	5825643	4m
2/21/2008 9:03	WC504	275992	5825931	3m
2/21/2008 9:08	WC505	275881	5826040	1.8m
2/21/2008 9:10	WC506	275869	5826042	2m
2/21/2008 9:12	WC507	275859	5826043	3m
2/21/2008 9:14	WC508	275851	5826055	2m
2/21/2008 9:16	WC509	275828	5826056	3m
2/21/2008 9:17	WC510	275819	5826060	2.5m
2/21/2008 9:18	WC511	275792	5826057	1.5m
2/21/2008 9:20	WC512	275777	5826055	3m
2/21/2008 9:21	WC513	275771	5826068	1.8m
2/21/2008 9:23	WC515	275755	5826064	1m
2/21/2008 9:26	WC516	275735	5826054	2.5m
2/21/2008 9:28	WC517	275717	5826059	1.8m
2/21/2008 9:29	WC518	275720	5826054	1.8m
2/21/2008 9:31	WC519	275710	5826054	2m
2/21/2008 9:33	WC520	275697	5826045	2.5m
2/21/2008 9:34	WC521	275688	5826041	2m
2/21/2008 9:37	WC522	275637	5826045	5m
2/21/2008 9:38	WC523	275637	5826030	3m
2/21/2008 9:42	WC524	275739	5826025	.3m
2/21/2008 9:44	WC525	275759	5826035	1.5m
2/21/2008 9:45	WC526	275756	5826037	1.8m
2/21/2008 9:51	WC527	275782	5825986	2m
2/21/2008 9:58	WC528	275444	5825530	3m
2/21/2008 10:03	WC529	275312	5825717	2.5m
2/21/2008 10:04	WC530	275311	5825714	3.5m
2/21/2008 10:06	WC531	275307	5825712	1.8m
2/21/2008 10:07	WC532	275308	5825711	4m
2/21/2008 10:08	WC533	275322	5825727	1m
2/21/2008 10:10	WC534	275346	5825710	4m
2/21/2008 10:13	WC535	275341	5825712	5m
2/21/2008 10:15	WC536	275341	5825699	1.5m
2/21/2008 10:16	WC537	275351	5825700	3m
2/21/2008 10:17	WC538	275354	5825714	3m

2/21/2008 10:19	WC539	275375	5825687	4m
2/21/2008 10:21	WC540	275375	5825684	1.2m
2/21/2008 10:22	WC541	275373	5825685	3.5m
2/21/2008 10:25	WC542	275375	5825655	4m
2/21/2008 10:33	WC543	275413	5825657	2.5m
2/21/2008 10:35	WC544	275415	5825647	2m
2/21/2008 10:38	WC545	275414	5825636	2m
2/21/2008 10:42	WC546	275439	5825534	3m
2/21/2008 10:52	WC547	275397	5825623	1.8m
2/27/2008 9:19	WC548	276016	5825572	6m
2/27/2008 9:24	WC549	275937	5825647	7m
2/27/2008 9:27	WC550	275910	5825667	1.2m
2/27/2008 9:29	WC551	275908	5825671	1.2m
2/27/2008 9:32	WC552	275936	5825767	4m
2/27/2008 9:34	WC553	275944	5825771	3.8m
2/27/2008 9:38	WC554	275944	5825774	6m
2/27/2008 9:41	WC555	275993	5825793	2m
2/27/2008 9:44	WC556	276019	5825807	1m
2/27/2008 9:46	WC557	276037	5825818	1m
2/27/2008 9:48	WC558	276046	5825826	1m
2/27/2008 9:50	WC559	276065	5825834	1.4m
2/27/2008 11:07	WC560	276091	5825890	3m
2/27/2008 11:15	WC561	276075	5825919	3m
2/27/2008 11:21	WC562	276034	5825958	4.5m
2/27/2008 11:25	WC563	276025	5825963	5m
2/27/2008 11:31	WC564	275899	5826065	1.4m
2/27/2008 11:33	WC565	275892	5826074	.4m
2/27/2008 11:35	WC566	275856	5826094	.4m
2/27/2008 11:37	WC567	275845	5826086	.5m
2/27/2008 11:41	WC568	275745	5826079	2m
2/27/2008 11:43	WC569	275717	5826081	2m
2/27/2008 11:44	WC570	275707	5826069	3.5m
2/27/2008 11:48	WC571	275698	5826068	2m
2/27/2008 11:50	WC572	275686	5826065	1.2m
2/27/2008 11:52	WC573	275678	5826067	.9m
2/27/2008 11:53	WC574	275672	5826064	1.2m
2/27/2008 11:54	WC575	275658	5826063	1m
2/27/2008 11:55	WC576	275658	5826060	1.8m
2/27/2008 11:57	WC577	275656	5826055	1m
2/27/2008 11:59	WC578	275666	5826075	1.9m
2/27/2008 12:00	WC579	275672	5826083	2m
2/27/2008 12:02	WC580	275677	5826086	4m
2/27/2008 12:04	WC581	275681	5826083	2.3m
2/28/2008 11:08	WC582	276000	5825339	4.2m
2/28/2008 11:10	WC583	276012	5825337	6m
2/28/2008 11:12	WC584	276043	5825335	4m
2/28/2008 11:54	WC585	275494	5826120	2m

