

# INFILL SEWERAGE PROGRAM

ANNUAL REPORT 2000 - 2001



## *REPORT*

This publication is the fifth Annual Report for the Infill Sewerage Program since the announcement of the program in April 1994. In some sections, information has been provided for both current and previous years.

## *MISSION*

To provide the opportunity for the community to connect to a sewerage scheme and thus contribute to the protection of public health and the environment.

## *VISION*

To exceed the mandate by providing sewerage services to more than 100,000 properties for less than \$800 million over a 10-year period and to maximise connections to sewerage schemes. (However, the program is currently being reviewed and is expected to be extended over a longer period at a reduced level of annual funding).

## *PROGRAM OBJECTIVES*

- Within the ten-year program sewer conventionally sized existing Perth metropolitan residential lots on the coastal plain. (However, the program is currently being reviewed and is expected to be extended over a longer period at a reduced level of annual funding).
- Within the ten-year program sewer progressively in a frontal process conventionally sized existing developed residential and town centre properties in medium and large country towns and cities not serviced by other organisations. (However, the program is currently being reviewed and is expected to be extended over a longer period at a reduced level of annual funding).
- Sewer the residential areas of the Perth metropolitan area classified as a potential health risk within the first five years of the program.
- Implement the communication plan and media strategy aimed at developing a positive community attitude towards the program.
- Minimise householder and public inconvenience.
- Develop the best practices of tendering, contracting and construction.
- Maintain a consultative and informative process with industry stakeholders.

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## THE STATE GOVERNMENT'S INFILL SEWERAGE PROGRAM

The Western Australian Government and the Water Corporation jointly embarked on the Infill Sewerage Program to provide reticulated sewerage to those areas of metropolitan Perth and country towns where the use of septic tank systems represents potential threats to public water supplies, public health, the environment and constrain urban development.

The program commenced on 1 July 1994 and is one of the largest public infrastructure projects ever undertaken in the State. It is the equivalent of sewerage a city the size of Canberra. Approximately 100,000 properties, being 80,000 within metropolitan Perth and 20,000 in country towns, are being targeted over the 10 years of the program at an estimated cost of \$800 million (in December 1994 dollars). However, the program is currently being reviewed and may be extended over a longer period at a reduced level of annual funding.

## OVERVIEW BY MANAGER, INFILL SEWERAGE PROGRAM

The provision of reticulated sewerage provides substantial long-term benefits to present and future generations in the areas of general health, the environment and the protection of our precious groundwater sources. It is through the performance and efforts of the Infill Sewerage Branch that the program is supported by the general community who are anxious to have the sewerage facility as soon as possible. The program requires planning, design, community liaison, preparation and awarding of contracts, gaining the confidence of and negotiating with private construction contractors and communication with residents.

The Infill Sewerage Team is comprised of private sector survey and design consultants and civil construction contractors working in close harmony with Corporation planning, design, project management and program management staff. Through open and honest communication practices a close knit team of members of the private sector and Corporation staff has developed. These members have worked together to resolve many difficult issues that have confronted the program. It is only through the tremendous teamwork and level of spirit exercised by those involved that has enabled the program to be highly successful and widely recognised. The team is fully committed to the Corporation's Company One vision. The relationship between the infill program and its contractors and suppliers is an excellent demonstration of the Corporation's aim to understand its customers' business and to add value to those businesses. It is this relationship that regularly sees infill projects being completed within budget and ahead of time.

Prior to the commencement of the Infill Sewerage Program on 1 July 1994, approximately 25 percent of lots in the Perth metropolitan area and 45 percent of lots in medium to large country towns used on-site treatment systems. By comparison, only about 4 percent of lots in most other Australian capital cities were unsewered.

The need for the program arose from the unconstrained urban development that occurred from the 1950's through to the 1970's when property development was generally permitted without a sewerage requirement.

The performance of construction contractors has generally been outstanding. Project completion dates were met and the number and value of contract variations have been minimised largely because of more thorough investigations during the design phase of projects. Contractors have generally continued to work very hard at satisfying the requirements and demands of the Corporation's customers. At times, this has proven to be very difficult given the disruptive nature of sewerage reticulation construction activities in established areas.

In addition to the execution of infill projects by the civil construction industry I would like to acknowledge the support and team participation of the following program members;

- John Goss, John Mills, Steven Jeffery and other members of the Infill Sewerage Branch.
- Cecil Aaron and the planning team from Infrastructure Planning Branch.
- John Bond and the design team from Infrastructure Development Branch.

The Government is presently reviewing the level of expenditure for all existing State programs. In line with that action, the Corporation is reviewing all areas of its operations and maintenance and levels of capital expenditure, which includes the Infill Sewerage Program and Small Town Sewerage Program. The Infill Sewerage Program is expected to be extended over a longer period at a reduced level of annual funding.

Ken R Walter

## MANAGEMENT STRUCTURE

Mr Ken Walter is the Manager of the Infill Sewerage Program and Small Town Sewerage Program.

Reporting to Mr Walter are;

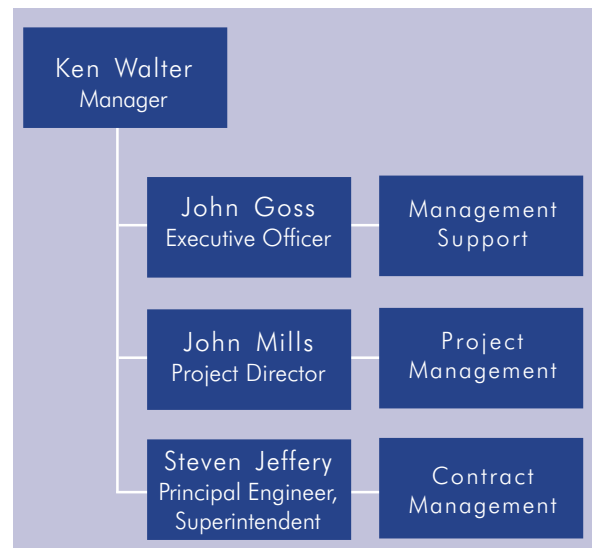
John Goss, Executive Officer

John Mills, Project Director

Steven Jeffery, Principal Engineer / Superintendent



(left to right) John Goss, Ken Walter, John Mills and Steven Jeffery.



