

## Goulburn Broken Catchment Report Card 2004-05

### Contents\*

\*click on cells under "resource condition target" to be hyperlinked to page

National Framework Matter for Target	Indicator Heading	Goulburn Broken Resource Condition Target
<b>1 Land Salinity</b>	Area of land threatened by shallow or rising water tables	<a href="#">1.1 Save 1,500 ha of foothills and river valleys of highland areas from salinisation by 2050.</a> <a href="#">1.2 Manage 30,000 ha of salinised land in the riverine plain of the Dryland by 2100.</a> <a href="#">1.3 Manage 120,000 ha of land with high water tables in the riverine plain of the Dryland by 2100.</a> <a href="#">1.4 Protect 286,000 ha of land from surface water accessions in the SIR by 2020.</a> ALTERNATIVE PROPOSED - SEE CONCEPT GRAPH
<b>8 Surface Water Salinity in freshwater aquatic environments</b>	In-stream salinity	<a href="#">8.1 Reduce increases to salinity levels of the River Murray at Morgan from the SIR from 43 to 17 ECs by 2020. MODIFIED - TO BE CONFIRMED</a> <a href="#">8.2 Salinity concentrations of River Murray resulting from groundwater disposal to be kept within acceptable limits by only disposing when flows are sufficiently high. THIS IS A COMPLIANCE TARGET - COULD GO TO THE NEXT LEVEL DOWN AND NOT BE AN RCT</a> <a href="#">8.3 Maintain increases to salinity levels of the River Murray at Morgan from the Goulburn Broken Dryland at or below 1.3 ECs by 2050.</a>
<b>2 Soil Condition</b>	Soil Condition	No targets set.
<b>3 Native Vegetation Communities Integrity</b>	Native vegetation extent and distribution	<a href="#">3.1 Maintain extent of all native vegetation types at 1999 levels in keeping with the goal of 'net gain' listed in Victoria's Biodiversity Strategy 1997.</a> <a href="#">3.2 Increase the cover of all endangered and applicable vulnerable EVCs to at least 15% of their pre-European vegetation cover by 2030.</a>
	Native vegetation condition	<a href="#">3.3 Improve the quality of 90% of existing (2000) native vegetation by 10% by 2030.</a>
<b>9 Significant native species and ecological communities</b>	Selected significant native species & ecological communities extent and conservation status	<a href="#">9.1 Increase 2002 conservation status of 80% threatened flora and 60% of threatened fauna by 2030.</a>
<b>4 Inland Aquatic Ecosystems Integrity (Rivers and other Wetlands)</b>	River condition	<a href="#">4.1 Maintain condition of all high value rivers.</a> <a href="#">4.2 Maintain condition of all ecologically healthy rivers.</a> <a href="#">4.3 Improve condition of all near ecologically healthy rivers.</a> <a href="#">4.4 Improve condition of 20% of streams in moderate, poor or very poor condition.</a>
	Wetland ecosystem extent and distribution	<a href="#">4.5 Maintain extent of all wetland types at 2003 levels where the extent (area and number) has declined since European settlement.</a>
	Wetland ecosystem condition	<a href="#">4.6 Improve condition of 70% of wetlands by 2030, using 2003 as the benchmark for condition.</a>
<b>6 Nutrients in Aquatic Environments</b>	Nitrogen in aquatic environments	Not appropriate to set: watching brief only: Carl Walters is going to send.
	Phosphorus in aquatic environments	<a href="#">6.1 Reduce potential phosphorus loads by 65% by 2016 by reducing phosphorus loads from:</a> <a href="#">6.1.1 irrigation drains by 50%</a> <a href="#">6.1.2 dryland and diffuse sources by 20%</a> <a href="#">6.1.3 wastewater management facilities by 80%</a> <a href="#">6.1.4 urban stormwater</a> <a href="#">6.1.5 intensive agricultural industries and local water quality issues</a>
<b>7 Turbidity/ suspended particulate matter in aquatic environments</b>	Turbidity/suspended solids	Monitoring only (see data - hopefully). (No target set.)
<b>10 Ecologically significant invasive species</b>	Selected ecologically significant vertebrate invasive species extent and impact	<a href="#">10.1 Reduced impact of foxes and wild dogs on livestock industries and native fauna.</a> <a href="#">10.2 Increase area declared "rabbit free" by 100% by when?</a>
	Selected ecologically significant invasive vegetation species extent and impact	<a href="#">10.3 Contain or where possible, eradicate, 100% of known satellite infestations of Regional Priority Weeds.</a> <a href="#">10.4 Contain or where possible, eradicate, 95% of Regional Priority Weeds in priority project areas.</a> <a href="#">10.5 Contain or where possible, eradicate, 100% of New and Emerging Weeds.</a> <a href="#">10.6 Eradicate 100% of State Prohibited Weeds infestations.</a>
<b>Other matters not included in National Framework</b>		
Climate change		To be determined.
Floodplain		<a href="#">F.1 Protect built environment (infrastructure and crops) from flooding.</a>
Water quality		<a href="#">F.2 Improve natural assets (ecosystems) through more natural flooding patterns.</a>
		To be determined.