2/28/2008 11:56	WC586	275483	5826110	1.2m
2/28/2008 11:58	WC587	275469	5826092	2.2m
2/28/2008 12:00	WC588	275465	5826086	2.5m
2/28/2008 12:01	WC589	275462	5826081	2.4m
2/28/2008 12:02	WC590	275468	5826079	1.5m
2/28/2008 12:04	WC591	275457	5826077	4m
2/28/2008 12:05	WC592	275459	5826090	2.6m
2/28/2008 12:07	WC593	275464	5826098	4m
2/28/2008 12:09	WC594	275396	5826127	1m
2/28/2008 12:13	WC595	275390	5826128	.4m
2/28/2008 12:15	WC596	275359	5826159	5m
2/28/2008 12:23	WC597	275151	5826166	3m
2/28/2008 12:24	WC598	275148	5826171	4m
2/28/2008 12:26	WC599	275108	5826226	2.4m
2/28/2008 12:29	WC600	275083	5826239	5m
2/28/2008 12:31	WC601	275089	5826232	2m
2/28/2008 12:35	WC602	275093	5826220	3m
2/28/2008 12:44	WC603	275076	5826135	2m
2/28/2008 12:45	WC604	275074	5826138	2.4m
2/28/2008 12:47	WC605	275065	5826139	.4m
2/28/2008 12:49	WC606	275033	5826168	5m
2/28/2008 12:59	WC607	275270	5826118	5m
2/28/2008 13:01	WC608	275276	5826121	3m
2/28/2008 13:02	WC609	275278	5826120	5.7m
2/28/2008 13:04	WC610	275218	5826130	2.3m
2/28/2008 13:10	WC613	275379	5826107	4m
2/28/2008 13:12	WC614	275396	5826095	1.2m
2/28/2008 13:13	WC615	275398	5826090	1.3m
7/10/2007 16:12	WE328	278003	5825262	5m
7/10/2007 13:30	WE257	277325	5825231	4.5m
7/10/2007 13:33	WE258	277324	5825221	2m
7/10/2007 13:34	WE259	277329	5825221	2.4m
7/10/2007 13:35	WE260	277335	5825228	6m
7/10/2007 13:37	WE261	277343	5825223	9m
7/10/2007 13:44	WE262	277355	5825199	6m
7/10/2007 13:46	WE263	277365	5825201	8.5m
7/10/2007 13:48	WE264	277368	5825192	1.5m
7/10/2007 13:51	WE265	277421	5825192	7m
7/10/2007 13:53	WE266	277420	5825198	3.5m
7/10/2007 13:54	WE267	277427	5825186	4m
7/10/2007 14:04	WE268	277430	5825186	3m
7/10/2007 14:06	WE269	277453	5825182	1m
7/10/2007 14:08	WE270	277466	5825183	2m
7/10/2007 14:11	WE271	277470	5825195	5m
7/10/2007 14:13	WE272	277483	5825219	0.4m
7/10/2007 14:15	WE273	277485	5825220	2.5m
7/10/2007 14:18	WE274	277503	5825217	9m