## PERFORMANCE AT A GLANCE

ITEM	PREVIOUS YEARS 1994/1995 TO 1999/2000	THIS YEAR 2000/2001	TOTAL 1994/1995 TO 2000/2001
<b>Expenditure \$ Millions</b>			
Metropolitan	331.473	57.035	388.508
Country	147.008	29.873	176.881
<b>Total</b>	<b>478.481</b>	<b>86.908</b>	<b>565.389</b>
<b>Number of Lots Sewered</b>			
Metropolitan	41,672	6,553	48,225
Country	12,718	2,401	15,119
<b>Total</b>	<b>54,390</b>	<b>8,954</b>	<b>63,344</b>
<b>Number of Major Construction Contracts</b>			
Metropolitan	206	17	223
Country	122	12	134
<b>Total</b>	<b>328</b>	<b>29</b>	<b>357</b>



Construction work at Scarborough.

## CAPITAL EXPENDITURE BY REGION

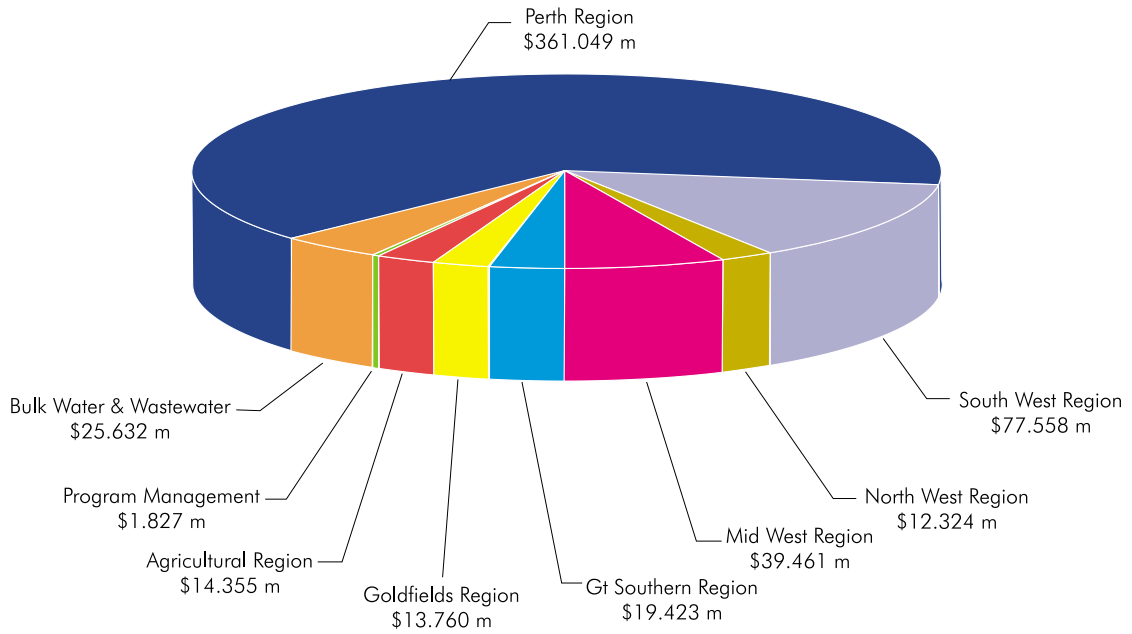
Region	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	
	\$ Millions	\$ Millions	\$ Millions	\$ Millions	\$ Millions	\$ Millions	\$ Millions	
<b>Perth Region</b>								
New Infrastructure	43.077	51.983	44.871	46.639	63.565	51.844	48.481	350.460
Upgrade Existing Infrastructure	2.166	0.317		0.559	0.412	1.410	5.725	10.589
<b>Total</b>	<b>45.243</b>	<b>52.300</b>	<b>44.871</b>	<b>47.198</b>	<b>63.977</b>	<b>53.254</b>	<b>54.206</b>	<b>361.049</b>
<b>South West Region</b>								
New Infrastructure	5.309	3.713	8.793	10.023	6.521	14.250	13.833	62.442
Upgrade Existing Infrastructure	0.475		4.243	2.903	2.252	2.278	2.965	15.116
<b>Total</b>	<b>5.784</b>	<b>3.713</b>	<b>13.036</b>	<b>12.926</b>	<b>8.773</b>	<b>16.528</b>	<b>16.798</b>	<b>77.558</b>
<b>North West Region</b>								
New Infrastructure	0.117	0.309	0.365	3.089	6.006	0.980	0.613	11.479
Upgrade Existing Infrastructure			0.094	0.143	0.140	0.468		0.845
<b>Total</b>	<b>0.117</b>	<b>0.309</b>	<b>0.459</b>	<b>3.232</b>	<b>6.146</b>	<b>1.448</b>	<b>0.613</b>	<b>12.324</b>
<b>Mid West Region</b>								
New Infrastructure	2.507	6.870	6.533	5.912	7.077	4.702	4.244	37.845
Upgrade Existing Infrastructure	0.321		0.465	0.116	0.130	0.584		1.616
<b>Total</b>	<b>2.828</b>	<b>6.870</b>	<b>6.998</b>	<b>6.028</b>	<b>7.207</b>	<b>5.286</b>	<b>4.244</b>	<b>39.461</b>
<b>Great Southern Region</b>								
New Infrastructure	1.407	4.463	5.837	3.622	0.947	1.677	1.470	19.423
Upgrade Existing Infrastructure								
<b>Total</b>	<b>1.407</b>	<b>4.463</b>	<b>5.837</b>	<b>3.622</b>	<b>0.947</b>	<b>1.677</b>	<b>1.470</b>	<b>19.423</b>
<b>Goldfields Region</b>								
New Infrastructure	0.171	0.530	3.154	1.932	0.212	2.026	4.782	12.807
Upgrade Existing Infrastructure			0.351	0.384		0.218		0.953
<b>Total</b>	<b>0.171</b>	<b>0.530</b>	<b>3.505</b>	<b>2.316</b>	<b>0.212</b>	<b>2.244</b>	<b>4.782</b>	<b>13.760</b>
<b>Agricultural Region</b>								
New Infrastructure	0.482	0.448	0.310	3.415	3.179	4.555	1.966	14.355
Upgrade Existing Infrastructure								
<b>Total</b>	<b>0.482</b>	<b>0.448</b>	<b>0.310</b>	<b>3.415</b>	<b>3.179</b>	<b>4.555</b>	<b>1.966</b>	<b>14.355</b>
<b>Bulk Water &amp; Wastewater</b>								
New Infrastructure	0.043	0.859	0.667	0.127				1.696
Upgrade Existing Infrastructure	4.293	5.647	1.847	1.182	5.903	2.235	2.829	23.936
<b>Total</b>	<b>4.336</b>	<b>6.506</b>	<b>2.514</b>	<b>1.309</b>	<b>5.903</b>	<b>2.235</b>	<b>2.829</b>	<b>25.632</b>
<b>Program Management</b>								
New Infrastructure	0.361	0.623	0.833	0.010				1.827
Upgrade Existing Infrastructure								
<b>Total</b>	<b>0.361</b>	<b>0.623</b>	<b>0.833</b>	<b>0.010</b>				<b>1.827</b>
<b>Total</b>								
New Infrastructure	53.474	69.798	71.363	74.769	87.507	80.034	75.389	512.334
Upgrade Existing Infrastructure	7.255	5.964	7.000	5.287	8.837	7.193	11.519	53.055
<b>Program Total</b>	<b>60.729</b>	<b>75.762</b>	<b>78.363</b>	<b>80.056</b>	<b>96.344</b>	<b>87.227</b>	<b>86.908</b>	<b>565.389</b>

