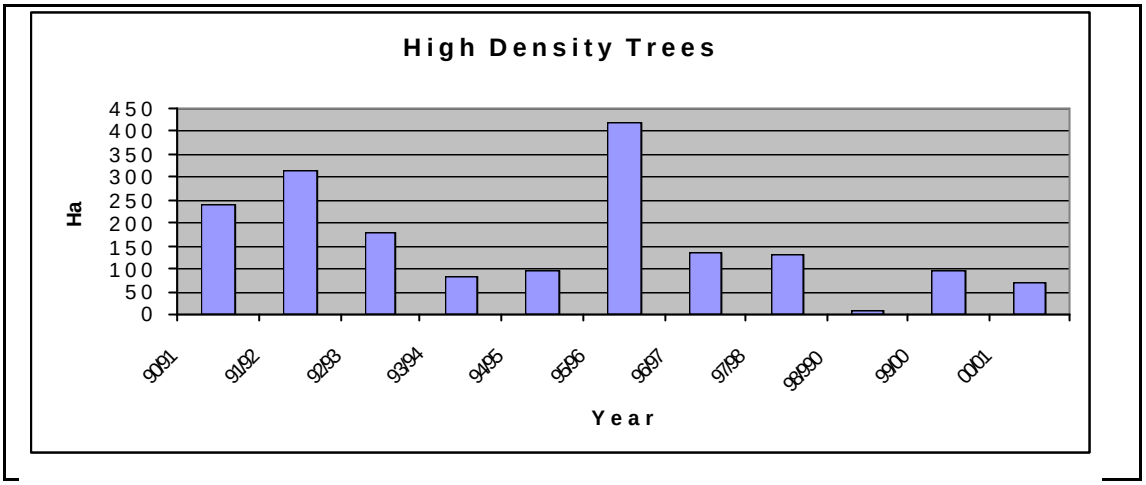
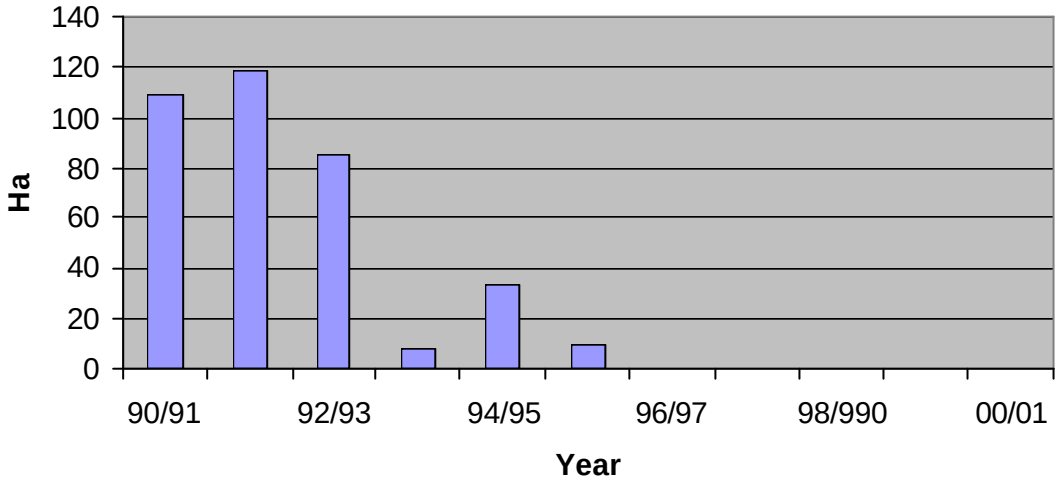
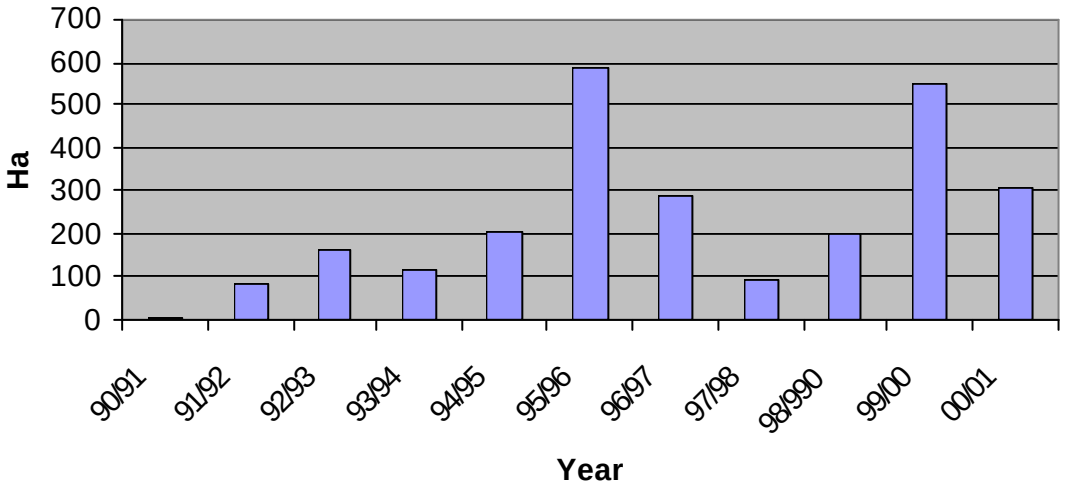
Appendices