7/10/2007 14:20	WE275	277511	5825224	5m
7/10/2007 14:23	WE276	277535	5825234	0.4m
7/10/2007 14:25	WE277	277527	5825243	2.5m
7/10/2007 14:26	WE278	277539	5825240	1.6m
7/10/2007 14:30	WE279	277561	5825242	2m
7/10/2007 14:31	WE280	277561	5825247	2m
7/10/2007 14:35	WE281	277580	5825237	1.2m
7/10/2007 14:37	WE282	277590	5825225	0.4m
7/10/2007 14:38	WE283	277606	5825232	1m
7/10/2007 14:39	WE284	277597	5825229	1m
7/10/2007 14:40	WE285	277602	5825225	0.6m
7/10/2007 14:41	WE286	277602	5825227	0.5m
7/10/2007 14:44	WE287	277600	5825208	2m
7/10/2007 14:46	WE288	277606	5825212	1.2m
7/10/2007 14:48	WE289	277606	5825217	2m
7/10/2007 14:49	WE290	277610	5825212	1.6m
7/10/2007 14:50	WE291	277615	5825213	0.5m
7/10/2007 14:53	WE292	277631	5825205	1.2m
7/10/2007 14:54	WE293	277632	5825209	2m
7/10/2007 14:56	WE294	277641	5825205	0.3m
7/10/2007 14:57	WE295	277650	5825203	2.5m
7/10/2007 14:59	WE296	277652	5825208	1.8m
7/10/2007 15:01	WE297	277647	5825199	4m
7/10/2007 15:03	WE298	277661	5825196	1.5m
7/10/2007 15:05	WE299	277688	5825181	3m
7/10/2007 15:08	WE300	277692	5825190	1m
7/10/2007 15:10	WE301	277699	5825192	2.5m
7/10/2007 15:12	WE302	277704	5825189	7m
7/10/2007 15:16	WE303	277733	5825200	8m
7/10/2007 15:17	WE304	277739	5825204	0.3m
7/10/2007 15:20	WE305	277746	5825204	1m
7/10/2007 15:23	WE306	277831	5825255	2m
7/10/2007 15:28	WE307	277840	5825256	1m
7/10/2007 15:30	WE308	277858	5825255	3m
7/10/2007 15:31	WE309	277863	5825256	1.2m
7/10/2007 15:33	WE310	277860	5825257	6m
7/10/2007 15:36	WE311	277870	5825257	5m
7/10/2007 15:37	WE312	277876	5825255	4m
7/10/2007 15:40	WE313	277896	5825271	1.2m
7/10/2007 15:42	WE314	277903	5825276	2m
7/10/2007 15:43	WE315	277902	5825281	4m
7/10/2007 15:44	WE316	277903	5825278	2.5m
7/10/2007 15:46	WE317	277902	5825276	3.5m
7/10/2007 15:47	WE318	277903	5825276	3.5m
7/10/2007 15:48	WE319	277906	5825273	9m
7/10/2007 15:51	WE320	277955	5825268	4m
7/10/2007 15:53	WE321	277956	5825271	3m

7/10/2007 16:02	WE322	277964	5825271	2m
7/10/2007 16:05	WE323	277967	5825270	5m
7/10/2007 16:07	WE324	277976	5825259	2m
7/10/2007 16:08	WE325	277973	5825258	3m
7/10/2007 16:10	WE326	277986	5825262	2.6m
7/10/2007 16:11	WE327	277994	5825266	2m
7/10/2007 16:13	WE329	277999	5825258	1.5m
7/10/2007 16:15	WE330	278006	5825267	4m
7/10/2007 16:18	WE331	277970	5825201	0.4m
7/10/2007 16:20	WE332	277959	5825200	4m
7/10/2007 16:22	WE333	277975	5825194	9m
7/10/2007 16:23	WE334	277961	5825189	8m
7/10/2007 16:25	WE335	277964	5825184	1.3m
7/10/2007 16:26	WE336	277957	5825181	3m
7/10/2007 16:28	WE337	277956	5825185	9m
7/10/2007 16:29	WE338	277947	5825204	6m
7/10/2007 16:32	WE339	277910	5825205	10m
7/31/2007 14:28	WE340	277865	5825221	5m
7/31/2007 14:30	WE341	277875	5825238	7m
7/31/2007 14:34	WE342	277911	5825228	5m
7/31/2007 14:36	WE343	277913	5825230	6m
7/31/2007 14:46	WE344	277886	5825237	1m
7/31/2007 14:48	WE345	277862	5825192	4m
7/31/2007 14:51	WE346	277866	5825189	5m
7/31/2007 14:52	WE347	277893	5825181	0.4m
7/31/2007 14:54	WE348	277922	5825177	0.5m
7/31/2007 14:56	WE349	277934	5825173	0.4m
7/31/2007 14:58	WE350	277932	5825194	0.5m
7/31/2007 15:00	WE351	277910	5825215	10m
7/31/2007 15:05	WE352	277911	5825241	5m
7/31/2007 15:07	WE353	277912	5825242	4.5m
7/31/2007 15:09	WE354	277927	5825253	8m
7/31/2007 15:12	WE355	277985	5825260	2m
7/31/2007 15:13	WE356	277984	5825263	1.5m
7/31/2007 15:15	WE357	277996	5825259	4m
7/31/2007 15:16	WE358	277998	5825259	2m
7/31/2007 15:18	WE359	278000	5825262	4m
7/31/2007 15:22	WE360	278002	5825189	2.5m
7/31/2007 15:25	WE361	277984	5825148	9m
7/31/2007 15:30	WE362	278078	5825200	11m
7/31/2007 15:32	WE363	278069	5825186	4.6m
7/31/2007 15:33	WE364	278073	5825181	4m
7/31/2007 15:35	WE365	278078	5825178	5m
7/31/2007 15:37	WE366	278089	5825175	4.2m
7/31/2007 15:41	WE367	278102	5825173	5m
7/31/2007 15:43	WE368	278142	5825182	7m
7/31/2007 15:44	WE369	278147	5825176	5m

