6.4 Impacts of Dryland Salinity on Assets in the North East

6.4.1 Background to identifying impact of salinity on Assets

The RCS identified soil salinity as a threat to the assets of land and biodiversity and water salinity as a threat to the asset of inland waters. The RCS did not identify the assets of people, built infrastructure, or climate and atmosphere as being threatened by soil or water salinity. In more recent times the issue of urban salinity has been brought to the attention of DPI in the North East. The region is also experiencing high population and industry growth and without proper planning processes and good information available to local government there is a risk to built infrastructure. This plan will expand on how all six assets of the region are threatened by soil and water salinity, rather than just those listed as being threatened in the RCS. The process of soil and water salinity are inter-linked therefore the information given in this section on the impact to assets is combined as a single threat of salinity.

It is important to note that there are some variations in the total area that has been mapped as being salt affected in the region. In 1997 the area affected by salinity in the region was mapped as 2300ha. Over a number of years this mapping has been reviewed and the area of salt affected land is now 1,311ha. There is a possibility that the original mapping assessment of sites failed to distinguish between waterlogged and saline areas, with the previous figures collected during a wetter climate cycle and some sites may have been responding to waterlogging. The situation today may reflect the drier climate cycle thus the original 2300ha mapped area may return in a wetter period.

The area mapped reflects the information made available by landholders to DPI staff. There is a possibility that a larger area may exist. This was highlighted by research undertaken in 2002 by Charles Sturt University. CSU found that salinity maps had failed to identify 61% of the areas affected by salinity; this is assuming landholders had correctly diagnosed saline affected areas. The report also pointed out that it was unlikely landholders would deliberately overstate the extent of salinity on their properties (CSU 2002).

The area of saline discharge sites used in this plan is based on mapping undertaken by DPI staff of known salinity sites. This is considered to be the most up to date and accurate at the time this plan was developed. Sites classified as being saline have been assessed using vegetation based on a presence of salt tolerant plant species and absence of salt sensitive species. The depth to water table data is based on data collected from the state groundwater network (PIRVIC & SKM) and current modelling by agencies. Water salinity data has been collected using continuous stream monitoring stations with data being analysed as well as data collected by handheld meters.

6.5 Threats to the Land Assets

This asset is generally defined as agricultural land, other private land, and public land. The key indicators used here to identify current and predicted area of land affected by salinity is the area of saline discharge sites and area of shallow watertables.

6.5.1 Land Currently Affected

Land identified as being affected by salinity in the North East has been assessed using vegetation assessments, that is the presence and absences of salt tolerant and sensitive species. The dominant land use that is affected by salinity is agricultural land, which leads to a loss of crops and pastures (Figure 20).

Current known total area of land with saline discharge: 1311ha
Current known area of saline discharge on private land: 1190ha
Current known area of saline discharge on public land: 121ha

Figure 20 – Impacts of salinity on land assets in the North East include loss of pasture and crops (eg vines) decline in soil structure and erosion.

Depth to water table can be used to illustrate the potential area of land at risk as the watertable rises within the catchment (Table 15). Groundwater monitoring has found that the Ovens and King Catchments in the North East have the sharpest rate of rise in groundwater level for Victoria. A rise in the water table was recorded between 10 and 30 cm/year. While trends of less than 10cm were recorded in the rest of the state (Clifton et al 2000a). Watertable levels within two metres will interact with the land surface via capillary action. Areas within three metres of the surface are definitely at risk of salinisation and waterlogging occurring.

Table 15 – Depth to watertable and hectares at risk within salinity priority areas.