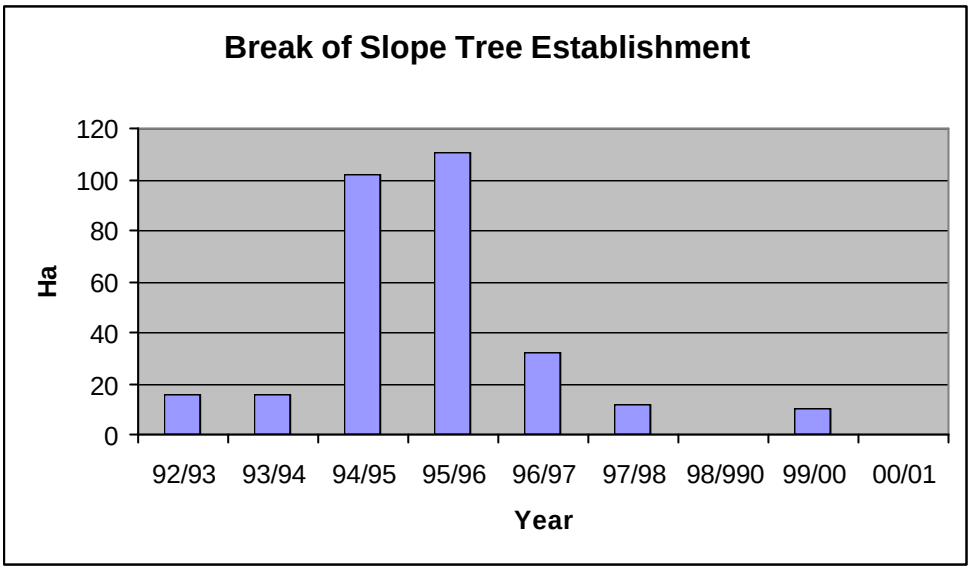
Appendix 1

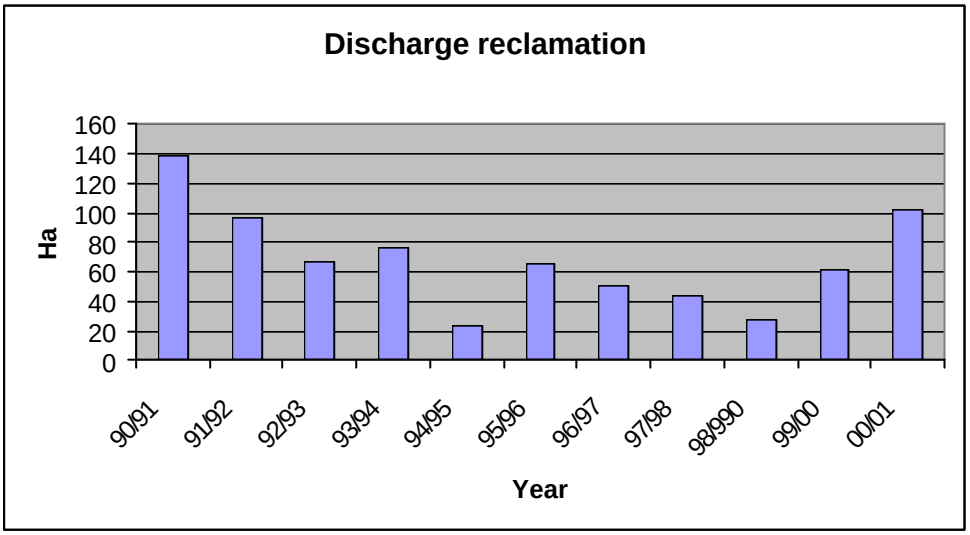
Areas treated for each activity

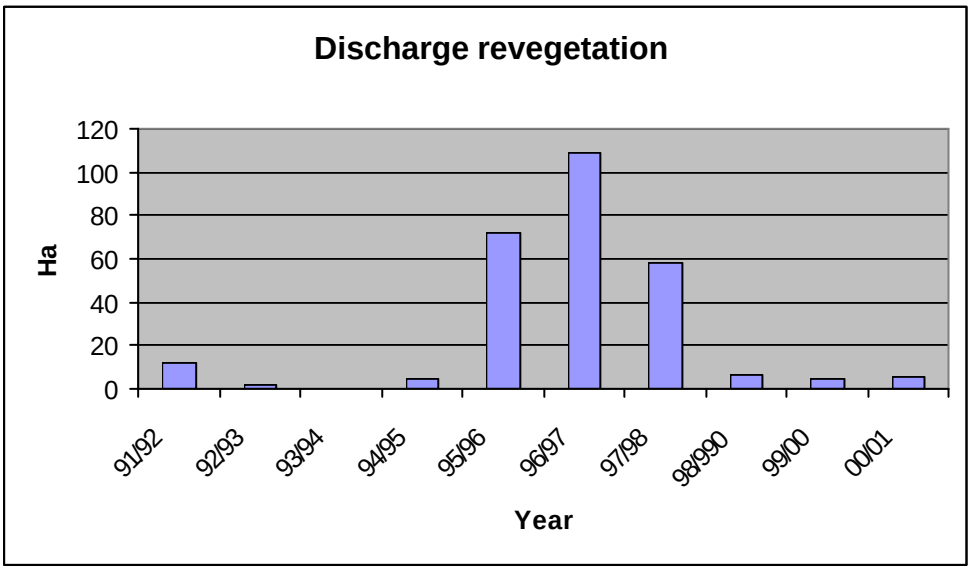




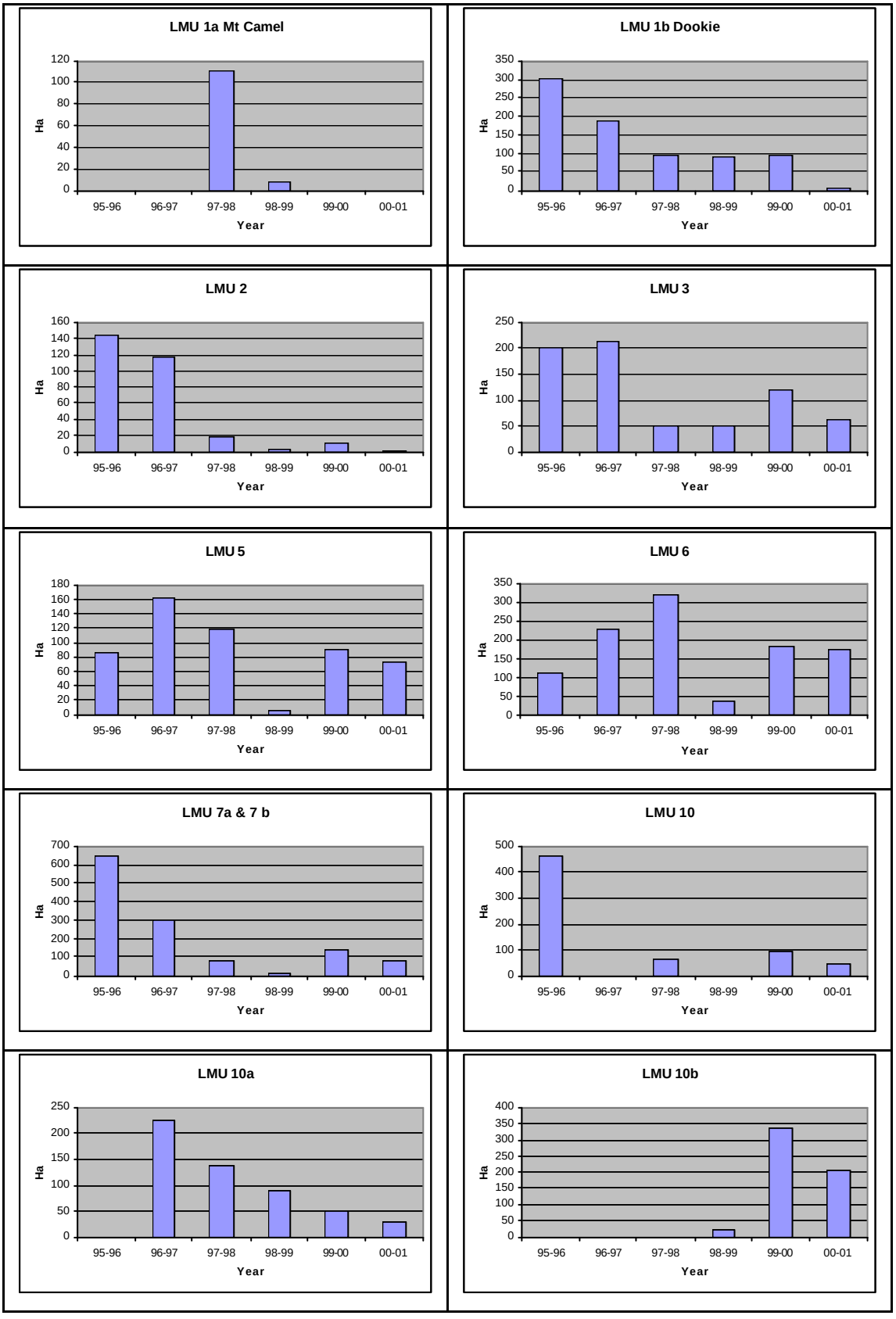


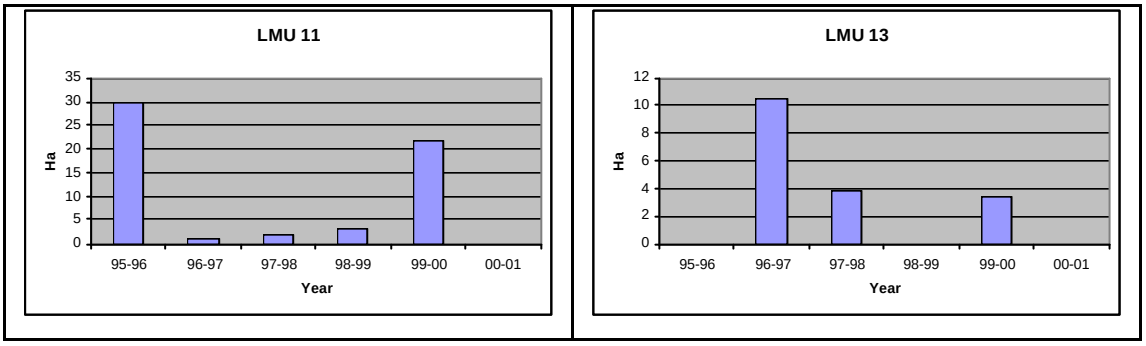

Break of Slope Tree Establishment
120
100
80
60
40
20
0
Ha
92/93
93/94
94/95
95/96
96/97
97/98
98/990
99/00
00/01
Year


Discharge reclamation
160
140
120
100
80
60
40
20
0
Ha
90/91
91/92
92/93
93/94
94/95
95/96
96/97
97/98
98/990
99/00
00/01
Year


Discharge revegetation
120
100
80
60
40
20
0
Ha
91/92
92/93
93/94
94/95
95/96
96/97
97/98
98/990
99/00
00/01
Year

LMU s- Area Treated in 1995/96 to 2000/01




LMU 11
Ha
35
30
25
20
15
10
5
0
95-96
96-97
97-98
98-99
99-00
00-01
Year
LMU 13
Ha
12
10
8
6
4
2
0
95-96
96-97
97-98
98-99
99-00
00-01
Year

Appendix 2

Evaluation criteria – Environmental Management Grants

Criteria	Parameter	Value	Score	Comments
1. Area of Works (ha)	1.0 - 2.0 2.0 - 3.0 3.0 - 5.0 above 5.0	**1** **2** **3** **5**		Minimum of 1 ha. Minimum total width is 40 m (can be 20 m private land + 20 m vegetated roadside Area of fencing or revegetation.
2. Proximity (distance) to nearest good quality remnants (metres)	> 1000 500 – 1000 100 – 500 < 100	**2** **3** **4** **5**		Officer's discretion of "good quality". Need to think about size ie .1 ha, presence of understorey, health of remnant etc.
3. Conservation status of Ecological Vegetation Class (EVC)	Least Concern Depleted Vulnerable Endangered / Rare	**1** **3** **4** **5**		Conservation status of EVC in the particular Bioregion of the Goulburn Broken Catchment.
4. Works type	Revegetation Remnant protection and enhancement	**4** **5**		Revegetation is for all revegetation other than remnant Protection and remnant protection and Enhancement.
5. Salinity priority	Discharge Potential discharge Recharge	**3** **5** **10**		If map not yet mapped, officer's discretion.
6. Farm Natural resource Plan	Normal	**1**		EVC Map, Aerial Photograph, Landsat Image or Topographical Map.
		Total		
		% Grant rate		

Criteria Score and Grant Rate

Criteria Score	% Grant Rate
12 – 14	55 %
15 – 18	60 %
19 – 22	65 %
23 – 27	70 %
28 - 31	75 %