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7/31/2007 15:53	WE371	278017	5825263	2.5m
7/31/2007 15:55	WE372	278025	5825258	1.5m
7/31/2007 15:57	WE373	278039	5825271	2m
7/31/2007 16:00	WE374	278055	5825276	1.5m
7/31/2007 16:01	WE375	278046	5825277	2m
7/31/2007 16:02	WE376	278045	5825275	3m
7/31/2007 16:04	WE377	278069	5825268	2m
7/31/2007 16:06	WE378	278062	5825267	2m
7/31/2007 16:07	WE379	278071	5825269	4m
7/31/2007 16:09	WE380	278070	5825276	2m
7/31/2007 16:13	WE381	278083	5825276	3m
7/31/2007 16:14	WE382	278092	5825268	0.4m
7/31/2007 16:16	WE383	278100	5825264	3m
7/31/2007 16:18	WE384	278098	5825273	0.3m
7/31/2007 16:20	WE385	278136	5825265	1.8m
7/31/2007 16:22	WE386	278148	5825266	1.5m
1/22/2008 10:59	WE387	278085	5825273	2m
1/22/2008 11:23	WE388	278106	5825270	2m
1/22/2008 11:25	WE389	278118	5825272	0.3m
1/22/2008 11:28	WE390	278140	5825268	2m
1/22/2008 11:31	WE391	278147	5825266	1.3m
1/22/2008 11:33	WE392	278155	5825266	0.9m
1/22/2008 11:35	WE393	278162	5825270	0.8m
1/22/2008 11:36	WE394	278166	5825269	0.5m
1/22/2008 11:38	WE395	278147	5825268	1.8m
1/22/2008 11:39	WE396	278150	5825268	0.4m
1/22/2008 11:42	WE397	278160	5825267	1.7m
1/22/2008 11:44	WE398	278167	5825268	1m
1/22/2008 11:46	WE399	278171	5825267	1.2m
1/22/2008 11:48	WE400	278171	5825268	0.7m
1/22/2008 11:49	WE401	278168	5825271	0.6m
1/22/2008 11:55	WE403	278177	5825260	?
1/22/2008 11:57	WE404	278177	5825261	1m
1/22/2008 12:00	WE405	278179	5825261	2m
1/22/2008 12:01	WE406	278180	5825258	1.1m
1/22/2008 12:05	WE407	278200	5825250	0.4m
1/22/2008 12:08	WE408	278219	5825232	0.4m
1/22/2008 12:13	WE409	278249	5825215	0.8m
1/22/2008 12:17	WE410	278294	5825165	0.6m
1/22/2008 12:22	WE411	278389	5825054	1m
1/22/2008 12:30	WE412	278474	5824977	3.5m
1/22/2008 12:32	WE413	278470	5824982	2m
1/22/2008 12:34	WE414	278440	5825046	2m
1/22/2008 12:37	WE415	278433	5825052	1.6m
1/22/2008 12:42	WE416	278532	5825039	2m
1/22/2008 12:53	WE417	278517	5824940	2.5m