Note - New Infrastructure refers to new works and includes wastewater treatment plants, main sewers, pumping stations, pressure mains and reticulation sewers. This capital expenditure is incurred by the Infill Sewerage Branch. Upgrade Existing Infrastructure refers to expenditure on existing assets by Bulk Water and Wastewater Division and Customer Services Division. This capital expenditure is sourced separately to the funds for new works but is reported on as a component of the Infill Sewerage Program, being recognition of the extra loading placed on major conveyancing systems and treatment plants.

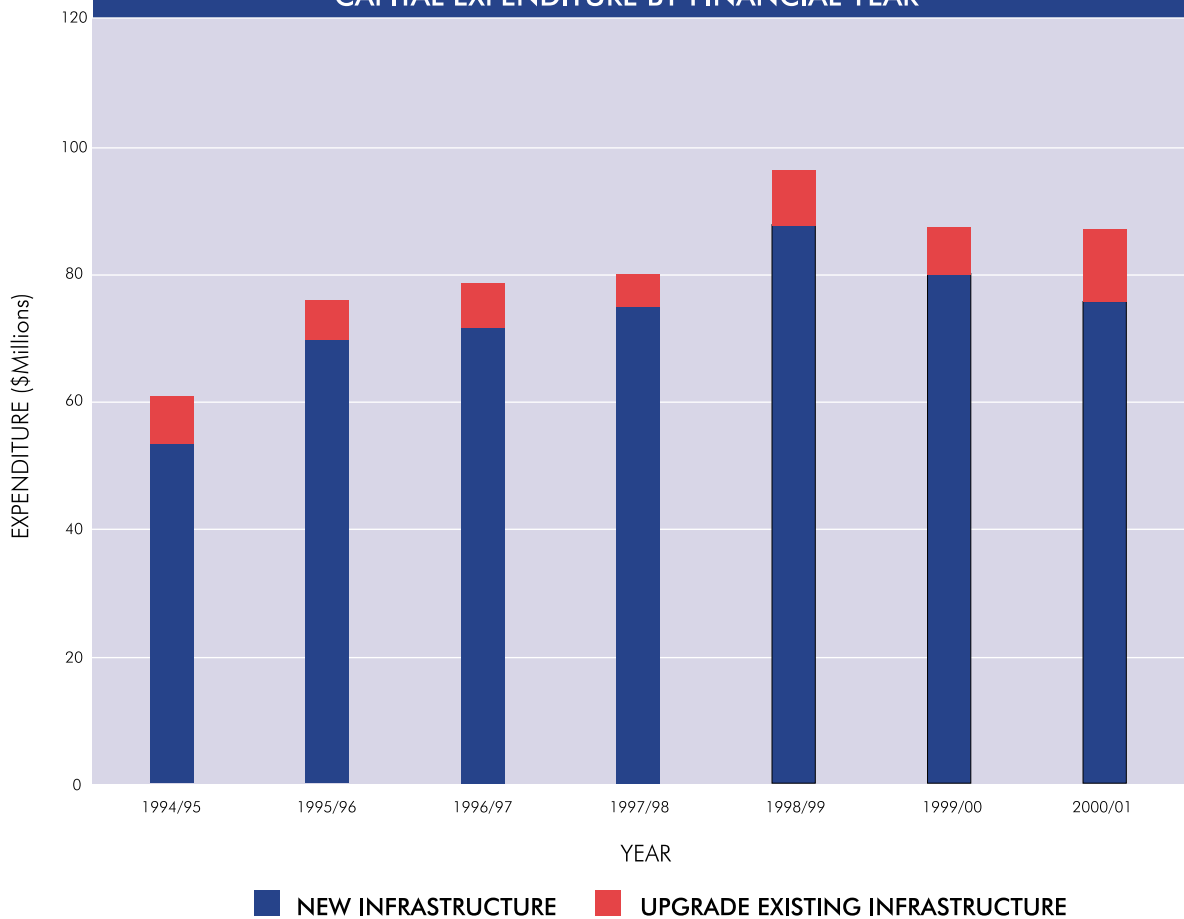
## CAPITAL EXPENDITURE BY REGION

FROM 1 JULY 1994 TO 30 JUNE 2001

TOTAL EXPENDITURE \$565.389 MILLION



## CAPITAL EXPENDITURE BY FINANCIAL YEAR



## CAPITAL EXPENDITURE 2000/2001

PROJECT NUMBER	PROJECT TITLE SEWERAGE DRAINAGE SCHEME	EXPENDITURE \$000's
	Bulk Water & Wastewater Division Wastewater Treatment Branch	
	Upgrade Existing Infrastructure	2,829
	Total Bulk Water & Wastewater	2,829
	Customer Services Division Perth Region	
C-S00050	Midland Main Sewer	261
C-S00233	Booragoon 9C	281
C-S00243	Morley 12K & 27A	172
C-S00245	Morley 24B & 30A	2,096
C-S00250	Morley 6A Parts A & B	3,054
C-S00266	Wembley Downs 3C & 4C	1,391
C-S00289	Maida Vale 1LL & 1PP	1,517
C-S00293	Maida Vale 1KK	232
C-S00300	Midland 1D & 10H and Wexcombe 6A Part 2	311
C-S00308	East Cannington 8F, 8G & 4J	1,270
C-S00309	East Cannington 9D, 9E & 9M	1,467
C-S00315	Morley 28A	121
C-S00320	Balcatta 9C & 9D	5,045
C-S00331	Morley 5B & 26L	3,208
C-S00333	Neerabup 4A & Wanneroo 1A	747
C-S00349	Spearwood 24A & 19G and Fremantle 21F	3,955
C-S00358	Westfield 11A	231
C-S00363	Spearwood 25A & 26A Part 1	3,995
C-S00386	Armadale 1M	602
C-S00389	Balcatta 10A	3,657
C-S00392	Westfield 11B	1,295
C-S00395	Bibra Lake 7K	1,392
C-S00398	Scarborough 10B & 12C	518
C-S00400	Scarborough 21A & 21B	1,625
C-S00408	Maddington 5G	106
C-S00410	Redcliffe 4E	254
C-S00411	Byford 1A	4,045
C-S00420	Perth Metropolitan Minor Pocket Areas	317
C-S00426	Scarborough 1D & 19K	156
C-S00429	Bibra Lake 9A	306
C-S00431	Kardinya 1RR & 2G	323
C-S00432	Kardinya 4P	1,652
C-S00747	Fremantle 13D	330
C-S00816	Perth 62F & 64F & Bayswater 3K	415
A-S0410	Unscheduled Extensions - North Metropolitan	74
A-S0411	Unscheduled Extensions - South Metropolitan	180
	Projects with expenditure less than \$100k	1,880
	Upgrade Existing Infrastructure	5,725
	Total Perth Region	54,206