Grant rates are calculated using the following capital costs:	
Fencing:	Total cost = $6.50/m for standard fence, $4.00/m for electric fence
Planting:	Total cost = $1500/ha for 500 plants/ha
Direct Seeding:	Total cost = $650/ha

NOTES

1. All grants that meet the minimum criteria will be at least 55%

2. 70% maximum grant rate if grant is fencing only ($4.55 per metre)

3. Grant rates above 55% are estimates only and may alter due to funding constraints

Appendix 3

Features of groundwater flow systems in the Goulburn Broken (Dyson et.al. 2000)

	GFS	Salt store	Salinity Occurrence	Temporal distribution of recharge	Spatial distribution of recharge	Baseflow/ washoff	Equilibrium response time	Groundwater salinity dS/m
1	Local flow systems in fractured sedimentary & metamorphic rocks	low	break of slope & valley floor (small areas)	seasonal	hill crest & upper slopes (some valleys)	baseflow	fast	0.5 to 2
2	Intermediate flow systems in fractured sedimentary rocks	low (higher than local)	valley floor (in stream)	seasonal	tabletops	baseflow	slow to moderate	0.5 to 2
3	Local & intermediate flow systems in weathered fractured sedimentary rocks	high	valley floor	seasonal & episodic at lower r/f	general, higher where rock outcrops	baseflow in SWG & washoff (SPC)	slow to moderate	up to 20
4	Local & intermediate flow systems in fractured Cambrian fractured rocks and colluvial and alluvial fans	moderate	break of slope & gullies	seasonal & episodic	higher on ridges and upper slopes, also high under red soils	washoff (some baseflow)	moderate to (fast)	<3 (lower on upper slopes)
5	Local flow systems in colluvial and alluvial fans in coarse grained acid volcanic rocks	low to moderate	break of slope & valley floor	seasonal	upper parts of colluvial fans	washoff	fast	0.5 to 5
6	Regional flow systems in Riverine Plain	low to high	drainage lines and depressions	seasonal & episodic	general & higher in alluvial fans & rivers and prior streams	washoff & baseflow	slow	<1 in Calivil <15 in Shepp.
7	Local flow systems in weathered granites	low	drainage lines and break of slope	seasonal	general & upper fans	washoff & some baseflow	fast	<3
8	Local flow systems in fractured basalts (Quaternary and Tertiary)	low	drainage lines adjacent basalt	seasonal	general	baseflow	moderate to fast	<2
9	Local flow systems in upland alluvium	low	n/a	seasonal	general (in part related to river flow)	baseflow	fast	<1
10	Local flow systems in Quaternary lunettes	high	footslopes, interlunette depressions, wetland interface	seasonal	general	baseflow/lateral flow, washoff	moderate to fast	5 to 20
11	Local flow systems in Tertiary gravel caps	moderate	n/a	seasonal	general	n/a	moderate to fast	<4
12	Local flow systems in fine grained acid volcanics (e.g. rhyolites)	moderate to high	break of slope & valley floor	seasonal	upper slopes	baseflow/lateral flow, washoff	moderate	1 to 15
13	Local flow systems in Tillite	moderate	valley floor	seasonal	general	washoff	moderate - fast	3 to 5

Appendix 4

Priority areas and recommended management options for all sub catchmenets in the Goulburn Broken

Sub-catchment	GFS	Targeting area	Recommended salinity management options
South West Goulburn			
High priority			
Dry Ck	3(80%), 8(10%), 1(10%), 9(>1%)	Discharge sites and high watertable are widespread at the lower slopes and valley floor. Hill slopes have been extensively cleared. High recharge may occur along gentle cleared slopes (GFS 3).	High-density trees targeted at recharge area (e.g. gentle slopes of weathered sedimentary hills) would be the most effective. Perennial pasture along would not be effective to control recharge due to high rainfall, but incorporation with low-density trees would be more effective. Opportunities for groundwater pumping may be limited due to high salinity of groundwater and low yield in the fractured rock aquifer. Establishing salt tolerant grasses and saltbush at discharge area would increase productivity and reduce salt wash-off.
Hughes Ck	7(78%), 3(15%), 9(4%), 6(2%), 1(1%)	Discharge sites and high watertables mainly occur on the valley floor and along drainage lines at the upper Hughes Ck (GFS 3). Salinity risk is believed to be relatively low.	High-density trees targeted at recharge area (e.g. gentle slopes of weathered sedimentary hills) would be the most effective. Perennial pasture along would not be effective to control recharge due to high rainfall, but incorporation with low-density trees would be more effective. Opportunities for groundwater pumping may be limited due to high salinity of groundwater and low yield in the fractured rock aquifer. Establishing salt tolerant grasses and saltbush at discharge area would increase productivity and reduce salt wash-off.
Kurkurac Ck	3(44%), 9(25%), 1(24%), 8(7%)	Discharge sites and high watertables mainly occur on the valley floor and along drainage lines in the sedimentary country (GFS 3). It is believed that high recharge occurs on along gentle cleared slope of sedimentary hills.	High density trees targeted at recharge area (e.g. gentle slopes of weathered sedimentary hills) and along drainage lines would be the most effective. Perennial pasture along would not be effective to control recharge due to high rainfall, but incorporation with low-density trees would be more effective. Opportunities for groundwater pumping may be limited due to high salinity of groundwater and low yield in the fractured rock aquifer. Establishing salt tolerant grasses and saltbush at discharge area would increase productivity and reduce salt wash-off.
Majors Ck	3(52%), 1(31%), 9(14%), 6(3%)	Discharge sites and high watertable are widespread at the lower slopes and valley floor, particularly in the southern part of the sub-catchment where hill slopes have been extensively cleared. High recharge may occur along gentle cleared slopes (GFS 3).	High density trees targeted at recharge area (e.g. gentle slopes of weathered sedimentary hills) and along drainage lines would be the most effective. Perennial pasture along may be effective to control recharge due to high rainfall, but incorporation with low-density trees would be more effective. Opportunities for groundwater pumping may be limited due to high salinity of groundwater and low yield in the fractured rock aquifer. Establishing salt tolerant grasses and saltbush at