## Goulburn Broken Catchment Report Card 2004-05

### Contents\*

\*click on cells under "resource condition target" to be hyperlinked to page

National Framework Matter for Target	Indicator Heading	Goulburn Broken Resource Condition Target
<b>1 Land Salinity</b>	Area of land threatened by shallow or rising water tables	<a href="#">1.1 Save 1,500 ha of foothills and river valleys of highland areas from salinisation by 2050.</a> <a href="#">1.2 Manage 30,000 ha of salinised land in the riverine plain of the Dryland by 2100.</a> <a href="#">1.3 Manage 120,000 ha of land with high water tables in the riverine plain of the Dryland by 2100.</a> <a href="#">1.4 Protect 286,000 ha of land from surface water accessions in the SIR by 2020.</a> ALTERNATIVE PROPOSED - SEE CONCEPT GRAPH
<b>8 Surface Water Salinity in freshwater aquatic environments</b>	In-stream salinity	<a href="#">8.1 Reduce increases to salinity levels of the River Murray at Morgan from the SIR from 43 to 17 ECs by 2020. MODIFIED - TO BE CONFIRMED</a> <a href="#">8.2 Salinity concentrations of River Murray resulting from groundwater disposal to be kept within acceptable limits by only disposing when flows are sufficiently high. THIS IS A COMPLIANCE TARGET - COULD GO TO THE NEXT LEVEL DOWN AND NOT BE AN RCT</a> <a href="#">8.3 Maintain increases to salinity levels of the River Murray at Morgan from the Goulburn Broken Dryland at or below 1.3 ECs by 2050.</a>
<b>2 Soil Condition</b>	Soil Condition	No targets set.
<b>3 Native Vegetation Communities Integrity</b>	Native vegetation extent and distribution	<a href="#">3.1 Maintain extent of all native vegetation types at 1999 levels in keeping with the goal of 'net gain' listed in Victoria's Biodiversity Strategy 1997.</a> <a href="#">3.2 Increase the cover of all endangered and applicable vulnerable EVCs to at least 15% of their pre-European vegetation cover by 2030.</a>
	Native vegetation condition	<a href="#">3.3 Improve the quality of 90% of existing (2000) native vegetation by 10% by 2030.</a>
<b>9 Significant native species and ecological communities</b>	Selected significant native species & ecological communities extent and conservation status	<a href="#">9.1 Increase 2002 conservation status of 80% threatened flora and 60% of threatened fauna by 2030.</a>
<b>4 Inland Aquatic Ecosystems Integrity (Rivers and other Wetlands)</b>	River condition	<a href="#">4.1 Maintain condition of all high value rivers.</a> <a href="#">4.2 Maintain condition of all ecologically healthy rivers.</a> <a href="#">4.3 Improve condition of all near ecologically healthy rivers.</a> <a href="#">4.4 Improve condition of 20% of streams in moderate, poor or very poor condition.</a>
	Wetland ecosystem extent and distribution	<a href="#">4.5 Maintain extent of all wetland types at 2003 levels where the extent (area and number) has declined since European settlement.</a>
	Wetland ecosystem condition	<a href="#">4.6 Improve condition of 70% of wetlands by 2030, using 2003 as the benchmark for condition.</a>
<b>6 Nutrients in Aquatic Environments</b>	Nitrogen in aquatic environments	Not appropriate to set: watching brief only: Carl Walters is going to send.
	Phosphorus in aquatic environments	<a href="#">6.1 Reduce potential phosphorus loads by 65% by 2016 by reducing phosphorus loads from:</a> <a href="#">6.1.1 irrigation drains by 50%</a> <a href="#">6.1.2 dryland and diffuse sources by 20%</a> <a href="#">6.1.3 wastewater management facilities by 80%</a> <a href="#">6.1.4 urban stormwater</a> <a href="#">6.1.5 intensive agricultural industries and local water quality issues</a>
<b>7 Turbidity/ suspended particulate matter in aquatic environments</b>	Turbidity/suspended solids	Monitoring only (see data - hopefully). (No target set.)
<b>10 Ecologically significant invasive species</b>	Selected ecologically significant vertebrate invasive species extent and impact	<a href="#">10.1 Reduced impact of foxes and wild dogs on livestock industries and native fauna.</a> <a href="#">10.2 Increase area declared "rabbit free" by 100% by when?</a>
	Selected ecologically significant invasive vegetation species extent and impact	<a href="#">10.3 Contain or where possible, eradicate, 100% of known satellite infestations of Regional Priority Weeds.</a> <a href="#">10.4 Contain or where possible, eradicate, 95% of Regional Priority Weeds in priority project areas.</a> <a href="#">10.5 Contain or where possible, eradicate, 100% of New and Emerging Weeds.</a> <a href="#">10.6 Eradicate 100% of State Prohibited Weeds infestations.</a>
<b>Other matters not included in National Framework</b>		
Climate change		To be determined.
Floodplain		<a href="#">F.1 Protect built environment (infrastructure and crops) from flooding.</a>
Water quality		<a href="#">F.2 Improve natural assets (ecosystems) through more natural flooding patterns.</a>
		To be determined.