CAPITAL EXPENDITURE 2000/2001		
PROJECT NUMBER	PROJECT TITLE SEWERAGE DRAINAGE SCHEME	EXPENDITURE \$000's
	South West Region	
C-S00466	Mandurah: Falcon 2A	103
C-S00476	Donnybrook 1A, 1D & 2A	334
C-S00494	Walpole 2A	214
C-S00496	Busselton 9D, 11E & 17A	2,191
C-S00499	Bunbury 32G & 42F	1,362
C-S00501	Bunbury 45D	235
C-S00503	Busselton 1E & 5N	127
C-S00509	Mandurah 47K	1,207
C-S00514	Ravenswood: West Murray 1A	4,200
C-S00515	Walpole 2B	688
C-S00532	Boyup Brook 1A	343
C-S00542	Nannup 1A & 1B	144
C-S00547	Bunbury 39F & 42G	463
C-S00549	Busselton 10F & 15B	172
C-S00552	Pinjarra 1F	303
C-S00751	Busselton 2L & 8L	147
C-S00881	Australind 4N	365
C-S00937	Mandurah: Falcon 3A	151
A-S5110	Unscheduled Extensions	287
	Projects with expenditure less than \$100k	797
	Upgrade Existing Infrastructure	2,965
	<b>Total South West Region</b>	<b>16,798</b>
	North West Region	
C-S00722	Broome Pocket Areas	608
A-S7910	Unscheduled Extensions	38
	Projects with expenditure less than \$100k	-33
	<b>Total North West Region</b>	<b>613</b>
	Mid West Region	
C-S00640	Geraldton: Spalding S4A	382
C-S00642	Geraldton: Waggrakine W2A	194
C-S00647	South Geraldton SG1E	748
C-S00650	South Geraldton SG4A	401
C-S00658	Geraldton G6B	150
C-S00671	Dongara 6A	429
C-S00673	Dongara 4A	592
C-S00675	Dongara 5A	877
A-S7110	Unscheduled Extensions	277
	Projects with expenditure less than \$100k	194
	<b>Total Mid West Region</b>	<b>4,244</b>

CAPITAL EXPENDITURE 2000/2001		
PROJECT NUMBER	PROJECT TITLE SEWERAGE DRAINAGE SCHEME	EXPENDITURE \$000's
	Great Southern Region	
C-S00575	Mount Barker 6A & 7A	1,145
A-S5510	Unscheduled Extensions	219
	Projects with expenditure less than \$100k	106
	Total Great Southern Region	1,470
	Agricultural Region	
C-S00616	Toodyay 1A	996
C-S00618	Beverley 1A	247
C-S00619	Quairading 1B & 1D	300
C-S00620	Toodyay 1B	206
C-S00621	York 1B	118
A-S6310	Unscheduled Extensions	20
	Projects with expenditure less than \$100k	79
	Total Agricultural Region	1,966
	Goldfields Region	
C-S00625	Esperance 16A & 28A	4,589
A-S6810	Unscheduled Extensions	193
	Total Goldfields Region	4,782
	TOTAL INFILL PROGRAM	86,908

Note - Upgrade Existing Infrastructure refers to expenditure on existing assets by Bulk Water and Wastewater Division and Customer Services Division. This capital expenditure is sourced separately to the funds for new works but is reported on as a component of the Infill Sewerage Program, being recognition of the extra loading placed on major conveyancing systems and treatment plants.