			discharge area would increase productivity and reduce salt wash-off.
Mollisons Ck	7(67%), 3(19%), 1(7%), 9(4%), 8(3%)	Discharge sites and high watertables mainly occur on the valley floor and along drainage lines in the sedimentary country (GFS 3). Small patches of discharge and high watertables also occur at valley floor in the granites country. It is believed that high recharge occurs on along gentle cleared slope of weathered sedimentary rocks and granites.	High density trees targeted at recharge area (e.g. gentle slopes of weathered sedimentary hills) and along drainage lines would be the most effective. Perennial pasture along may be effective to control recharge due to high rainfall, but incorporation with low-density trees would be more effective. Opportunities for groundwater pumping may be limited in the sedimentary country due to high salinity of groundwater, but granites country may provide some opportunities. Establishing salt tolerant grasses and saltbush at discharge area would increase productivity and reduce salt wash-off.
Sunday Ck	3(72%), 1(12%), 7(10%), 8(6%)	Discharge sites and high watertable are widespread at the lower slopes and valley floor. Hill slopes have been extensively cleared. High recharge may occur along gentle cleared slopes (GFS 3).	High-density trees targeted at recharge area (e.g. gentle slopes of weathered sedimentary hills) would be the most effective. Perennial pasture along would not be effective to control recharge due to high rainfall, but incorporation with low-density trees would be more effective. Opportunities for groundwater pumping may be limited due to high salinity of groundwater and low yield in the fractured rock aquifer. Establishing salt tolerant grasses and saltbush at discharge area would increase productivity and reduce salt wash-off.
Whiteheads Ck	3(52%), 9(18%), 6(12%), 1(9%), 7(4%), 11(4%)	Discharge sites and high watertable are widespread at the lower slopes and valley floor. High recharge may occur along gentle cleared slopes (GFS 3).	High-density trees targeted at recharge area (e.g. gentle slopes of weathered sedimentary hills) would be effective. Tree belts along the streams would form a effective buffer to reduce groundwater/surface water interaction (may reduce baseflow into the surface water system. Perennial pasture incorporated with low-density trees would be also effective. Opportunities for groundwater pumping may be limited due to high salinity of groundwater and low yield in the fractured rock aquifer. Establishing salt tolerant grasses and saltbush at discharge areas would increase productivity and reduce salt wash-off.
Moderate priority			
Dabyminga Ck	3(64%), 7(25%), 1(9%), 9(2%)	Discharge sites and high watertable occur at the lower slopes and valley floor. High recharge may occur along gentle cleared slopes (GFS 3). Forest is well retained at the upper part landscape.	High density trees targeted at recharge area (e.g. gentle slopes of weathered sedimentary hills) would be the most effective. Perennial pasture along would not be effective to control recharge due to high rainfall, but incorporation with low-density trees would be more effective. Opportunities for groundwater pumping may be limited due to high salinity of groundwater and low yield in the fractured rock aquifer. Establishing salt tolerant grasses and saltbush at discharge area would increase productivity and reduce salt wash-off.

Sheepwash Ck	3(43%), 6(26%), 1(23%), 9(7%), 8(1%)	No discharge is reported. High watertables may occur in places. Stream/groundwater interaction may be active.	Tree belts along Goulburn River would form a effective buffer to reduce groundwater/surface water interaction (may reduce baseflow into the surface water system.
Stony Ck	3(44%), 1(38%), 9(12%), 8(5%), 6(1%)	Small discharge sites are reported. High watertables may occur in places. Stream/groundwater interaction may be active.	Tree belts along the streams would form a effective buffer to reduce groundwater/surface water interaction (may reduce baseflow into the surface water system.
Trawool	7(36%), 3(35%), 9(20%), 1(9%)	Small discharge sites are reported. High watertables may occur in places. Stream/groundwater interaction may be active.	Tree belts along the streams would form a effective buffer to reduce groundwater/surface water interaction (may reduce baseflow into the surface water system.

Upper Goulburn

High priority None

Chapter 1 Moderate priority

Big R	1(88%), 5(8%), 9(2%), 10(2%)	Low salinity risk -no discharge site reported, well-retained forested and low stream salinity	Low significance for reduction of salinity risk
Delatite Ck	2(43%), 1(32%), 7(16%), 9(5%), 5(3%), 4(>1%)	Salinity risk is low in general. Maybe some potential risk in the lower part of the sub-catchment due to extensively cleared land	Tree belts along stream may act as buffers and reduce salinity input into the stream, but low significance for reduction of salinity risk is expected due to high rainfall.
Yea R	3(52%), 1(33%), 9(9%), 7(4%)	Salinity risk is low in general. High watertables may occur at the lower part of the sub-catchment. Salt export is relatively high.	Tree belts along Goulburn River. Retention and re-introduction of native vegetation are also recommended.

Chapter 2 Low Priority

Acheron Ck	1(55%), 5(28%), 9(9%), 7(8%)	Low salinity risk -no discharge site reported, well-retained forested and low stream salinity	Low significance for reduction of salinity risk
Boundary Ck	3(80%), 1(16%), 9(4%)	Relatively high stream salinity, maybe some watertables at the lower slope. High recharge may occur along cleared gentle slopes (GFS3)	High-density trees along cleared gentle slopes, but low significance for reduction of salinity risk is expected due to small size of the sub-catchment and high rainfall.
Brankeet Ck	7(50%), 1(47%), 9(3%)	Low salinity risk -no discharge site reported, reasonably well retained forested, high rainfall, low stream salinity and steep country (GFS 1 and 7).	Low significance for reduction of salinity risk
Coles Ck	1(95%), 9(5%)	Salinity risk is low in general. Maybe some potential risk due to extensively cleared land (84%) and relatively low rainfall (rain shallow)	Low significance for reduction of salinity risk is expected due to small size.