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1/22/2008 13:01	WE419	278503	5824827	1m
1/22/2008 13:04	WE420	278518	5824760	4.5m
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1/24/2008 14:14	WE422	278284	5825235	2.2m
1/24/2008 14:18	WE423	278369	5825150	2m
1/24/2008 14:20	WE424	278381	5825139	2m
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20070523	WE002	277597	5825605	6m
20070523	WE003	277578	5825594	8m
20070523	WE004	277577	5825571	9m
20070523	WE005	277607	5825580	9m
20070523	WE006	277591	5825557	4m
20070523	WE007	277591	5825555	3.5m
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20070523	WE009	277600	5825428	6.5m
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20070523	WE013	277584	5825448	10m
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20070523	WE016	277559	5825426	9.5m
20070523	WE017	277527	5825402	11m
20070523	WE018	277535	5825389	9m
20070523	WE019	277570	5825401	8m
20070523	WE020	277582	5825394	4m
20070523	WE021	277587	5825378	8m
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20070523	WE026	277561	5825323	6m
20070523	WE027	277579	5825275	7m
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20070523	WE030	277506	5825286	5m
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20070523	WE033	277471	5825264	6m
20070523	WE034	277480	5825253	7m
20070523	WE035	277458	5825243	6.5m
20070523	WE036	277455	5825256	6m
20070523	WE037	277458	5825262	9m
20070523	WE038	277447	5825258	6m
20070523	WE039	277446	5825254	2m
20070523	WE040	277457	5825224	7m

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20070725	WE048	277599	5825260	1.8m
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20070725	WE054	277632	5825262	7m
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20070725	WE058	277663	5825240	9m
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20070525	WE067	277735	5825224	4m
20070525	WE068	277737	5825229	?
20070525	WE069	277739	5825241	4m
20070525	WE070	277734	5825251	3m
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20070525	WE080	276848	5825726	12m
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20070702	WE167	276977	5825347	1m
20070702	WE168	276987	5825342	0.6m
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20070703	WE247	277171	5825311	0.5m
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20070703	WE249	277210	5825313	10m
20070703	WE250	277246	5825284	8.5m
20070703	WE251	277260	5825286	4m
20070703	WE252	277259	5825289	7m
20070703	WE253	277282	5825290	3m
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20070703	WE256	277326	5825231	9m
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20070430	LE030	277958	5825620	4m
20070430	LE031	277967	5825617	3.5m
20070430	LE032	277957	5825604	5m
20070430	LE033	277959	5825560	5m

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20070430	LE035	277956	5825531	6m
20070430	LE036	277951	5825513	.3m
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20070430	LE042	277958	5825352	2m
20070430	LE043	277959	5825353	2.2m
20070430	LE044	277963	5825337	4m
20070430	LE045	277970	5825306	3m
20070430	LE046	277982	5825319	1.6m
20070430	LE047	277983	5825325	2.5m
20070430	LE048	278103	5825312	3m
20070430	LE049	278106	5825318	2.5m
20070430	LE050	278000	5825129	2m
20070430	LE051	278121	5825312	3m
20070430	LE052	278129	5825310	5m
20070430	LE053	278135	5825307	2m
20070430	LE054	278136	5825310	6m
20070430	LE055	278156	5825302	3m
20070430	LE056	278161	5825303	2m
20070430	LE057	278173	5825297	3m
20070430	LE058	278175	5825300	.4m
20070430	LE059	278182	5825303	1.8m
20070430	LE060	278186	5825295	4m
20070430	LE061	278196	5825295	5m
20070430	LE062	278223	5825280	2m
20070508	LE063	277688	5825941	1m
20070508	LE064	277696	5825943	1m
20070508	LE065	277684	5825938	2m
20070508	LE066	277700	5825942	1.4m
20070508	LE067	277711	5825941	.3m
20070508	LE068	277715	5825959	3.6m
20070508	LE069	277722	5825959	2m
20070508	LE070	277731	5825960	4m
20070508	LE071	277736	5825960	2m
20070508	LE072	277729	5825951	1m
20070508	LE073	277729	5825942	.3m
20070508	LE074	277752	5825939	2m
20070508	LE075	277757	5825938	2.5m
20070508	LE076	277752	5825939	3m
20070508	LE077	277750	5825947	.4m
20070508	LE078	277769	5825918	4m
20070508	LE079	277767	5825917	8m
20070508	LE080	277774	5825905	1.8m