Action plan for improving data used to directly measure resource condition

National Framework Matter for Target	Indicator Heading	Goulburn Broken Resource Condition Target	Information needed to measure resource condition	Dataset name(s)	Certainty in using data for			Data sheet number	RCT that dataset contributes to	Priority to improve data (L-VH)	Action(s) needed to improve dataset	When should improvements be undertaken	Costs to improve dataset	Costs of maintaining dataset	Monitoring status/comments	Target manager
					broad visioning (20+ years)	updating sub-strategies including RCTs (5 years)	action planning (annual)									
1 Land Salinity	Area of land threatened by shallow or rising water tables	1.1 Save 1,500 ha of foothills and river valleys of highland areas from salinisation by 2050.	Extent and locations of foothills and river valleys of highland areas expected to salinise without intervention.											To be updated when Cotter returns from leave. Is someone monitoring this as part of a statewide process?	Cotter	
			Extent and locations of foothills and river valleys of highland areas saved from salinisation.												Quantitative assumptions have been developed to indicate progress (contribution of funded works eg planting of perennial vegetation). To be updated when Cotter returns from leave.	Cotter
		1.2 Manage 30,000 ha of salinised land in the riverine plain of the Dryland by 2100.	Extent of salinised riverine plain.												To be updated when Cotter returns from leave. Is someone monitoring this as part of a statewide process?	Cotter
			Criteria to define "managed".												Quantitative assumptions have been developed to indicate progress (contribution of funded works eg planting of perennial vegetation). To be updated when Cotter returns from leave.	Cotter
		1.3 Manage 120,000 ha of land with high water tables in the riverine plain of the Dryland by 2100.	Extent of high water tables in the riverine plain.												To be updated when Cotter returns from leave. The aerial geophysics project was not helpful. Is someone monitoring this as part of a statewide process?	Cotter
1.4 Protect 286,000 ha of land from surface water accessions in the SIR by 2020.	Extent of land expected to be unprotected without intervention.													This "do nothing" scenario was included in Draft Shepparton Irrigation Region Land and Water Salinity Management Plan 1990.	Sampson	
	Extent of land with surface drainage?													To be updated when Sampson returns from leave.	Sampson	
	Extent of land with sub-surface drainage?													To be updated when Sampson returns from leave.	Sampson	
	Extent of land with groundwater pump protection?													To be updated when Sampson returns from leave.	Sampson	
8 Surface Water Salinity in freshwater aquatic environments	In-stream salinity	8.1 Maintain increases to salinity levels of the River Murray at Morgan from the SIR at or below 17.0 ECs by 2020 .	Salinity levels of the River Murray at Morgan from the SIR without any intervention.											This "do nothing" scenario was included in Draft Shepparton Irrigation Region Land and Water Salinity Management Plan 1990.	Sampson	
			Salinity loads from all sources in the SIR.												Five drains?? Have been monitored since 1996?? And the relationship between these and the total load has been tested several times?? Need to include pumping disposal target too?? (within acceptable limits) Quantitative assumptions have been developed to indicate progress eg reuse systems to reduce river salinity levels. To be updated when Sampson returns from leave.	Sampson
			Flows in River Murray												Flow taken to be average over 25 years 1974-1999??	Sampson
		8.2 Maintain increases to salinity levels of the River Murray at Morgan from the Goulburn Broken Dryland at or below 1.3 ECs by 2050.	Salinity levels of the River Murray at Morgan from the Dryland without any intervention.												This "do nothing" scenario was included in Draft Salinity Management Plan 1990??	Cotter
			Salinity loads at "end of valley" (Casey's Weir on Broken River and Goulburn Weir on Goulburn River)												Measured how often and since when. To be updated when Cotter returns from leave.	Cotter
2 Soil Condition	Soil Condition	No targets set.	Extent of land affected by acidity?											See previous	Cotter	
			Extent of erosion?												Private industry? Fertiliser company? To be updated when Cotter returns from leave.	Cotter?
4 Native Vegetation Communities' Integrity	Native vegetation extent and distribution	4.1 Maintain extent of all native vegetation types at 1999 levels in keeping with the goal of 'net gain' listed in Victoria's Biodiversity Strategy 1997.	Native vegetation extent	Treedens/tre e25	High	Low - could be improved (statewide responsibility)	Low - detection of vegetation change not practical on annual basis	DS1	3.1, 3.2, 3.3	High - should be able to get indication of trend changes every 5 - 10 years	0	0	0	0	Statewide satellite imagery updating information every few years, although methodology changes (mainly technological improvements) make comparisons between years difficult. Incentives funded through CMA being used as indicator of progress using assumptions. Good processes in place (Catchment Activity Management System (CAMS)) to collect data on actions that have been funded. Audit/survey? being undertaken of landholders to identify proportion of "voluntary" contributions being undertaken and to identify types of works and types of vegetation. Native vegetation removal figures not yet available: working on this as part of statewide process?? DSE (David Parkes and James Todd) are developing the "Netgain accounting model" which will indicate the progress towards Netgain interms of both extent and quality of vegetation - David Parkes and James Todd. What datasets does this require?	Brunt
			Extent of endangered and applicable vulnerable EVCs.												As per previous. An estimate of progress has been made using coarse assumptions of: types of works, types of vegetation and extent of voluntary uptake.	Brunt
	Native vegetation condition	4.3 Improve the quality of 90% of existing (2003) native vegetation by 10% by 2030.	Native vegetation extent												See previous.	Brunt
Condition of native vegetation.														Methodology to estimate condition has been developed (used extensively in NC CMA). How is this being taken up in CB? Is it cost-effective? Assumptions have been used to indicate progress, especially for private land component (how much each type of work eg fencing contributes to outcome).	Brunt	

National Framework Matter for Target	Indicator Heading	Goulburn Broken Resource Condition Target	Information needed to measure resource condition	Dataset name(s)	Certainty in using data for			Data sheet number	RCT that dataset contributes to	Priority to improve data (L-VH)	Action(s) needed to improve dataset	When should improvements be undertaken	Costs to improve dataset	Costs of maintaining dataset	Monitoring status/comments	Target manager
					broad visioning (20+ years)	updating sub-strategies including RCTs (5 years)	action planning (annual)									
9 Significant native species and ecological communities	Selected significant native species & ecological communities extent and conservation status	9.1 Increase 2002 conservation status of 80% threatened flora and 60% of threatened fauna by 2030.	Target expected to be radically altered during 2006, as part of statewide process.											Who would know.	Brunt	
4 Inland Aquatic Ecosystems Integrity (Rivers and other Wetlands)	River condition	4.1 Maintain condition of all high value rivers.	Criteria for defining "high value river".											Defined in Victorian River Health Strategy (VRHS) and GB Regional River Health Strategy 2005 (RRHS).	Tennant	
			Extent of high value rivers.											Recorded in GB RRHS and 5 year reviews of RIVERS database	Tennant	
			Condition of high value rivers.											Index of Stream Condition (ISC) determined every 5 years along high value rivers.	Tennant	
		4.2 Maintain condition of all ecologically healthy rivers.	Criteria for defining "ecologically healthy river".												As per High Value Rivers.	Tennant
			Extent of ecologically healthy rivers.												As per High Value Rivers.	Tennant
			Condition of high value rivers.												As per High Value Rivers.	Tennant
		4.3 Improve condition of all near ecologically healthy rivers.	Criteria for defining "near ecologically healthy river".												As per High Value Rivers.	Tennant
			Extent of near ecologically healthy rivers.												As per High Value Rivers.	Tennant
			Condition of near ecologically healthy rivers.												As per High Value Rivers.	Tennant
		4.4 Improve condition of 20% of streams in moderate, poor or very poor condition.	Criteria for defining "moderate, poor or very poor condition stream".												As per High Value Rivers.	Tennant
Extent of moderate, poor and very poor streams.													As per High Value Rivers.	Tennant		
Condition of moderate, poor and very poor streams.													As per High Value Rivers.	Tennant		
Wetland ecosystem extent and distribution	4.5 Maintain extent of all wetland types at 2003 levels where the extent (area and number) has declined since European settlement.	Wetland extent.											The most current data available is contained in the DSE WETLAND_1994 digital mapping layer. The layer was compiled about 1975 -1994 and only includes wetlands greater than 1 ha. The need for an updated statewide wetland spatial layer and who should be responsible for producing one (state or individual CMAs) were discussed in late 2005 at a statewide Wetland CMA forum. (Both issues yet to be resolved.)	Casanella		
Wetland ecosystem condition	4.6 Improve condition of 70% of wetlands by 2030, using 2003 as the benchmark for condition.	Wetland extent. Wetland condition.											See previous. Index of Wetland Condition (IWC) being trialled across Victoria early 2006 to enable benchmarking. (The anticipated benchmarking in 2003 did not happen.) This might lead to a need to revise resource condition target. Methodology for monitoring yet to be determined.	Casanella Casanella		
6 Nutrients in Aquatic Environments	Nitrogen in aquatic environments	Not appropriate to set: watching brief only: Carl Walters is going to send.	Total Kjeldahl?? nitrogen levels in rivers.											Extensive monitoring. Who and how often?	Botting	
	Phosphorus in aquatic environments	6.1 Reduce potential phosphorus loads by 65% by 2016 by reducing phosphorus loads from:	Potential total phosphorus loads at end of valley.											Potential loads could really only be determined through modelling, which was done c. 1995. Parts of the model have been improved significantly; perhaps a re-run of the modelling could be done in the next few years.	Botting	
			Total phosphorus loads at end of valley.											Total P measured weekly at Site 405232 (Goulburn River at McCoy's Bridge). Trend analysis undertaken 5 yearly (including 2006).	Botting	
		6.1.1 irrigation drains by 50%	Total phosphorus loads in specific drains that enable a total load (from all drains) to be calculated.											Five?? Drains have been monitored since 1996?? To determine progress. Quantitative assumptions have been developed to indicate progress (contribution of funded works eg construction and use of reuse dams to reduce loads) and these have been recorded since 1996? To be updated when Sampson returns from leave.	Sampson	
		6.1.2 dryland and diffuse sources by 20%	Total phosphorus loads from dryland and diffuse sources.											Many and varied scales of action make it difficult to ascertain progress from assumptions. P reductions from riparian rehabilitation are reasonable. Modelling (SEDNET) used to determine P and sediment loads from stream banks. (Check with Christine Glassford re CAMS recording of appropriate information.)	Botting	
		6.1.3 wastewater management facilities by 80%	Total phosphorus loads from wastewater											Main wastewater management facilities in Catchment are now off-line (ie no longer discharging directly to water course). Impacts from waste water irrigation and overflows not known and difficult to measure. 2002 Water Quality Strategy version notes that 2002 load of 10t/year is down from 50 t/year, meeting target reduction of 80%. Monitoring managed by Goulburn Valley Water.	Botting	
	6.1.4 urban stormwater	Total phosphorus loads from urban stormwater											Regional River Health Strategy target reduction in P exports of 9.84t/yr (NB target not stated in Water Quality Strategy). Progress can be measured from estimates of P reduction from individual actions using MUSIC model (Note that there are a number of assumptions associated with the model) or by monitoring of urban areas (not done extensively). Not appropriate to extend across Catchment.	Botting		