Dairy Ck	3(66%), 1(19%), 9(15%)	Relatively high stream salinity, maybe some watertables at the lower slope and along drainage lines. High recharge may occur along cleared gentle slopes (GFS3)	High-density trees along cleared gentle slopes, but low significance for reduction of salinity risk is expected due to small size of the sub-catchment and high rainfall.
Ford Ck	2(50%), 1(28%), 9(18%), 4(2%)	Salinity risk is low in general. Maybe some potential risks due to some high watertables at the lower slopes, relatively high stream salinity and extensively cleared land (99 %).	High-density trees along cleared gentle slopes, but low significance for reduction of salinity risk is expected. Retention and re-introduction of native vegetation are also recommended.
Home Ck	1(80%), 9(12%), 7(8%)	Salinity risk is low in general. Maybe some potential risks due to some high watertables at the lower slopes, relatively high stream salinity and extensively cleared land (81 %).	Tree belts along stream may act as buffers and reduce salinity input into the stream, but low significance for reduction of salinity risk is expected. Retention and re-introduction of native vegetation may also reduce recharge.
Homewood	1(60%), 9(29%), 3(11%)	Salinity risk is low in general. Maybe some high watertable at the lower landscape.	Low significance for reduction of salinity risk
Howqua R	1(67%), 2(10%), 4(7%), 5(6%), 7(5%), 9(5%)	Low salinity risk - no discharge site reported, well-retained forestry (94%), low stream salinity with no trend, steep country.	Low significance for reduction of salinity risk
Jamieson R	1(61%), 2(24%), 4(9%), 5(4%), 9(2%)	Low salinity risk - no discharge site reported, well-retained forestry (97%), low stream salinity (34 EC) with no trend, steep country.	Low significance for reduction of salinity risk
Jerusalems	1(83%), 5(12%) 7(3%), 9(2%)	Low salinity risk - no discharge site reported, well-retained forestry (97%), low stream salinity (>40 EC) with no trend, steep country.	Low significance for reduction of salinity risk
Johnson Ck	1(91%), 6(9%)	Salinity risk is low in general. Relatively high stream salinity (250 EC) indicates that there may be some salinity at the lower part of the sub-catchment.	Low significance for reduction of salinity risk
King Parrot Ck	3 (66%), 7(21%), 1(8%), 9(5%)	Salinity risk is low in general. Relatively high stream salinity (250 EC) indicates that there may be some salinity at the lower part of the sub-catchment.	Low significance for reduction of salinity risk
Limestone Ck	1(80%), 9(9%), 3(8%), 7(2%)	Salinity risk is low in general. High watertables may occur at the lower part of the sub-catchment.	Low significance for reduction of salinity risk
Merton Ck	1(89%), 9(8%), 7(3%)	Moderate salinity risk due to extensively cleared land (89%), high watertable and relatively high stream salinity (200+ EC). But insignificant off-catchment impact due to low flow.	High-density trees along cleared gentle slopes, but low significance for reduction of salinity risk is expected. Retention and re-introduction of native vegetation are also recommended.
Murrindindi R.	7(44%), 1(42%), 5(5%), 3(5%), 9(3%)	Low salinity risk - no discharge site reported, well-retained forestry (79%), low stream salinity (>40 EC) with no trend, steep country.	Low significance for reduction of salinity risk

Rubicon R	5(76%), 1(15%), 9(8%), 7(>1%)	Low salinity risk - no discharge site reported, well-retained forestry (79%), low stream salinity (>20 EC) with no trend, steep country.	Low significance for reduction of salinity risk
Scrubby Ck	1(67%), 9(24%), 3(2%), 7(1%)	Salinity risk is low in general. High watertables may occur at the lower part of the sub-catchment.	Tree belts along Goulburn River
Snobs Ck	5(91%), 1(5%), 7(2%), 9(2%)	Low salinity risk - no discharge site reported, well-retained forestry (96%), low stream salinity (>30 EC) with no trend, steep country.	Low significance for reduction of salinity risk
Spring	1(89%), 9(11%)	Moderate salinity risk due to extensively cleared land (93%), high watertable and relatively high stream salinity (250 EC). But insignificant off-catchment impact due to low flow.	High-density trees along cleared gentle slopes, but low significance for reduction of salinity risk is expected. Retention and re-introduction of native vegetation are also recommended.
Switzerland	7(70%), 3(17%), 9(7%), 1(5%)	Salinity risk is low in general. High watertables may occur at the lower part of the sub-catchment.	Tree belts along Goulburn River
Tallangalook Ck	1(75%), 2(9%), 9(7%), 7(6%), 4(3%)	Salinity risk is low in general. High watertables may occur at the lower part of the sub-catchment.	Low significance for reduction of salinity risk
Upper Goulburn R	1(98%), 9(1%)	Low salinity risk - no discharge site reported, well-retained forestry (99.6%), low stream salinity with no trend, steep country.	Low significance for reduction of salinity risk
West Eildon	1(88%), 9(12%)	Salinity risk is low in general. High watertables may occur at the lower part of the sub-catchment.	Tree belts along Goulburn River. Retention and re-introduction of native vegetation are also recommended.
Wightmans	1(50%), 9(36%), 7(11%), 5(3%)	Low salinity risk - no discharge site reported, well-retained forestry (90%), low stream salinity with no trend, steep country.	Low significance for reduction of salinity risk

West Goulburn

High priority None

Chapter 3 Moderate priority

Cornella Ck	4(30%), 3(26%), 1(18%), 6(17%), 9(7%)	Widespread high watertable along foothills, high recharge on hill slopes of Cambrian fractured rocks and colluvial and alluvial fans. However, off-catchment impact may be insignificant due to low stream flow.	High-density trees, particularly moderate water-use species such as sugar gum, would be suitable in most high recharge areas. Well-managed perennial pasture would be suitable at mid and lower slopes. There are some opportunities for groundwater pumping fresh groundwater from fractured rock aquifers to irrigate horticulture or farm forestry. Saline agronomy would be suitable at lower slope where watertable is high.