	Depth to Watertable (m) against Hectares at risk.					
Salinity Priority Area	**<1m**	**<2m**	**<3m**	**<4m**	**<5m**	**<10m**
Carboor Bobinawarrah		166	838	2354	4257	7079
Chiltern		3	3719	3221	3381	17019
Everton - Tarrawingee	176	723	585	1987	3888	5117
Greta		96	3992	5343	4179	4319
Indigo Valley		88	1152	3102	2993	8188
Murmungee		20	381	2757	3158	2668
Riverine Plain	13	864	4918	7116	10502	31397
Rutherglen		18	2046	2527	1319	6949
Springhurst		40	1003	2395	3913	4840
Talgarno-Wises Creek		5	634	1534	1759	4026
Whorouly			580	1806	4219	4617
Wodonga - Baranduda		22	227	688	751	1589
Total Hectares	**188**	**2046**	**20076**	**34832**	**44320**	**97808**

Source: Cheng 2004

6.5.2 Predicted Effect

In 1997 the estimated spread of discharge areas without the implementation on the salinity strategy was 5.83% per annum, (NESWG 1997). However current predictions of estimated spread are in the order of 1-2%, due to the variation in climatic conditions since 1997 (pers. comm. Dyson 2005).

The predicted area of shallow watertables for the region is:

- Year 1998: 40,400ha
- Year 2020: worst case scenario 48,000ha
- Year 2050: worst case scenario 68,000ha (NLWRA 2000)

There is a potential risk that high watertables may develop into saline discharge in the region if the circumstances are suitable.

6.5.3 Overall Cost to this Asset

The annual cost to the land asset affected by salinity for agricultural producers alone in the region is approximately $760,000. The overall cost to the land asset is $1.858 million annually (Wilson 2006). The economic evaluation in chapter 9 discusses the cost in more detail.

6.6 Threats to the Biodiversity Assets

This asset is generally defined as flora, fauna, and terrestrial ecosystems. Defining the impact that salinity has on each species of flora and fauna within the catchment is not possible. It is possible however to consider the impacts that rising groundwater, saline water and discharge areas have on the structure and composition of vegetation within the catchment. Ecological vegetation classes (EVC's) identify structure and composition of vegetation, and these have been used as a measure of biodiversity within this plan.

An EVC consists of one or a number of floristic communities that appear to be associated with a recognisable environmental niche, and which can be characterised by a number of their adaptive responses to ecological processes that operate at the landscape scale level (DSE 2006). It is possible to associate fauna with species of flora or vegetation communities with particular structure or composition.

Salinity can have a direct or indirect impact on fauna; for example a frog in a saline waterway may be directly impacted (loss of food and toxic environment). While the loss of a tree used by one bird for food supply may force the bird to compete for food within an another birds range. The loss of isolated paddock trees is commonly associated with discharge areas these tree provide valuable habitat for many species (Figure 21). A study in to tree decline in the North East found that over a 29 year period a 47% decline in isolated paddock trees had occurred (DPI 2003).

Figure 21 – The Impact on biodiversity assets includes the loss of valuable isolated paddock trees.

6.6.1 Biodiversity Currently Affected

The EVC of land identified as being affected by salinity has been determined as follows (Table 16):

Table 16 – Saline discharge sites found within extant EVC's in the North East. Other EVC that have one site each although lees than 1ha include Heathy Dry Forest (EVC 20), Wetland Formation (EVC 74), Swampy Riparian Woodland (EVC 83) and Grassy Woodland (175).

EVC	EVC NAME	No Sites	Area (ha)
23	Grassy Dry Forest	2	2
47	Valley Grassy Forest	5	5
55	Plains Grassy Woodland	7	24
56	Floodplain Riparian Woodland	9	101
61	Box Ironbark Forest	2	2
68	Creekline Grassy Woodland	3	5
255	Riverine Grassy Woodland/Sedgy Riverine Forest/Wetland Formation Mosaic	14	35
803	Plains Woodland	10	9
	TOTAL		183

Note that the difference in total number of discharge sites between Table 16 and 17 is due to some discharge site occurring over two EVC.

The status of an EVC can be defined as 'endangered' which generally means contracted to less than 10% of former range, 'vulnerable' means 10% to 30% remains, 'depleted' means 30% to 50% remains, and 'least concern' means greater than 50% remains (DSE 2006). The EVC status of the land affected by salinity has been identified (Table 18) as follows:

- Endangered EVC's are found on 74ha of land identified as saline discharge
- Vulnerable EVC's are found on 108ha of land identified as saline discharge

Table 17 – Status of EVC's where saline discharge sites are found.