National Framework Matter for Target	Indicator Heading	Goulburn Broken Resource Condition Target	Information needed to measure resource condition	Dataset name(s)	Certainty in using data for				Data sheet number	RCT that dataset contributes to	Priority to improve data (L-VH)	Action(s) needed to improve dataset	When should improvements be undertaken	Costs to improve dataset	Costs of maintaining dataset	Monitoring status/comments	Target manager
					broad visioning (20+ years)	updating sub-strategies including RCTs (5 years)	action planning (annual)										
		6.1.5 intensive agricultural industries and local water quality issues	Total phosphorus loads from agricultural industries and local water quality issues.												Virtually impossible to measure. Includes piggeries, fish farms, septic tanks, leaching from tips. Detailed information on location and operation of individual enterprises/nutrient sources would be required to measure actual impacts. Modelling has been used previously (1995) but requires many assumptions (therefore greater chance of error) due to variability and scale of impacts	Botting	
7 Turbidity/suspended particulate matter in aquatic environments	Turbidity/suspended solids	Monitoring only (see data - hopefully). (No target set.)	Criteria to determine which sites along rivers and streams are representative.												Difficult to select "representative" sites due to the influence of flow, erosion, deposition but there is some long-term data available at a number of sites around the catchment (see Victorian Water Quality Monitoring Network Trend Analysis and www.vicwaterdata.net). Are RCTs likely to be set? When?	Botting	
			Turbidity of rivers and streams at representative sites.												Targets could relate to SEPP (WoV) guidelines. Are RCTs likely to be set? When?	Botting	
			Suspended solids of rivers and streams at representative sites.												Turbidity not a true measure of suspended solids - it's not bad but is affected by other material (eg algae) in the water column. Suspended solids is not a standard measure being used.	Botting	
10 Ecologically significant invasive species	Selected ecologically significant vertebrate invasive species extent and impact	10.1 Reduced impact of foxes and wild dogs on livestock industries and native fauna.	Extent of foxes.												Who is doing what and how often?	Wood	
			Impact of foxes.												Who is doing what and how often?	Wood	
			Extent of wild dogs.												Who is doing what and how often?		
		10.2 Increase area declared "rabbit free" by 100% by when?	Impact of wild dogs.													Who is doing what and how often?	Wood
			Extent of rabbits.													Who is doing what and how often?	Wood
			Impact of rabbits.													Who is doing what and how often?	Wood
	Selected ecologically significant invasive vegetation species extent and impact	10.3 Contain or where possible, eradicate, 100% of known satellite infestations of Regional Priority Weeds.	Criteria for selecting "Regional Priority Weeds".													Where are criteria listed?	Wood
			Extent and distribution of satellite infestations of Regional Priority Weeds.													How is this recorded and reported?	Wood
		10.4 Contain or where possible, eradicate, 95% of Regional Priority Weeds in priority project areas.	Criteria for selecting "priority project areas".													Who is doing what and how often?	Wood
			Extent and distribution of Regional Priority Weeds infestations in priority project areas.													Who is doing what and how often?	Wood
10.5 Contain or where possible, eradicate, 100% of New and Emerging Weeds.	Criteria for selecting "New and Emerging Weeds".													Where are criteria listed?	Wood		
	Extent and distribution of New and Emerging Weeds.													Who is doing what and how often?	Wood		
10.6 Eradicate 100% of State Prohibited Weeds infestations.	Criteria for selecting "State Prohibited Weeds".													Where are criteria listed?	Wood		
	Extent and distribution of State Prohibited Weeds.													Who is doing what and how often?	Wood		
<b>Other matters not included in National Framework</b>																	
Climate change															No funds to formally set target or do any monitoring.	McFarlane	
Floodplain		F.1 Protect built environment (infrastructure and crops) from flooding. F.2 Improve natural assets (ecosystems) through more natural flooding patterns.	To be determined, perhaps annual damage reduced (\$).												Being developed.	Tierney	
			To be determined.												Being developed.	Tierney	
Water quantity			To be determined.												No targets formally set yet.	Tennant	