Chapter 4 Low priority			
Back	3(44%), 6(33%), 1(16%), 9(2%), 10(2%)	Salinity risk is low in general. High watertables may occur at the lower part of the sub-catchment.	Tree belts along Goulburn River. Perennial pasture and low density trees would be also effective to control recharge.
Buffalo Ck	3(68%), 6(21%), 1(11%)	Low salinity risk due to deep watertable and reasonably well-retained forest	Low significance for reduction of salinity risk
Sandy Ck (South)	6(58%), 3(19%), 7(17%), 1(4%)	Low salinity risk due to deep watertable and reasonably well retained forest. High watertable may occur at the lower slopes where have been cleared, but not evidenced.	Low significance for reduction of salinity risk
Wanalta Ck	3(57%), 1(14%), 6(14%), 9(1%)	Moderate salinity risk due to high watertables in places and high potential recharge along cleared gentle slopes	Low-density tree incorporated with well-managed perennial pasture would be suitable for recharge control at mid and lower slopes.
Goulburn Plains			
High Priority			
Lower Goulburn	6(93%), 3(5%), 1(2%)	The area with high watertable is not significant, but along Goulburn River and probably contribute significant salt load to the river	Tree belts along Goulburn River and Goulburn Weir would form an effective buffer to reduce groundwater/surface water interaction.
Chapter 5 Moderate priority			
Honeysuckle Ck Plain	6(68%), 9(16%), 3(15%), 1(1%)	High watertables occur at the BOS and lower of the sedimentary rises, and the area near irrigation area and drainage lines	Alley faming with perennial pasture at the lower slope. Low density tree planting along slopes of sedimentary rises.
Honeysuckle Ck Upland	5(81%), 9(15%). 1(3%), 3(1%)	High watertables are widespread at the BOS, lower slope, valley floor and along drainage lines. High recharge probably occurs along gentle colluvial slopes (GFS 5)	High-density plantings along colluvial slopes may be the most suitable options, particularly BOS plantation. Salt tolerant vegetation is also warranted at the lower and valley floor where watertable is high and saline. There may be some opportunities for groundwater pumping in the colluvium. Perennial pasture is generally unsuitable due to relatively high rainfall and acid soil.
Sheep Pen Ck Plain	6(98%), 3(2%)	Shallow watertables are widespread and saline across the sub-catchment. Discharge occurs along drainage lines and the plain/upland interface.	Wider adoption of salinity management protases is necessary due to influence of regional groundwater system. Widespread establishment of relatively salt tolerant perennial pasture (e.g. lucerne) is warranted. Improved management of traditional crops and pastures would reduce deep drainage, particular in low and moderate recharge area. The majority of the catchment area is not suitable for tree plantations due to shallow and saline watertables. There may be some opportunities along the plain/upland interface for moderate water-use tree species (e.g. red ironbark). The use of engineering options may be limited due to saline

			groundwater and problem of its disposal. Some opportunities for establishment of salt tolerant grasses in the areas with high watertables.
Sheep Pen Ck Upland	3(64%), 6(20%), 1(16%)	Shallow watertables are widespread at the lower slope, BOS and valley floor. Watertables are generally deep and rising steadily below hills. Groundwater is generally saline, but fresh shallow groundwater occurs in places. It is believed that high recharge occurs along fault zones where weathered sedimentary rocks are highly fractured.	High-density trees along the fault zones may be effective to control recharge. There may be some opportunities for farm forestry (e.g. alley farm) on the gentle slopes. Some opportunities for pumping fresh groundwater from plaeochannels. Some opportunities for establishment of salt tolerant grasses at the lower slope and BOS.
Chapter 6 Low priority			
Branjee	6(99%), 3(1%)	In general, salinity risk is low across the sub-catchment. High watertable occur along the irrigation boundary and the upper part of the sub-catchment (GFS3), but the area is small.	Low significance for reduction of salinity risk
Castle Ck	6(64%), 7(28%), 9(6%), 1(1%)	Low salinity risk in general, some hill slopes of weathered granites (GFS 7) may have some moderate salinity risk	Low significance for reduction of salinity risk
Creightons Ck	7(53%), 6(32%), 9(13%), 1(1%), 3(1%)	In general, salinity risk is low across the sub-catchment. High watertable occur at the BOS and lower slopes of weathered granites (GFS7) and valley floor (GFS 9), but the area is small.	Low significance for reduction of salinity risk
Pranjip Ck Plain	6(54%), 7(33%), 9(11%), 3(1%)	Watertable is generally deep. Some high watertables occur along drainage lines	Tree belts along creeks
Pranjip Ck Upland	same as above	High watertables occur at the lower slopes of weathered granites, but total area is insignificant. High recharge probably occur at the mid and upper slopes. On the alluvial plain, watertables are generally deep.	High density trees at the mid and upper slopes. Groundwater pumping?
Seven Ck Plain	6(80%), 9(11%), 3(5%), 5(4%)	Low salinity risk on plain area due deep watertable, some hill slopes of weathered volcanics (GFS 5) northern part of the sub-catchment may have some moderate salinity risk	High density plantings along colluvial slopes may reduce recharge. Salt tolerant vegetation is also warranted at the lower and valley floor where watertable is high and saline. Perennial pasture is generally unsuitable due to relatively high rainfall and acid soil.