Status	Description	No Sites	Area (ha)
E	Endangered	42	74
D	Depleted	2	2
V	Vulnerable	12	108
	TOTAL	**57**	**184**

Black Swamp is the most significant wetland within the region, which is listed on The Directory of Important Wetlands in Australia (Environment Australia 2001). It is found on the flood plain between the Murray and Ovens River. There are significant saline discharge areas upstream of the swamp associated with high watertables in the Springhurst/Byawatha Hills. The risk of saline water flows impacting on the health of this swamp area needs further investigation.

Black Swamp is considered high value for its ecological, educational, scientific, cultural and scenic features. It is also home to the Great Egret listed by JAMBA and CAMBA (Environment Australia 2001). Salinity is listed as a threat to this wetland in the Directory to this wetland.

6.6.2 Predicted Effect

The predicted effect requires further investigation within the region, although by considering the depth to watertable it is possible to understand the potential impact on assets if the watertable was to rise. Currently 1398ha of endangered EVC has a Depth to Watertable (DTWT) of less than 3m, while 854ha occurs within saline discharge sites; also 1054ha of vulnerable has a DTWT of less than 3m, while 160ha occurs within saline discharge sites (Table 18).

Table 18 - Summary of DTWT affecting extant EVC Status in each salinity priority area.

		Area (Ha) of EVC Status by Depth to Water Table					
Priority Zone	**Status**	**<1m**	**<2m**	**<3m**	**<4m**	**<5m**	**<10m**
CARBOOR BOBINAWARRAH	E				5	9	11
	V		5	59	128	206	316
	D			10	66	453	3134
	LC			1	6	52	669
CHILTERN	E		0	100	169	200	2853
	V			57	169	322	1010
	D			1	1	1	1723
	LC			5	26	48	1341
EVERTON TARRAWINGEE	E	1	4	10	36	181	384
	V			1	1	31	128
	D			2	2	22	159
	LC			2	2	32	419
GRETA	E			8	14	15	21
	V			6	17	35	69
	D			3	23	119	607
	LC			1	4	40	345
INDIGO VALLEY	E		0	20	37	62	378
	V			359	523	668	786
	D		0	3	15	19	263
	LC			25	56	73	152
MURMUNGEE	E		0	5	31	100	183
	V				0	1	1
	D			0	4	20	149
	LC					0	1
RIVERINE PLAIN	E	12	164	1197	2581	5188	9324
	V	1	70	154	301	432	669
	D			2	18	41	52
	LC					0	0
RUTHERGLEN	E			45	73	90	145
	V			340	588	745	1016
	LC			14	28	47	180
SPRINGHURST	E			11	27	77	210
	D			2	3	15	202
	LC			3	15	43	641
TALGARNO-WISES CREEK	E			0	4	4	58
	D					1	19
	LC				11	34	225
WHOROULY	E			0	18	51	67
	V			3	9	33	39
	D			7	27	147	1390
	LC				0	4	126
WODONGA - BARANDUDA	E		0	2	10	19	40
	V				1	1	1
	D				0	4	75

6.6.3 Overall Cost to this Asset

The true cost to biodiversity requires further investigation in the region. It has not been possible to assess this issue with the funding available to this stage.

6.7 Threats to the Built Infrastructure Assets

This asset is generally defined as roads, railway lines, buildings, and underground utilities. The infrastructure that can be affected by salinity also includes household items such as hot water systems, toilets, taps, and pipes. Built infrastructure can be affected by rising groundwater, saline water supplies and saline discharge sites (Figure 22). The built infrastructure asset has a wide number of stakeholders such as households, industry, utilities companies, state, and local government.

Figure 22– An example of salinity impact on built infrastructure, with salinity occurring beside roads.

6.7.1 Built Infrastructure Currently Affected

It is estimated that 1045 urban households in the region are currently affected by slight or very slight saline and shallow watertables (Wilson 2004). It is estimated that 90 commercial, retail and industrial buildings are affected by saline and shallow watertables (Wilson 2004).