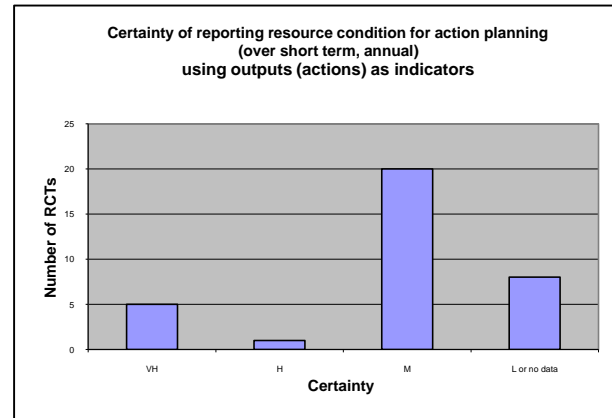
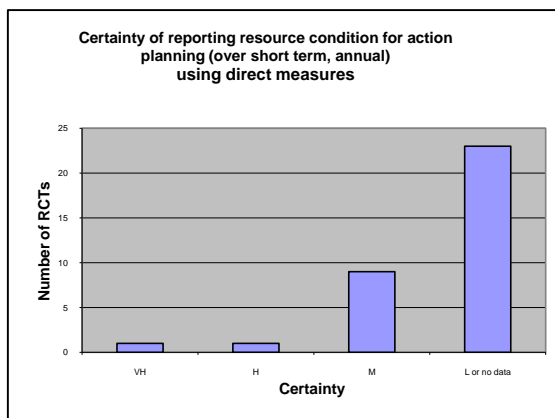
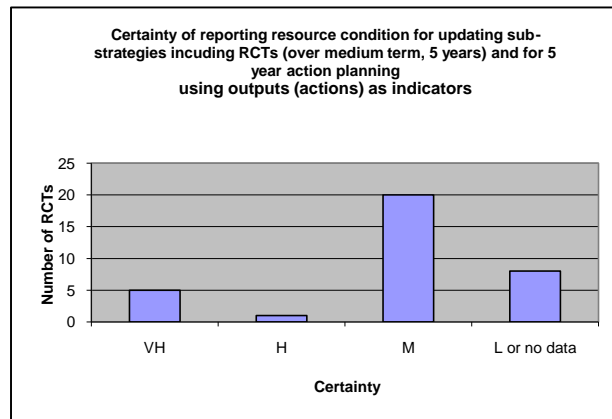
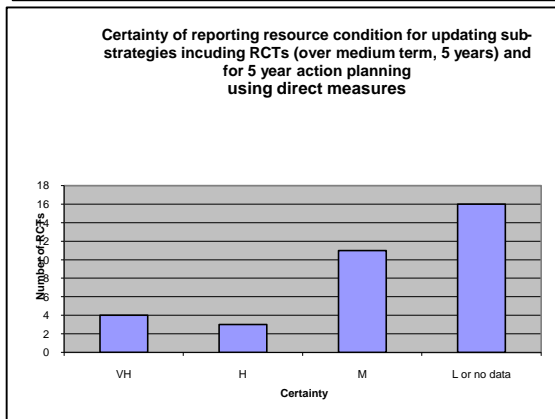
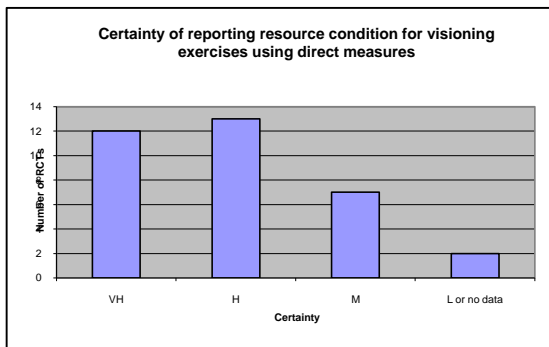
Summary of certainty of reporting on progress towards Resource Condition Targets (RCTs)

National Framework		Goulburn Broken Resource Condition Target	Certainty of reporting resource condition change for:					
			broad visioning exercises (over long term, 20+ years)	updating sub- strategies, including RCTs (over medium term, 5 years) and for 5 year action planning		action planning (over short term, annual)		
				using direct measure	using direct measure	using outputs (actions) as indicators	using direct measure	using outputs (actions) as indicators
Matter for Target	Indicator Heading							
1 Land Salinity	Area of land threatened by shallow or rising water tables	1.1 Save 1,500 ha of foothills and river valleys of highland areas from salinisation by 2050.	H	L	M	L	M	
		1.2 Manage 30,000 ha of salinised land in the riverine plain of the Dryland by 2100.	H	L	M	L	M	
		1.3 Manage 120,000 ha of land with high water tables in the riverine plain of the Dryland by 2100.	H	L	M	L	M	
		1.4 Protect 286,000 ha of land from surface water accessions in the SIR by 2020.	VH	H	VH	L	VH	
8 Surface Water Salinity in freshwater aquatic environments	In-stream salinity	8.1 Maintain increases to salinity levels of the River Murray at Morgan from the SIR at or below 17.0 ECs by 2020 .	VH	M	VH	L	VH	
		8.2 Salinity concentrations of River Murray resulting from groundwater disposal to be kept within acceptable limits by only disposing when flows are sufficiently high.	VH	M	VH	L	VH	
		8.3 Maintain increases to salinity levels of the River Murray at Morgan from the Goulburn Broken Dryland at or below 1.3 ECs by 2050.	H	M	M	M	M	
2 Soil Condition	Soil Condition	No targets set. Do we need to set?	L	L	L	L	L	
3 Native Vegetation Communities' Integrity	Native vegetation extent and distribution	3.1 Maintain extent of all native vegetation types at 1999 levels in keeping with the goal of 'net gain' listed in Victoria's Biodiversity Strategy 1997.	H	L	M	L	M	
		3.2 Increase the cover of all endangered and applicable vulnerable EVCs to at least 15% of their pre-European vegetation cover by 2030.	H	L	M	L	M	
	Native vegetation condition	3.3 Improve the quality of 90% of existing (2003) native vegetation by 10% by 2030.	H	L	M	no data	M	
9 Significant native species and ecological communities	Selected significant native species & ecological communities extent and conservation status	9.1 Increase 2002 conservation status of 80% threatened flora and 60% of threatened fauna by 2030.	M	L	M	no data	L	
4 Inland Aquatic Ecosystems Integrity (Rivers and other Wetlands)	River condition	4.1 Maintain condition of all high value rivers.	H	M	M	L	M	
		4.2 Maintain condition of all ecologically healthy rivers.	H	M	M	L	M	
		4.3 Improve condition of all near ecologically healthy rivers.	H	M	M	L	M	
		4.4 Improve condition of 20% of streams in moderate, poor or very poor condition.	H	M	M	L	M	
	Wetland ecosystem extent and distribution	4.5 Maintain extent of all wetland types at 2003 levels where the extent (area and number) has declined since European settlement.	H	L	L	L	L	
	Wetland ecosystem condition	4.6 Improve condition of 70% of wetlands by 2030, using 2003 as the benchmark for condition.	M	L	L	L	L	
6 Nutrients in Aquatic Environments	Nitrogen in aquatic environments	Not appropriate to set: watching brief only. Or do we need to set?	VH	VH	L	L	L	
		Phosphorus in aquatic environments	6.1 Reduce potential phosphorus loads by 65% by 2016 by reducing phosphorus loads from: 6.1.1 irrigation drains by 50% 6.1.2 dryland and diffuse sources by 20% 6.1.3 wastewater management facilities by 80% 6.1.4 urban stormwater 6.1.5 intensive agricultural industries and local water quality issues	VH VH M H H M	H L VH M L	M M VH M M	L M H L L	M H M VH M M
	7 Turbidity/suspended particulate matter in aquatic environments	Turbidity/suspended solids	Monitoring only. Do we need to set a target?	VH	L	M	L	M
			10.1 Reduced impact of foxes and wild dogs on livestock industries and native fauna.	H	M	L	L	L
			10.2 Increase area declared "rabbit free" by 100% by when?	L	L	L	M	L
			10.3 Contain or where possible, eradicate, 100% of known satellite infestations of Regional Priority Weeds. 10.4 Contain or where possible, eradicate, 95% of Regional Priority Weeds in priority project areas. 10.5 Contain or where possible, eradicate, 100% of New and Emerging Weeds. 10.6 Eradicate 100% of State Prohibited Weeds infestations.	M M H VH	L L VH VH	L L M VH	M M M VH	L L M VH
<b>Other matters not included in National Framework</b>								
Climate change			no data	no data	no data	no data	no data	
Floodplain		F.1 Protect man-made assets (infrastructure and crops) from flooding. F.2 Improve natural assets (ecosystems) through more natural flooding patterns.	M M	M M	M M	M M	M M	
Water quantity								