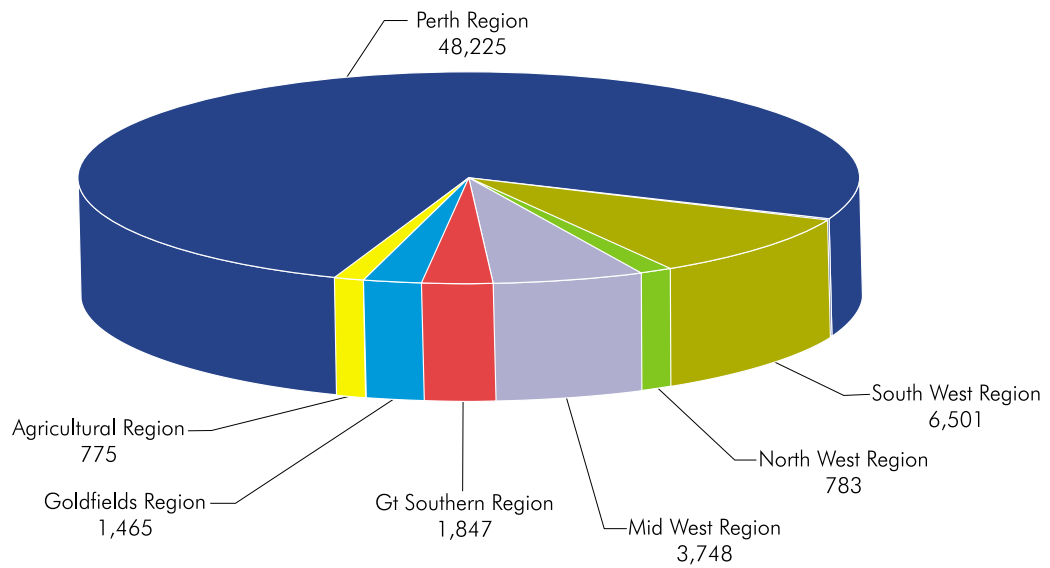
## LOTS SEWERED

To date 63,344 lots have been sewered, being 48,225 in the Perth metropolitan area and 15,119 in country towns.

### NUMBER OF LOTS SEWERED IN REGIONS

FROM 1 JULY 1994 TO 30 JUNE 2001

TOTAL LOTS SEWERED 63,344



### NUMBER OF LOTS SEWERED IN REGIONS

REGION	FROM 1994/95 TO 1999/2000	2000/01	TOTAL
Perth Region	41,672	6,553	48,225
South West Region	5,362	1,139	6,501
Great Southern Region	1,674	173	1,847
Mid West Region	3,359	389	3,748
Agricultural Region	707	68	775
Goldfields Region	943	522	1,465
North West Region	673	110	783
Total	54,390	8,954	63,344