Depth to watertable is also an indicator of potential risk to built infrastructure. Depth to watertable could not be used accurately within urban areas due to limited suitable information for modelling. Therefore the towns within 1km, 2km and 5km of saline discharge sites have been identified (Table 19).

Table 19 – Proximity of towns and localities within the region to saline discharge sites.

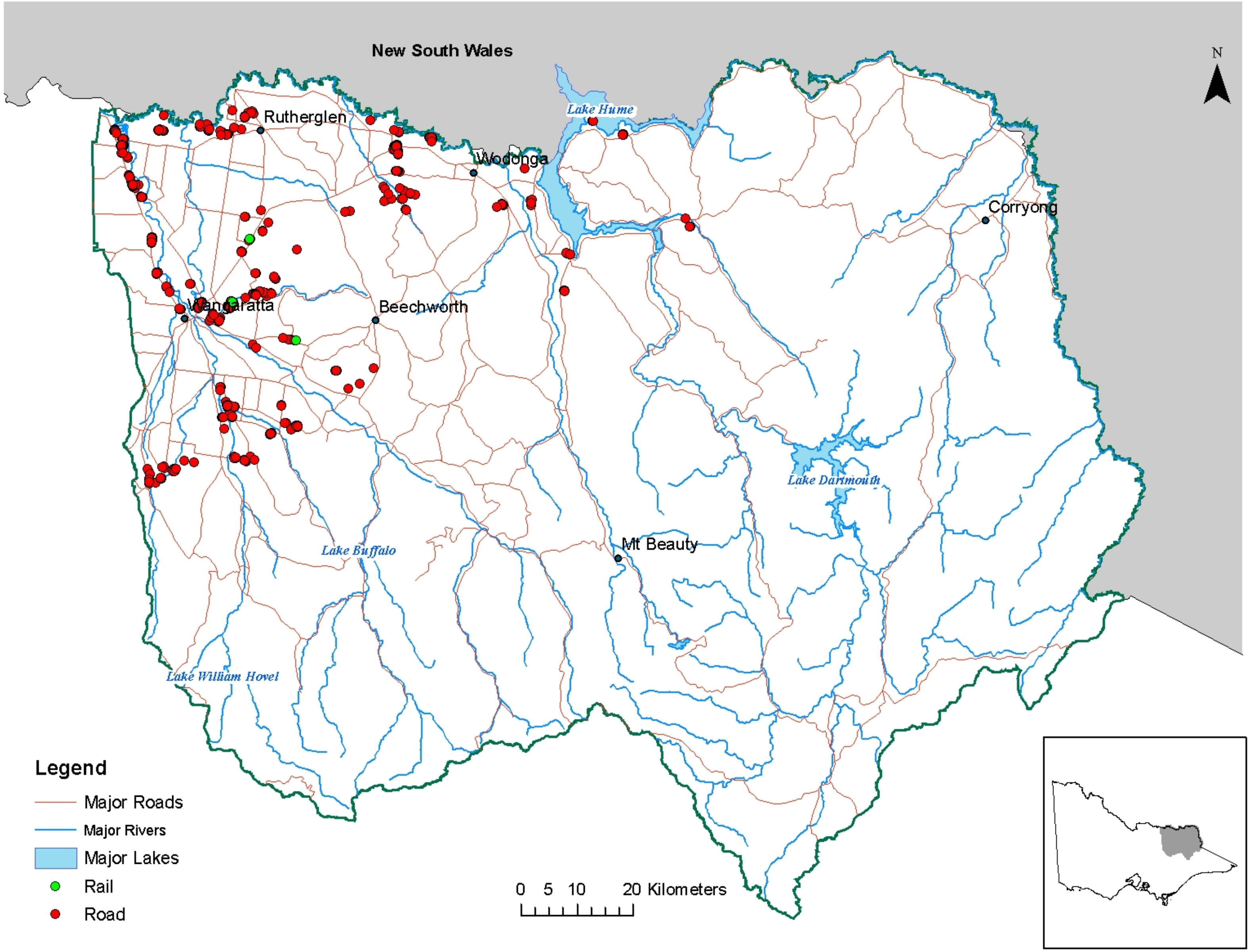
Within 1km	Within 2km	Within 5km	
• Barnawartha South	• Baranduda	• Baarmutha	• Greta
• Bobinawarrah	• Barnawartha North	• Bandiana	• Greta West
• Boralma	• Bellbridge	• Barnawartha	• Huon
• Bundalong South	• Bowman	• Bethanga	• Jarrott
• Byawatha	• Bowser	• Bonegilla	• Kallara
• Docker	• Carlyle	• Boorhaman	• Kergunyah
• Esmond	• Carraragarmungee	• Boorhaman North	• Leneva
• Greta South	• Corryong	• Brimin	• Markwood
• Hansonville	• Cudgewa	• Brookfield	• Milawa
• Hansonville South	• Everton	• Browns Plains	• Moyhu
• Killawarra	• Gundowring North	• Bullioh	• Norong Central
• Kneebones Gap	• Killawarra	• Bundalong	• Old Tallangatta
• Meadow Creek	• Londrigan	• Byrne	• Oxley
• Murmungee	• Mitta Junction	• Carboor	• Peechelba
• Red Bluff	• Ryans Creek	• Carboor Upper	• Peechelba East
• Skehan	• Talgarno	• Cheshunt	• Pieper
• Springhurst		• Chiltern	• Prentice North
• Tarrawingee		• Claremont	• Rutherglen
• Wahgunyah		• Dugays Bridge	• Sandy Creek
• Waldara		• Ebden	• Tallangatta East
• Wangaratta		• Edi Upper	• Tangambalanga
		• Eldorado	• Taylor Gap
		• Georges Creek	• Whitfield
		• Great Northern	• Whorouly
			• Whorouly South
			• Wodonga West