Priority to improve certainty of assumptions that link outputs to outcomes, based on cost-effectiveness of doing so.  
Target needs setting or reviewing

## Summary of certainty of reporting resource condition changes for major steps of planning

Certainty in reporting resource condition change	Number of RCTs with level of certainty for major steps in planning				
	broad visioning exercises (over long term, 20+ years) using direct measure	updating sub-strategies, including RCTs (over medium term, 5 years) and for 5 year action planning		action planning (over short term, annual)	
		using direct measure	using direct measure	using outputs (actions) as indicators	using direct measure
VH	12	4	5	1	5
H	13	3	1	1	1
M	7	11	20	9	20
L or no data	2	16	8	23	8



**Legend: Data availability for RCT reporting**

**Coverage, frequency and currency**

<b>Data parameters</b>	<b>Satisfactory</b>	<b>Marginal</b>	<b>Unsatisfactory</b>
<b>Coverage</b>	whole region, or relevant component	selected areas	case study
<b>Frequency</b>	annual to 5 yearly	greater than 5 yearly	once only
<b>Currency</b>	2000 or more recent	1980-2000	pre-1980 or incomplete



## Data requirements for measuring resource condition directly

### Datasheet

### Native vegetation extent

Data sheet number:	DS1
Date updated	16 January 2006
Who updated it	Kate Brunt, GB CMA Benalla
What needs to be measured	Native vegetation extent by ecological vegetation class (EVC)
What RCTs do data help measure progress towards	3.1, 3.2, 3.3
Certainty in using data for: <i>(rate Low to Very High)</i>	
<i>Broad visioning (20+ years)</i>	High
<i>Updating sub-strategies including RCTs (5 yearly)</i>	Low - could be improved (statewide responsibility)
<i>Annual action planning</i>	Low - detection of vegetation change not practical on annual basis
Name of dataset	Treeden/tree25 (note that a derived dataset using this data? Is being developed - see comments)
How is it collected	EVC classification and distribution methodology (Department of Sustainability and Environment 2000?) Satellite imagery (remote sensing) of vegetation extent overlaid on EVC maps
Coverage of data (whole of catchment, selected areas, case study or nil)	Whole of GB Catchment has been modelled
Frequency of collection	About every 2 years
Currency of collection	2002
Why collected	State mapping program Victorian State of the Environment report?
Availability of data	Native vegetation extent completed Baseline data available from DSE upon request
Additional information required eg investment required, additional data, spatial extent	Investment is provided to enable GB CMA staff to extract and manipulate data
Who is responsible	Department of Sustainability and Environment
Title	Biodiversity Manager
Location	Melbourne
Telephone	
Metadata reference	DSE dataset Goulburn Broken CMA Native Vegetation??
Format	ARC/INFO
Data storage and management frameworks	National Vegetation Information System
Priority to improve data	High - should be able to get indication of trend changes every 5 - 10 years
Action needed to improve dataset	
Costs of these improvements	
When these improvements should be undertaken	
Costs of maintaining dataset	
Comments	Statewide satellite imagery updating information every few years, although methodology changes (mainly technological improvements) make comparisons between years difficult. Incentives funded through CMA being used as indicator of progress <b>using assumptions. Good processes in place (Catchment Activity Management System (CAMS)) to collect data on actions that have been funded.</b> Audit/survey? being undertaken of landholders to identify proportion of "voluntary" contributions being undertaken and to identify types of works and types of vegetation. Native vegetation removal figures not yet available: working on this as part of statewide process?? DSE (David Parkes and James Todd) <b>are developing the "Netgain accounting model" which will indicate the progress towards Netgain in terms of both extent and quality of vegetation - David Parkes and James Todd. What datasets does this require?</b>
References	How to do EVCs by DSE 2000 How much of each EVC have we got? GB Native Vegetation Management Strategy, GB CMA 2000