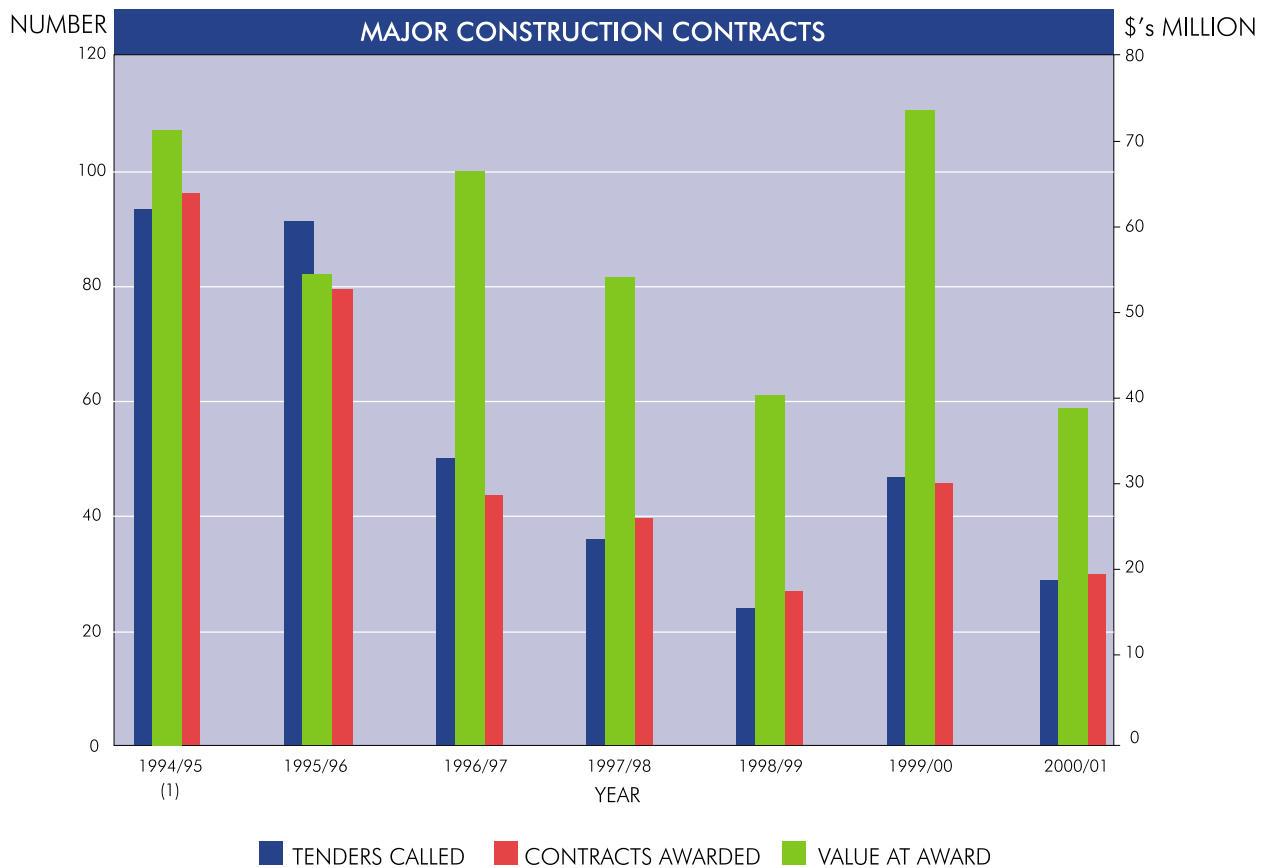
## NUMBER OF LOTS SEWERED IN PERTH METROPOLITAN SUBURBS

Suburb	From 1994/95 to 1999/2000	2000/01	Total	Suburb	From 1994/95 to 1999/2000	2000/01	Total
Alfred Cove	117		117	Karrinyup	352	999	1,351
Applecross	11		11	Kelmscott	572	148	720
Armadale	359	54	413	Kenwick	161		161
Ascot	244	36	280	Kewdale	708	1	709
Ashfield	147		147	Langford	2		2
Balcatta	12	1	13	Maddington	697	2	699
Balga	1,110		1,110	Maida Vale	28		28
Bassendean	37		37	Marmion	2	1	3
Bateman	304		304	Martin	51		51
Bayswater	1,408	8	1,416	Maylands	92	25	117
Beaconsfield	153	313	466	Medina	1,066		1,066
Beckenham	1,181	109	1,290	Melville	702		702
Bedford	542		542	Menora	5		5
Beechboro	35		35	Middle Swan	405	30	435
Bellevue	6		6	Midland	88	14	102
Belmont	28		28	Midvale	6		6
Bentley	170	5	175	Morley	2,910	434	3,344
Bibra Lake	3		3	Mount Claremont	147		147
Booragoon	58		58	Mount Lawley	4		4
Bull Creek	57		57	Mount Nasura	413	7	420
Bullsbrook	2		2	Mullaloo	1	6	7
Byford	8	500	508	Mundaring	79		79
Calista	430		430	Munster	4		4
Cannington	370		370	Murdoch	1		1
Carine	240		240	Myaree	576		576
Carlisle	529		529	Nollamara	1,165		1,165
Churchlands	10		10	North Beach	62	75	137
City Beach	441	1	442	North Fremantle		1	1
Claremont	1		1	North Lake	3	3	6
Cloverdale	936		936	O'Connor	7		7
Coogee	6	4	10	Osborne Park	65		65
Coolbellup	681	567	1,248	Parkwood	1		1
Coolbinia	135		135	Peppermint Grove		1	1
Currambine	2		2	Queens Park	761	68	829
Dianella	917	1,166	2,083	Redcliffe	806		806
Doubleview	1,192	9	1,201	Riverton	264		264
Duncraig	2		2	Rivervale	23	9	32
East Cannington	570	86	656	Rockingham	1,165		1,165
East Fremantle	45		45	Safety Bay	828		828
East Victoria Park	108	2	110	Samson	63		63
Eden Hill	177		177	Scarborough	441	91	532
Embleton	893		893	Shelley	190		190
Floreat	1		1	Shenton Park		1	1
Forrestfield	457		457	Shoalwater	1,015		1,015
Fremantle	1		1	South Fremantle	1		1
Glendalough	110		110	South Guildford	330		330
Gosnells	1,998		1,998	South Perth	3		3
Greenmount	198		198	Spearwood	121	59	180
Guildford	12		12	St James	279		279
Gwelup	200	136	336	Stirling	62		62
Hamilton Hill	1,918	584	2,502	Swan View	57	1	58
Hazelmere	227		227	Trigg	15	117	132
Helena Valley	52		52	Tuart Hill	235		235
High Wycombe	275	449	724	Viveash	173		173
Hilton	212	1	213	Wanneroo	5	117	122
Huntingdale	2		2	Warnbro	75		75
Inglewood	7	2	9	Welshpool	5		5
Innaloo	1,146	177	1,323	Wembley Downs	122	92	214
Jandakot	3		3	Willagee	326		326
Joondanna	45		45	Willetton	512	1	513
Kalamunda	61		61	Wilson	666		666
Kallaroo	1		1	Woodlands	176		176
Kardinya	463	1	464	Yokine	1,512	39	1,551
				<b>Total</b>	<b>41,672</b>	<b>6,553</b>	<b>48,225</b>

## NUMBER OF LOTS SEWERED IN COUNTRY TOWNS

Town	From 1994/95 to 1999/2000	2000/01	Total	Town	From 1994/95 to 1999/2000	2000/01	Total
Albany	1,087	44	1,131	Kalbarri	178		178
Augusta	100		100	Karratha	1		1
Australind	159	25	184	Katanning	17		17
Binningup	7		7	Kellerberrin	6	1	7
Boddington	8		8	Kojonup	26		26
Bremer Bay	229		229	Kununurra	3		3
Bridgetown	125		125	Ledge Point	21		21
Broome	136	90	226	Leonora	8	16	24
Bunbury	701	289	990	Mandurah	1,208	221	1,429
Burekup	4		4	Manjimup	415		415
Busselton	1,116	403	1,519	Margaret River	167	2	169
Capel	165		165	Merredin	1	2	3
Carnarvon	26		26	Mount Barker	55	122	177
Collie	63		63	Mukinbudin		1	1
Corrigin	2		2	Narrogin	40		40
Cranbrook	85		85	Newdegate	3		3
Cunderdin	95	1	96	Northam	4		4
Dardanup	140		140	Onslow	234		234
Denham	315		315	Pemberton	143		143
Denmark	60	2	62	Pingelly	6		6
Derby	2	8	10	Pinjarra	15	39	54
Dongara	256		256	Port Denison	264	174	438
Donnybrook	199	7	206	Port Hedland	297	12	309
Dunsborough	8	5	13	Quairading	292	62	354
Eaton	11		11	Quindalup	17		17
Eneabba	4		4	Toodyay	112		112
Esperance	935	506	1,441	Wagin	58	5	63
Geraldton	2,265	215	2,480	Walpole	97	148	245
Harvey	117		117	Waroona	385		385
Jurien	30		30	York	195	1	196
				<b>Total</b>	<b>12,718</b>	<b>2,401</b>	<b>15,119</b>