Across the region roads and railway lines are found within saline discharge sites or within close proximity (Figure 23). There are approximately 3.4km of major roads in the region that are located with a saline discharge and 5.7km of minor roads (Table 20). Approximately 200m of railway line are found within saline discharge sites. The rail assets within the Everton-Tarrawingee and Murmungee priority areas are now the Murray to Mountains Rail Trail and not operating railway lines.

Table 20 – Road and rail infrastructure within set distance of mapped discharge sites (m).

Feature Type		**Distance**		
		On	**<50m**	**<100m**
Roads	**Major Road**	3400	13,700	21,700
	Minor Road	5700	21,800	35,700
	Unsealed Road	5100	13,500	20,200
Rail	**railway**	200	300	300
	railway bridge		300	700
	rail trail			200

Figure 23 – Roads and Railway line close to saline discharge sites.



6.7.2 Predicted Effect

By considering depth to watertable it is possible to understand the potential impact on assets if the watertable was to rise. Currently 22km of railway lines have watertables within 3m, while only 200m are currently within a saline discharge site (Table 21). While approximately 433km of roads have watertables within 3m, with 14.2km currently within saline discharge (Table 22). The potential impact of rising saline groundwater on assets such as railway lines and rail trails is not fully understood.

Table 21 - Metres of rail assets by depth to watertable. The rail assets within the Everton Tarrawingee and Murmungee priority areas are now rail trail not operating railway lines.