## Data sheet to enable GB reporting on progress towards Resource Condition Targets

### Data sheet:

### Native vegetation condition

Data sheet number:	2
Date updated:	6 January 2006
Who updated it:	Rod McLennan, c/- GB CMA Shepparton
What needs to be measured	Native vegetation condition by ecological vegetation class (EVC)
Data contribution to RCTs	7
How is it collected	EVC classification and distribution methodology (Department of Sustainability and Environment 2000?) Satellite imagery (remote sensing) of vegetation extent overlaid on EVC maps Samples done and extrapolation done?? More extensively done in North Central?
Where is it collected	Whole of Goulburn Broken Catchment sites where government funds have been allocated ony (and have been processes through GB CMA's system)
Frequency of collection	Five yearly
Currency of collection	Kate Bell did a scant bit about 2000
Why collected	State mapping program Victorian Sate of the Environment report? Long-term check on assumptions linking works ouputs to resource condition targets
Availability of data	Biodiversity Manager
Additional information required eg investment required, additional data, spatial extent	Investment is provided to enable GB CMA staff to extract and manipulate data
Is annual reporting realistic (yes or no)	No - detection of vegetation change not practical on annual basis
Who is responsible	Department of Sustainability and Environment
Title	Biodiversity Manager
Location	Melbourne
Telephone	
Metadata reference	DSE dataset Goulburn Broken CMA Native Vegetation??
Format	ARC/INFO
Data storage and management frameworks	National Vegetation Information System
References	How to do EVCs by DSE 2000 How much of each EVC have we got? GB Native Vegetation Management Strategy, GB CMA 2000 How to do Habitat Hectares by DSE 2001

		1990-91	1991-92	1992-93	1993-94
SIR					
Primary drains constructed	km	29.8	12.0	54.6	49.1
Community drains constructed	km	13.5	22.1	9.4	10.1
Tile drains installed	ha				6
New public groundwater pumps installed upgrade??	no.	0	1	0	1
Private pumps installed					
Fence terrestrial vegetation	ha				
Fence wetland remnant	ha				
Fence stream/river remnant	ha				
Off-stream watering	no.				
Binding management agreement (license, Section 173, covenant)	ha				
Revegetation - plant natives	ha				
Active management - Bush Returns	ha				
Active management - Green Graze	ha				

---

**Cumulative Achievements**

---

1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03
66.0	66.9	65.0	48.0	87.0	0.0	2.6	12.2	14.0
14.0	14.4	16.0	17.7	13.6	19.9	28.9	12.4	6.5

3

3            4            2            3            3            4            5            6            5

539  
0  
104  
796  
829

2003-04	2004-05	2005-06	2006-07	TOTAL
12.0	8.0			527.2
19.5	0.0			218.0

3

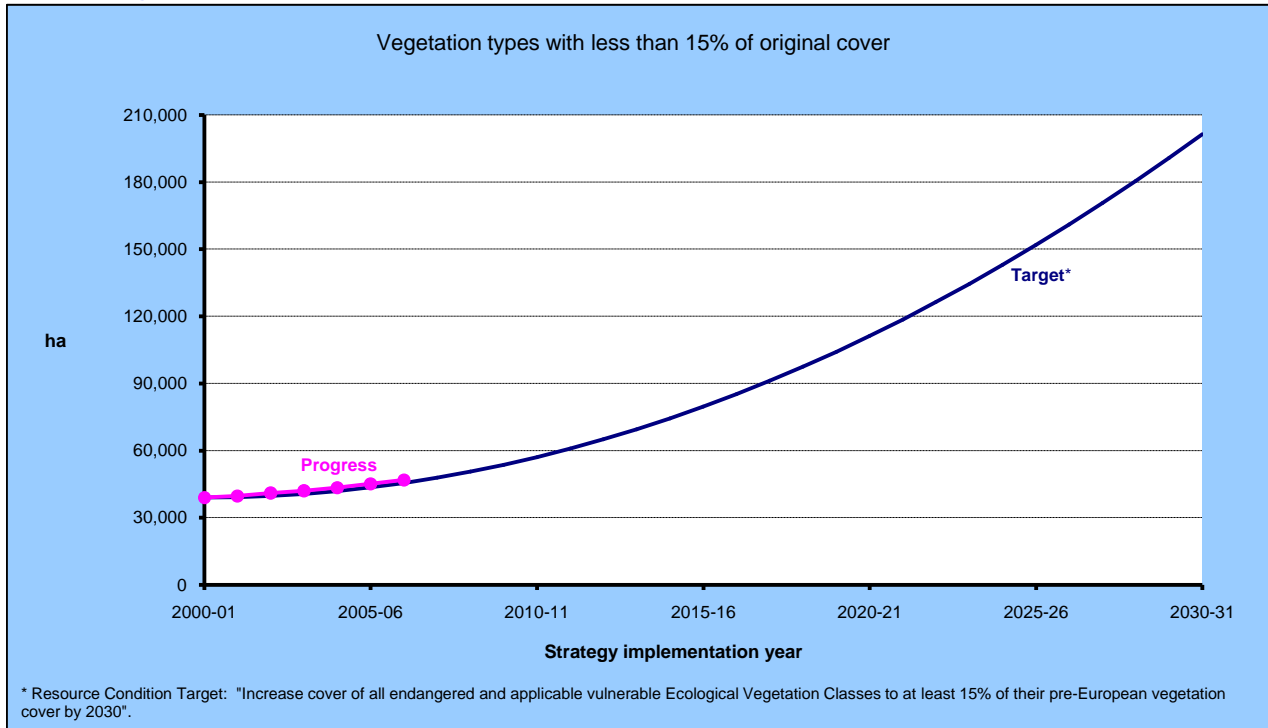
2

42

511.7	771	519	769
12.6	24	6	22
217.5	91	115	725
86	74	89	
230.5	797	758	1,625
706.3	897	791	718
	158	502	40
			1,189