MAJOR CONSTRUCTION CONTRACTS TENDERED AND AWARDED			
YEAR	NUMBER OF TENDERS CALLED	NUMBER OF CONTRACTS AWARDED	VALUE AT AWARD (\$'s MILLION)
1994/95 (1)	93	96	71.490
1995/96	91	79	54.700
1996/97	49	43	66.600
1997/98	35	39	54.083
1998/99	23	26	40.175
1999/00	46	45	74.060
2000/01	28	29	38.581
TOTAL (2)	365	357	399.689

Note:

- (1) Tenders that were called prior to 1 July 1994 are not included in this figure.
- (2) The variation between the total number of tenders called and the total number of contracts awarded is because some tenders have been declined and some have not yet been awarded as contracts.

## MAJOR CONSTRUCTION CONTRACTS 2000/2001

Sewerage Drainage Scheme	Components	Date Tender Advertised	Date Contract Awarded	Contractor	Contract Sum \$'s
Maida Vale 1LL & 1PP	Gravity sewers	Invitation - IS2/3 (15 May 2000)	3 July 2000	Rob Carr Pty Ltd	1,344,510
Broome Infill Areas	Gravity sewers	20 May 2000	3 July 2000	Tallenford Pty Ltd (trading as G & B Drainage)	549,928
Morley 24B & 30A	Gravity sewers	Invitation - IS2/3 (24 May 2000)	3 August 2000	Foothills Drainage Pty Ltd	1,933,800
Morley 6A Part B	Gravity sewers Pump station Pressure main	Invitation - IS3 (6 June 2000)	16 August 2000	Mary Donald Nominees Pty Ltd (trading as D J & M B MacCormick)	2,724,687
Kardinya 4P	Gravity sewers	Allocated Contract	12 July 2000	Water Corporation Construction Branch	1,552,277
Spearwood 25A & Spearwood 26A Pt 1	Gravity sewers Pump station Pressure main	Invitation - IS3 (18 July 2000)	11 October 2000	Rob Carr Pty Ltd	3,579,977
Scarborough 10B & 12C	Gravity sewers	Selective Tender	28 August 2000	Garherst Pty Ltd	420,730
Mount Barker 6A & 7A	Gravity sewers Pump station Pressure main	Invitation - IS2/3 (29 August 2000)	24 November 2000	Albany Drainage & Construction Pty Ltd	1,204,997
Westfield 11B	Gravity sewers	16 September 2000	16 November 2000	A & E Contracting Pty Ltd	1,190,770
Armadale 1M	Gravity sewers	30 September 2000	27 November 2000	Subdivision & Civil Construction Pty Ltd	422,099
Redcliffe 4E	Gravity sewers	21 October 2000	21 December 2000	Scotrac Drainage & Excavator Hire	172,190
Fremantle 13D Part 1	Gravity sewers	Allocated Contract	25 October 2000	Water Corporation Construction Branch	162,866
Dongara 6A	Gravity sewers	28 October 2000	28 December 2000	Tru-Line Excavations & Plumbing Pty Ltd	338,729
Scarborough 21A & 21B	Gravity sewers Pump station Pressure main	Invitation - IS3 (30 October 2000)	18 January 2001	Premium Corporation Pty Ltd	4,699,455
Neerabup 4A	Gravity sewers Pump station Pressure main	Invitation - IS2/3 (31 October 2000)	29 December 2000	Garherst Pty Ltd	2,230,194
Bibra Lake 7K	Gravity sewers	Invitation - IS2/3 (31 October 2000)	27 December 2000	Garherst Pty Ltd	1,815,014
Toodyay 1B Part 1	Micro-tunnelled sewer railway crossing	Selective Tender	12 February 2001	Mary Donald Nominees Pty Ltd (trading as D J & M B MacCormick)	120,800
Wembley Downs 3C & 4C	Gravity sewers	Invitation - IS2/3 (23 November 2000)	2 February 2001	Foothills Drainage Pty Ltd	1,369,311
Walpole 2B	Gravity sewers	Selective Tender	2 February 2001	Flemington Holdings Pty Ltd (trading as DPM Contractors)	613,260
Perth 62F & 64F and Bayswater 3K	Gravity sewers	Allocated Contract	21 February 2001	Water Corporation Construction Branch	333,073
Mandurah 47K	Gravity sewers Pump station Pressure main	Invitation - IS2/3 (18 December 2000)	20 March 2001	Tallenford Pty Ltd (trading as G & B Drainage)	2,222,924
Pinjarra 1F	Gravity sewers	13 January 2001	6 April 2001	Scotrac Drainage & Excavator Hire	389,780
Bunbury 32G & 42F (recall to complete works)	Gravity sewers	Invitation - IS2/3 (13 February 2001)	9 April 2001	Correct Line Drainage & Plumbing	1,219,892
Quairading 1D	Gravity sewers	Invitation - IS2/3 (19 February 2001)	3 April 2001	DMW Constructions Pty Ltd	199,000