Priority Zone	Type	<1m	<2m	<3m	<4m	<5m	<10m
CHILTERN	bridge_rail	0	0	231	231	231	231
	rail_siding	0	0	990	1704	1704	1704
	railway	0	191	12874	17493	20894	25936
	Total	0	191	14095	19428	22829	27871
EVERTON TARRAWINGEE	bridge_rail	0	0	0	0	0	61
	rail_trail	355	2559	3854	6809	12645	23155
	Total	355	2559	3854	6809	12645	23216
INDIGO VALLEY	bridge_rail	0	0	0	41	41	249
	railway	0	0	1850	8149	8568	13424
	Total	0	0	1850	8189	8608	13673
MURMUNGEE	bridge_rail	0	0	0	68	109	109
	rail_siding	0	0	0	342	620	620
	rail_trail	0	25	1296	5712	8424	10572
	Total	0	25	1296	6122	9153	11301
RIVERINE PLAIN	bridge_rail	0	142	142	603	1189	1566
	rail_siding	0	0	0	459	485	3463
	rail_trail	0	0	0	781	2895	4710
	railway	0	0	107	2069	5823	20608
	Total	0	142	249	3912	10392	30346
RUTHERGLEN	railway	0	220	220	411	431	4738
	Total	0	220	220	411	431	4738
SPRINGHURST	rail_siding	0	0	0	669	841	841
	railway	0	0	1103	4695	9912	10529
	Total	0	0	1103	5364	10752	11369
Grand Total		355	3136	22667	50235	74811	122514

Table 22 - Kilometres of road assets by depth to watertables.

Priority Zone	Type	<1m	<2m	<3m	<4m	<5m	<10m
CARBOOR BOBINAWARRAH	Major Road		0.7	3.4	14.8	24.5	27.2
	Minor Road		0.3	4.5	14.9	29.7	39.4
	Unsealed Road		1.7	7.8	20.8	51.7	87.1
	Total		2.7	15.7	50.6	105.9	153.8
CHILTERN	Major Road			44.1	64.3	74.0	88.5
	Minor Road			55.4	92.0	126.2	222.1
	Unsealed Road			17.8	28.7	40.0	180.1
	Total			117.3	185.0	240.1	490.7
EVERTON TARRAWINGEE	Major Road	0.2	1.8	6.7	8.8	19.9	31.6
	Minor Road	0.8	4.6	8.7	19.4	41.6	75.8
	Unsealed Road	0.7	2.3	3.5	7.8	22.4	34.9
	Total	1.6	8.7	18.9	36.0	83.9	142.4
GRETA	Major Road		0.2	10.3	26.8	38.6	44.2
	Minor Road		0.9	32.2	62.7	76.7	90.0

	Unsealed Road		0.3	23.7	52.5	72.6	96.8
	Total		1.5	66.1	142.0	188.0	231.0
INDIGO VALLEY	Major Road		0.3	11.6	33.4	40.1	67.2
	Minor Road		2.0	13.5	45.6	69.1	116.2
	Unsealed Road		0.3	12.8	25.9	34.2	69.3
	Total		2.6	37.9	104.9	143.4	252.7
MURMUNGEE	Major Road		0.1	1.5	10.6	22.9	29.6
	Minor Road			0.6	13.2	26.4	33.5
	Unsealed Road			1.5	15.0	27.5	37.9
	Total		0.1	3.6	38.8	76.8	101.1
RIVERINE PLAIN	Major Road		3.4	23.1	53.5	97.7	227.7
	Minor Road		2.9	33.5	80.8	147.8	453.2
	Unsealed Road		2.7	25.7	50.4	101.7	253.1
	Total		8.9	82.3	184.7	347.2	934.0
RUTHERGLEN	Major Road			3.0	9.4	13.7	39.1
	Minor Road		0.1	18.8	51.0	66.1	150.5
	Unsealed Road			24.9	41.3	53.5	98.5
	Total		0.1	46.7	101.7	133.3	288.2
SPRINGHURST	Major Road		0.3	6.4	18.9	30.0	31.8
	Minor Road		0.2	9.3	28.3	64.8	77.7
	Unsealed Road		0.1	6.4	17.6	32.7	63.6
	Total		0.7	22.1	64.8	127.6	173.1
TALGARNO-WISES CREEK	Major Road			6.0	18.2	24.7	30.7
	Minor Road			0.4	1.8	3.1	3.4
	Unsealed Road		0.2	2.7	9.8	19.9	32.7
	Total		0.2	9.2	29.8	47.7	66.8
WHOROULY	Major Road			0.6	6.1	26.8	29.9
	Minor Road			3.7	13.5	36.7	42.9
	Unsealed Road			2.5	11.6	34.3	70.8
	Total			6.8	31.2	97.8	143.6
WODONGA - BARANDUDA	Major Road			0.4	2.7	6.8	9.2
	Minor Road			5.4	15.9	18.7	19.8
	Unsealed Road		0.0	0.9	6.5	13.4	29.5
	Total		0.0	6.6	25.0	38.9	58.5
Grand Total		**1.6**	**25.5**	**433.3**	**994.5**	**1630.5**	**3035.8**