Seven Ck Upland	7(68%), 5(28%), 9(2%), 1(1%), 8(1%)	High watertables are widespread at the BOS, lower slope, valley floor and along drainage lines. High recharge probably occurs along gentle collouvial slopes (GFS 5)	High-density plantings along colluvial slopes may be the most suitable options, particularly BOS plantation. Tree belts along the creek would form an effective buffer to reduce groundwater/stream interaction. Salt tolerant vegetation is also warranted at the lower and valley floor where watertable is high and saline. There may be some opportunities for groundwater pumping in the colluvium. Perennial pasture is generally unsuitable due to relatively high rainfall and acid soil.
Wormangal	6(55%), 7(16%), 9(12%), 3(11%), 1(6%)	There may be some high watertables along the plain/upland interface and valley floor in the upland area. But the total area may not significant	Farm forestry along the gentle slopes of sedimentary hills (GFS 3)
Broken Highland			
High Priority			
Broken R upland	2(31%), 7(31%), 9(24%), 5(6%), 1(5%), 3(1%), 4(1%)	High watertables are widespread at the BOS, lower slope, valley floor and areas along the river. High recharge probably occurs along gentle colluvial slopes (GFS3 and GFS 5)	High density plantings along colluvial slopes may be the most suitable options, particularly BOS plantation. Tree belts along the creek would form an effective buffer to reduce groundwater/stream interaction. Salt tolerant vegetation is also warranted at the lower and valley floor where watertable is high and saline. There may be some opportunities for groundwater pumping in the colluvium and fractured rocks. Perennial pasture is generally unsuitable due to relatively high rainfall and acid soil.
Chapter 7 Moderate priority			
Four and Sevens Ck	1(37%), 9(32%), 3(13%), 6(12%), 7(6%)	High watertables are widespread at the lower slope and valley floor, but the total area is insignificant. High recharge probably occurs along gentle slopes of weathered sedimentary rocks (GFS3)	High density plantings along slopes (GFS3) may be the most suitable options, particularly BOS plantation. Retain native vegetation in ridge and upper slope areas. Salt tolerant vegetation is also warranted at the lower and valley floor where watertable is high and saline. There may be some groundwater pumping opportunities in the fractured rocks. Perennial pasture is generally unsuitable due to relatively high rainfall.
Holland Ck	9(33%), 5(29%), 12(10%), 2(8%), 1(6%), 4(4%), 6(4%), 3(2%), 7(2%),8(2%)	High watertables are widespread at the BOS, lower slope, valley floor and areas along the creek. High recharge probably occurs along gentle colluvial slopes (GFS3 and GFS5)	High density plantings along colluvial slopes may be the most suitable options, particularly BOS plantation. Tree belts along the creek would form an effective buffer to reduce groundwater/stream interrelation. Retain native vegetation in ridge and upper slope areas. Salt tolerant vegetation is also warranted at the lower and valley floor where watertable is high and saline. There may be some opportunities for groundwater pumping in the colluvium. Perennial pasture is generally unsuitable due to relatively high rainfall and acid soil.
Chapter 8 Low Priority			
Five Ck	5(49%), 9(39%), 7(6%), 6(2%),	High watertables are widespread at the BOS, lower slope and valley floor, but the total area is insignificant. High recharge	High density plantings along colluvial slopes may be the most suitable options, particularly BOS plantation. Salt tolerant vegetation is also warranted at the lower and valley floor where watertable is high and saline. There may be some opportunities for groundwater pumping in

	3(3%), 1(1%)	probably occurs along cleared colluvial slopes (GFS5)	the colluvium. Perennial pasture is generally unsuitable due to relatively high rainfall and acid soil.
Chapter 9 Broken Plain			
High Priority			
Lower Broken R (Kialla East-Pine Lodge South)	6 (97%), 3 (3%), 1(1%)	Entire catchment area due to widespread shallow watertable, high groundwater salinity and active groundwater/stream interaction. Recharge occurs across majority of the sub-catchment.	Wider adoption of salinity management practices is necessary due to influence of regional groundwater system. Widespread establishment of relatively salt tolerant perennial pasture (e.g. lucerne) is warranted. Improved management of traditional crops and pastures would reduce deep drainage, particular in low and moderate recharge area. The majority of the catchment area is not suitable for tree plantations due to shallow watertables and high groundwater salinity. Some of sandy rises and area along Broken River and near irrigation area may offer some opportunities for moderate water-use tree species (e.g. red ironbark). The use of engineering options may be limited due to high groundwater salinity and problem of its disposal. Some opportunities for establishment of salt tolerant grasses at discharge area.
Moderate priority			
Congupna Ck Upland	4 (73%), 6(14%), 3(7%), 1(6%)	Widespread high watertable along foothills, high recharge on hill slopes of Cambrian fractured rocks and culluvial and alluvial fans	High-density trees, particularly moderate water-use species such as sugar gum, would be suitable in most high recharge areas. Well-managed perennial pasture would be suitable at mid and lower slopes. There are some opportunities for groundwater pumping fresh groundwater from fractured rock aquifers to irrigate horticulture or farm forestry. Saline agronomy may be the most suitable at lower slope where watertable is high.
Muckatah Ck	6(78%), 3(20%, 1(1%), 13(1%)	Widespread high watertable in the northern part of the sub-catchment. High watertables also occur at lower slope of sedimentary rises (GFS3) in the southern part of the sub-catchment	High-density trees along the irrigation boundary (as interception and recharge control) and hill slopes of sedimentary rises (as recharge control only). Widespread establishment of perennial pasture is warranted across the catchment area. Limited opportunities for groundwater pumping or drainage
Chapter 10 Low priority			
Boosey Ck Plain	6(95%), 1(2%), 3(1%), 7(1%), 9(1%)	Low salinity risk in general	Low significance for reduction of salinity risk

Boosey Ck Upland	7(48%), 6(16%), 9(13%), 3(12%), 1(11%)	Hill slopes formed by weathered fractured sedimentary rocks (GFS 3) and weathered granites (GFS 7)	High density trees targeted at recharge area and BOS plantation in granitic country (where GW is fresh) would be most effective. Well-managed perennial pasture would also be effective. Groundwater pumping may have some potential in weathered granites. Establishing salt tolerant grasses at discharge area would be the best options of living with salinity
Broken Ck Plain	6(71%), 3 (11%), 1(6%), 9(6%), 7(4%), 4(2%)	Generally low salinity risk due to deep watertable and relatively low recharge on plain area, moderate salinity risk along foothills at Devenish-Goorambat, Tarnook (GFS3) and Dookie (GFS4)	Low significance for reduction of salinity risk
Congupna Ck Plain	6(95%), 4(4%), 8(1%)	Low salinity risk in general, high watertables occur along interface of GFS6/GFS4	Low significance for reduction of salinity risk due to pobabaly strong influence of GFS4 in the upland area
Nine Mile Ck	6(92%), 4(6%), 2(2%)	In general, salinity risk is low across the sub-catchment. Moderate risk along the boundary with Congupna Ck Sub-catchment	Trees planting and establishing perennial pasture on the hill slopes (GFS 4)
Sandy Ck (Nth)	6(58%), 3(19%) 7(17%), 1(4%), 9(1%), 13(1%)	High watertables occur at lower slopes of sedimentary rises, but total area is insignificant. On the alluvial plain, watertables are generally deep.	Trees planting at the upper and mid slopes, and establishing perennial pasture at the lower slope would be effective for salinity control