## Native vegetation: assumed impacts of intervention on extent



Assumptions	Certainty	Importance for decision-making
<b>1. Assumptions on target itself and projected increase</b>		
1.1 The "extent" of native vegetation is a critical factor in securing the future of species. ("Extent" is considered a more appropriate term as it refers to the area over which vegetation occurs, WHEREAS "cover" generally refers to the area actually covered by vegetation. The language is likely to change when targets are reviewed).	VH	VH
1.2 An extent of 15% by 2030 for these EVCs represents an appropriate target being a balance of ecological, social and economic needs.	L	VH
1.3 Annual progress towards RCT is expected to be exponential.	M	M
1.4 It is assumed that public land extent is static.	H	H
<b>2. Assumptions used in calculating progress towards RCT from outputs recorded</b>		
Area these types of EVCs increased = <b>F.</b> Area increased through funds provided via GB CMA + <b>V.</b> Area voluntarily increased by works or changed management of existing land use by land managers (including natural regeneration) + <b>LU.</b> Area increased from changed land use (resulting in natural regeneration) - <b>R.</b> Area reduced by direct removal - <b>D.</b> Area reduced by indirect removal (dieback). <b>Calculation (progress towards RCT): <math>A = F + V + LU - R - D</math></b>		
<b>Assumption 2.1 (F).</b> Area increased through funds provided via GB CMA =		
2.1a Proportion of all funded actions focussing on these EVC types (0.75) x	VH	L
2.1b [area revegetated (planted or direct seeded) +	VH	VH
2.1c proportion of increased area (0.05) from regeneration by fencing x	M	L
2.1d area fenced (terrestrial, wetland or stream/river) +	VH	M
2.1e proportion of area increased when land managed actively for natural regeneration - "Bush Returns"; (0.8) x	M	L
2.1f area of land managed actively for natural regeneration - "Bush Returns" +	VH	VH
2.1g proportion of area increased when land managed actively for natural regeneration - "Green Graze"; (0.3) x	M	L
2.1h area of land managed actively for natural regeneration - "Green Graze"]	VH	VH
<b>Therefore, <math>F = 0.75[b + 0.05d + 0.8f + 0.3h]</math></b> (with "averaged" ratings for assumptions given at right)	H	M
<b>Assumption 2.2 (V).</b> $V = F$ .	M	VH
<b>Assumption 2.3 (LU).</b> Area increased from changed land use = 300 ha per year	L	VH
<b>Assumption 2.4 (R).</b> Area reduced by direct removal = 200 ha per year	H	H
<b>Assumption 2.5 (D).</b> Area reduced by indirect removal (dieback) = 200 ha per year	L	H
<b>3. Further implied assumptions in calculations</b>		
3.1 Success rate of extent established when revegetating = 100%.	VH	H
3.2 Composition of vegetation established matches original EVC.	VH	M
3.3 No lag time between action to establish vegetation (planting, direct seeding or naturally regenerating) and measuring extent.	inconsequential	
3.4 Data for actions undertaken 2000-01 to 2002-04 were interpolated from 2003-04 and 2004-05 results.	M	L

**Notes, including data management issues**

- 1 Information compiler: Tim Barlow, Vanessa Keogh, Kate Brunt, Carla Miles, Rod McLennan
- 2 Error bars (+/- 30%) are based on expert opinion (Kate Brunt and Tim Barlow) and are for a 95% confidence level. These error bars will become less than 30% as major assumptions are refined.
- 3 Satellite imagery is not yet a reliable means of measuring progress: ongoing imagery improvements result in finer patches of vegetation being detected and hence greater areas recorded. The lag time between seedling and detection also complicates the use of the data to verify that actions are translating into outcomes in the medium term (3-10 years).
- 4 A landholder survey has been developed to determine increases in vegetation cover that is occurring outside of GBCMA funding. This survey will be undertaken during 2007.
- 5 The proportion of revegetation conducted in endangered and applicable vulnerable EVCs (75%) has been verified using 2002 - 2007 CAMS data . It is assumed that the same proportion of Bush Returns and Green Graze vegetation cover increases are in these EVCs.
- 6 Full referencing of assumptions is provided in the Biodiversity Monitoring Action Plan.

**Outputs contributing to RCT for 2006-07:**

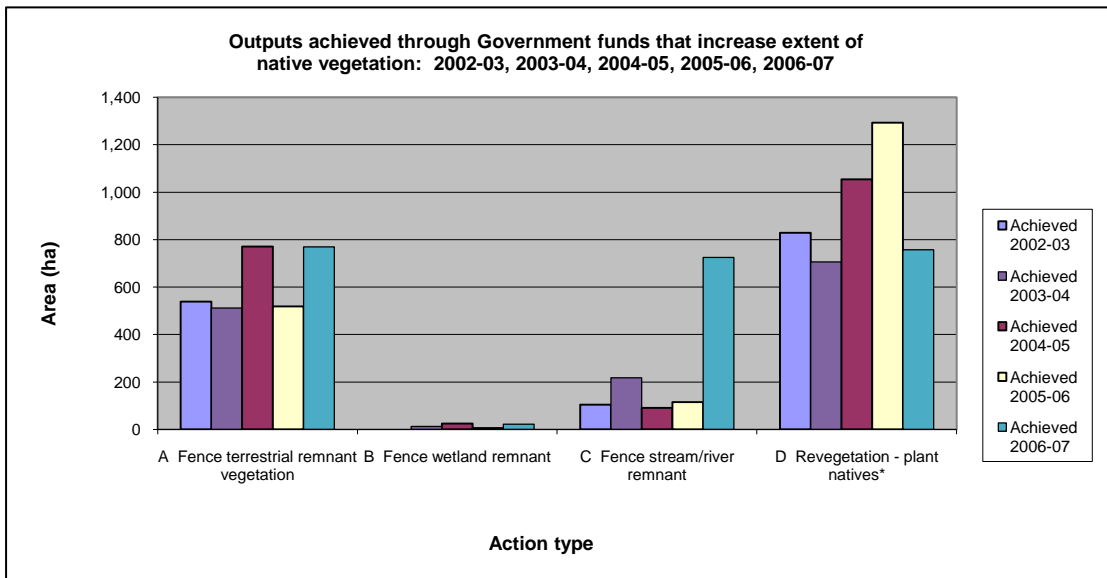
		From funds received through GB CMA		
		Target	Achieved	% achieved
b	Revegetation - plant natives	732	718 ha	98
d.i.	Area fenced - terrestrial remnant*	294	769 ha	262
d.ii.	Area fenced - wetland	21	22 ha	105
d.iii.	Area fenced - stream/river remnant	31	725 ha	2339
f	Area actively managed - Bush Returns	100	40 ha	40
h	Area actively managed - Green Graze	1000	1189 ha	119

\* This output excludes figures from Bush Returns (see output f).

**Outputs achieved through Government funds that increase extent of native vegetation, 2002-03, 2003-04, 20004-05, 2005-06 and 2006-07:**

		From funds received through GB CMA				
		Achieved 2002-03	Achieved 2003-04	Achieved 2004-05	Achieved 2005-06	Achieved 2006-07
A	Fence terrestrial remnant vegetation	539	512	771	519	769
B	Fence wetland remnant	0	13	24	6	22
C	Fence stream/river remnant	104	218	91	115	725
D	Revegetation - plant natives*	829	706	1,055	1,293	758

\* There is some uncertainty surrounding the derivation of the 2002-03 figure of 829ha which was the first year quantitative reporting was attempted. This figure is taken to be 1,625 (revegetation and conservation covenants for EVCs less than 15%) - 796 ha (Trust for Nature covenants). Both figures came from the 02/03 Annual report..





check 0.75

rating

rating

rating