6.7.3 Overall Cost to this Asset

It is estimated that high saline water tables cost households, industry, utilities companies, and state and local government in the North East Region $1.1million annually. This cost represents the additional repair and replacement costs of infrastructure. It is predicted with a 2% annual expansion that by 2050 this could increase to $1.7million annually (Wilson 2006). The use of saline groundwater for domestic purposes is a potential threat to this asset. There is not a lot of information in this regard available at the time this plan was developed. The economic evaluation in chapter 9 discusses this is in more detail.

6.8 Threats to the Inland Water Resources Assets

The asset of Inland waters are generally considered to be rivers, streams, wetlands, storages and groundwater, it includes not only the water but the aquatic and terrestrial ecosystems that are part of them. Key indicators used to identify current and predicted area of inland water resources affected by salinity is based on discharge areas, rising groundwater, salt loads and concentrations (EC). Salinity can impact on the health of the riparian ecosystems (figure 24), both flora and fauna species have tolerance levels which the will decline or cease to survive. Flora and fauna species can be directly and indirectly affected, such as a fish or plant living within the saline environment or an animal dependent on the water for its drinking supply. Limitations for how water can be used also apply to domestic, agricultural and horticultural uses. This especially applies to surface water where flow decreases leading to an increase in salt concentrations and pumping of groundwater. A decline in the soil structure can also occur along rivers and streams and around wetlands and storages.

Figure 24 – Impact of salinity on inland water assets, including saline water in dams and salinisation of waterways.

6.8.1 Inland Waters Currently and Potentially Affected

This information was developed through modelling of current saline sites and waterways (surface water). The proximity of current salinity discharge sites to waterways is:

- 36% of salinity discharge sites are within 50m of a waterway.
- 54% of salinity discharge sites are within 100m of a waterway.

Approximately 180,000 tonnes of salt is exported annually from the North East in the river systems (NESWG 1997). The impact this has on the streams and rivers is generally low due to the high rainfall (flow) that occurs within the catchment. This is predicted to increase to approximately 240,000 tonnes of salt a year (Table 23). The information within table 23 is from work undertaken in 1997 for the original NESS. The Ultimate Salt Loads Report for Victoria in 2000 indicated substantially lower predicted EC estimates for Morgan for the period to the year 2027. This plan did not have the resources to investigate beyond the boundaries of the MDBC Basin Salinity Management Strategy 2001-2015. Salinity levels (EC) are predicted to remain stable within the region over time (Table 24).

Table 23 – Current and predicted impacts of salt loads from the North East on the Murray River.

Catchment	Average annual salt load (t/yr)	Impact on Murray River (EC at Morgan) estimated for 1985-95	Predicted for 2027 Average annual salt load (t/yr)	Predicted for 2027 Impact on Murray River (EC at Morgan)
Upper Murray	104,668	15.5	141,077	21.03
Kiewa	21,078	4.4	28,410	5.90
Ovens	55,942	10.8	75,401	14.52
Total	181,688	30.7	244,888	41.45

Source: NESWG 1997.

Table 24 - Flow-Weighted Average River Salinity EC.

River	Current	2020	2050	2100
Ovens River u/s River Murray	70	70	75	80
Kiewa River u/s Murray River	45	45	45	45

Source: (DNRE 2000a, DNRE 2000b).

The North East CMA and DPI established a series of four continuous stream monitoring stations in 1998. These provide data on stream salinity levels and salt loads. Table 25 and Figure 25 demonstrate the influence of flow and salt load on streams within the region, which are particularly highlighted during winter 2002. While salinity levels (EC) are generally low, salt loads that are exported from the region are worth noting (Table 26). They are located at key points in the catchment to monitor salt moving through the catchment (Figure 26).