20070508	LE081	277781	5825916	1m
20070508	LE082	277790	5825929	1.5m
20070508	LE083	277799	5825916	.3m
20070508	LE084	277808	5825900	.9m
20070508	LE085	277814	5825902	1m
20070508	LE086	277819	5825897	.6m
20070508	LE087	277829	5825887	1.2m
20070508	LE088	277835	5825882	.8m
20070508	LE089	277839	5825879	.7m
20070508	LE090	277840	5825880	.8m
20070508	LE091	277821	5825868	1m
20070508	LE092	277837	5825839	3m
20070508	LE093	277834	5825845	4m
20070508	LE094	277843	5825857	.5m
20070508	LE095	277847	5825839	.6m
20070508	LE096	277851	5825841	.5m
20070508	LE097	277859	5825856	1m
20070508	LE098	277863	5825829	1m
20070508	LE099	277856	5825822	1.2m
20070508	LE100	277860	5825820	.8m
20070508	LE101	277842	5825769	9m
20070508	LE102	277877	5825775	1.5m
20070508	LE103	277876	5825775	1.2m
20070508	LE104	277883	5825755	.8m
20070508	LE105	277876	5825750	1m
20070508	LE106	277879	5825749	.4m
20070508	LE107	277876	5825752	1.5m
20070508	LE108	277877	5825736	.4m
20070508	LE109	277877	5825715	.8m
20070508	LE110	277876	5825708	.5m
20070508	LE111	277874	5825700	1.2m
20070508	LE112	277877	5825690	2m
20070508	LE113	277880	5825690	2.7m
20070508	LE114	277879	5825687	3m
20070508	LE115	277879	5825682	3.5m
20070508	LE116	277886	5825671	1.5m
20070508	LE117	277883	5825673	9m
20070508	LE118	277895	5825641	9m
20070508	LE119	277915	5825622	3m
20070508	LE120	277911	5825625	1m
20070508	LE121	277910	5825620	1.1m
20070508	LE122	277908	5825614	1.2m
20070508	LE123	277917	5825614	.8m
20070508	LE124	277916	5825609	4m
20070508	LE125	277914	5825612	1m
20070508	LE126	277926	5825592	1.2m
20070508	LE127	277924	5825592	1m

20070508	LE128	277925	5825593	1.5m
20070508	LE129	277913	5825586	.4m
20070508	LE130	277917	5825582	.7m
20070508	LE131	277920	5825577	0.6m
20070508	LE132	277930	5825543	5m
20070508	LE133	277923	5825538	1.8m
20070508	LE134	277922	5825522	4m
20070508	LE135	277914	5825519	1.5m
20070508	LE136	277908	5825505	2.4m
20070508	LE137	277912	5825508	2m
20070508	LE138	277912	5825497	3m
20070508	LE139	277905	5825493	7m
20070508	LE140	277913	5825476	6m
20070508	LE141	277915	5825475	5m
20070508	LE142	277915	5825460	5m
20070508	LE143	277907	5825456	5m
20070508	LE144	277914	5825439	5m
20070508	LE145	277908	5825438	6m
20070508	LE146	277900	5825425	3m
20070508	LE147	277907	5825424	4m
20070508	LE148	277916	5825411	4m
20070508	LE149	277866	5825413	12m
20070508	LE150	277863	5825406	4m
20070508	LE151	277911	5825410	.4m
20070508	LE152	277897	5825390	7m
20070510	LE153	278097	5826031	7m
20070510	LE154	278091	5826031	7m
20070510	LE155	278097	5826027	5m
20070510	LE156	278131	5826010	1.2m
20070510	LE157	278137	5826007	4m
20070510	LE158	278136	5826008	5m
20070510	LE159	278167	5825980	6m
20070510	LE160	278166	5825978	5m
20070510	LE161	278068	5825735	5m
20070510	LE162	278187	5825924	3m
20070510	LE163	277756	5825978	3.5m
20070510	LE164	277757	5825982	1m
20070510	LE165	277749	5825988	1m
20070510	LE166	277747	5825985	3m
20070321	LN047	275025	5828779	1m
20070425	M017	273617	5825828	8m
20070425	M018	273611	5826119	3.5m
20070425	M019	273608	5826139	6.5m
20070425	M020	273628	5826177	1.2m
20070425	M021	273607	5826173	1m
20070425	M022	273583	5826169	1m
20070515	M023	274087	5825851	6m

20070515	M024	274094	5825879	3m
20070515	M025	274043	5825864	2m
20070515	M026	274192	5825894	3m
20070515	M027	274189	5825895	3m
20070327	WC011	274371	5826390	3m
20080221	WC514	275555	5825900	.4m
20080228	WC612	275358	5826110	2.8m
20080121	WE402	278175	5825258	0.9m