Table 25 Monthly salt loads for continuously monitored streams in 2002

Month	Monitoring Station											
	Ovens River at Peechelba 403241			Three Mile Creek 403249			Black Dog Creek 403247			Indigo Creek 403248		
	Flow (ML/mth)	Salt Load (t/mth)	FWS (µs/cm)	Flow (ML/mth)	Salt Load (t/mth)	FWS (µs/cm)	Flow (ML/mth)	Salt Load (t/mth)	FWS (µs/cm)	Flow (ML/mth)	Salt Load (t/mth)	FWS (µs/cm)
January	12,138	610	84	113	31	458	0	0	na	3	2	761
February	9,431	528	93	150	70	783	0	0	na	0	0	na
March	10,070	532	88	205	120	976	0	0	na	0	0	na
April	10,428	543	87	138	111	1,337	0	0	na	0	0	na
May	13,772	725	88	270	148	911	0	0	na	17	10	947
June	45,003	1,637	61	1,374	183	222	0	0	na	94	38	677
July	88,390	2,679	51	1,670	186	186	0	0	na	131	44	563
August	71,136	2,311	54	1,830	204	186	0	0	na	119	39	547
September	74,807	2,491	56	2,105	236	187	0	0	na	131	41	526
October	49,643	1,768	59	1,068	179	279	0	0	na	33	10	499
November	14,345	673	78	395	122	516	0	0	na	0	0	na
December	6,530	378	97	74	58	1,314	0	0	na	na	na	na
Total	405,692	14,874	61	9,391	1,648	293	0	0	na	529	184	580

Figure 25 – This graph illustrates the monthly salt load distribution in streams.

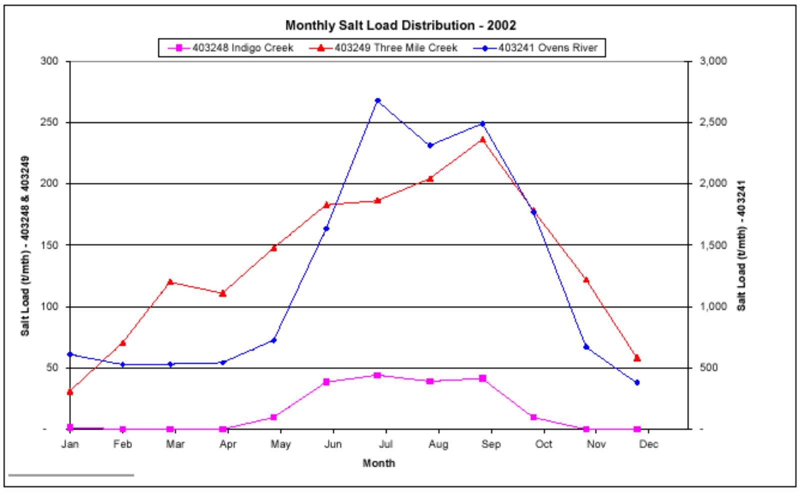


Table 26 – Mean daily EC (µS/cm) and salt loads (tonnes) recorded by continuous stream monitoring stations.

Name	1998 EC (µS/cm)	1999 EC (µS/cm)	1999 salt load tonnes)	2000 EC (µS/cm)	2000 salt load tonnes)
The Ovens River	74	78	35,380	64	70,072
Three Mile Creek				119	4,765
Indigo Creek		344	1,225	354	4765
Black Dog Creek	190	191	777	167	2599

Source: GMW 2001

The North East had no data on stream salinity within many of the small sub-catchments. Recently the Bureau of Rural Sciences (BRS) supported an endeavour to capture stream EC data and build community understanding of these processes. This project lead to the development of a community stream salinity monitoring program on 59 stream sites (Figure 26). This monitoring is valuable base data for a number of streams where data has never been previously collected (Table 27). It is accepted the data collection period is short and taken during a climatic period of lower than average rainfall, this impacts on the value of the data.