## MAJOR CONSTRUCTION CONTRACTS 2000/2001

Sewerage Drainage Scheme	Components	Date Tender Advertised	Date Contract Awarded	Contractor	Contract Sum \$'s
Busselton 1E & 5N	Gravity sewers	Invitation - IS2/3	14 May 2001	Flemington Holdings Pty Ltd (trading as DPM Contractors)	1,184,666
	Pressure main	(14 March 2001)			
South Geraldton SG4A	Gravity sewers	Invitation - IS3	23 May 2001	DMW Constructions Pty Ltd	3,765,173
	Vacuum sewers	(22 March 2001)			
	Pump station				
	Pressure main				
Bunbury 49A	Gravity sewers	Invitation - IS2/3	27 June 2001	Lamac Plumbing & Drainage (WA) Pty Ltd	557,212
	Pump station	(26 April 2001)			
	Pressure main				
Bibra Lake Gravity Main	Gravity sewers	Invitation - IS2/3 (2 May 2001)	12 June 2001	Georgiou Group Pty Ltd	475,284
Bibra Lake 9A	Gravity sewers	Allocated Contract	7 May 2001	Water Corporation Construction Branch	2,023,728
	Pump station				
	Pressure main				
Bunbury 26G	Gravity sewers	Invitation - IS2/3 (15 May 2001)	29 June 2001	Bayside Civil & Drainage Pty Ltd	984,925
Scarborough 19K	Gravity sewers	Invitation - IS2/3 (24 May 2001)	To be awarded in 2001/02	N/A	N/A
Toodyay 1B Part 2	Gravity sewers	Invitation - IS2/3 (26 June 2001)	To be awarded in 2001/02	N/A	N/A

29 major contracts to the value of \$38,581,359 were awarded during the financial year. The tender for Bunbury 32G & 42F (being a recall to complete works) has not been included in the total figures.

Note: Invitation - IS2/3 refers to tenders invited from construction contractors that have previously pre-qualified to undertake works estimated in value at more than \$1.0 million. Invitation - IS3 refers to tenders invited from construction contractors that have previously pre-qualified to undertake works estimated in value at more than \$2.5 million.

Selective Tender refers to direct invitations to construction contractors with suitable expertise or specialist equipment to undertake contracts with an unusual degree of difficulty or complexity.

Allocated Contract refers to contracts allocated to the Water Corporation's Construction Branch.

Not included in the table above are:

1. Contracts awarded with an initial value less than \$100,000.
2. Contracts awarded by Regions for minor unscheduled sewer mains extensions.



Michael Thorman inspecting an infill sewerage sign.

## OVERVIEW OF THREE PROJECTS

*“ the contractor earned considerable praise from local residents for meticulous restoration work ”*

### Westfield 11B Project

For many years, residents within this project area had experienced septic tank overflow problems caused through heavy clay soils. A major consideration for this project was to eliminate the potential environmental danger through pollutants and excessive nutrients leaching out of septic tanks and entering the important Canning River. Protecting the ecosystems of the upper reaches of the Canning River was a major outcome from the \$1.4 million infill sewerage project undertaken in the summer and autumn months of the 2000/01 financial year.

This important environmental undertaking provided reticulated sewerage to about 150 properties in Kelmscott. Experienced contractor A & E Contracting Pty Ltd commenced construction work in December 2000. The work involved 5,061 metres of reticulated sewer mains in the general area bounded by Brookton Highway, Hill, Hamersley and Bernard Streets and Gemsarna Crescent. A few hundred metres of these mains were laid using trenchless techniques to avoid obstacles and minimise disruption to property.

The project encountered some difficulties due to a plethora of underground cables and pipes from telephone, water and gas utilities throughout the area. In some instances the alignment of these pipes and cables was not as expected and it was necessary to undertake the excavation work with extra caution. Large areas of rock were also encountered.

The project was scheduled for completion by the end of May 2001, before the start of winter conditions. Despite the construction difficulties encountered, the contractor was able to complete the project by the scheduled date. The contractor earned considerable praise from local residents for meticulous restoration work. The work was undertaken on a daily basis, with excavation work finishing in time each day, for each section of restoration work to be completed before the end of that day. Throughout the project, residents were kept fully informed with personally delivered information leaflets and had access to the infill sewerage information van, on-site.



A Kelmscott street after infill sewerage work was completed.

*“ this area is home to or visited by more than 100 species of birds ”*

### Balcatta 9C and 9D Project

This project undertaken in the Perth metropolitan suburbs of Karrinyup and Gwelup clearly exemplifies the environmental benefits of the Infill Sewerage Program. Environmental considerations were paramount because the area is a green belt that contains two important local wetlands being Lake Gwelup and Lake Karrinyup. In addition to the wetlands, the project area also included the Lake Karrinyup Country Club with its world class golf course.

The \$5.9 million project involved building a pump station and extending reticulated sewerage to about 855 properties through construction of 20,481 metres of gravity sewers and 1,084 metres of pressure main. Construction commenced in February 2000 and finished in early April 2001.

One issue was the difficulty of ensuring gravity flow from one end of the project to the other. To obtain the required gradient, it was necessary to build an elevated sewer across part of the wetlands. This was to be attached to the side of an existing water main and innovative ways were examined to improve the

visual impact of the construction. This was achieved by adding an additional feature agreed to in consultation with the City of Stirling, a timber footbridge to link the two lakes and improve public access.

Lake Gwelup and Lake Karrinyup are an ornithologists' delight. The area is home to or visited by over 100 species of birds, including ducks, cormorants, cuckoos, egrets, grebes, herons, honeyeaters, ibis, kookaburras, owls, parrots, pelicans, plovers, raptors, swallows, swans, thornbills and wattlebirds. Reptiles and amphibians found in the area include frogs, geckos, lizards, skinks, snakes and turtles and native mammals found are brush-tailed possums, water rats and bats.

However, before the project was undertaken, the area between the lakes was generally inaccessible because it is wet and swampy in winter and the overgrown vegetation is home to lively tiger and brown snakes in summer. By building an attractive timber footbridge to link the existing walkways around the lakes, the whole area has been transformed into an outstanding and



Footbridge at Lake Karrinyup and Lake Gwelup



Birdlife on Lake Gwelup.

far more accessible leisure amenity.

Another important part of the project was minimising disruption to the grounds of the Lake Karrinyup Country Club with its world class golf course. By using the environmentally friendly micro-tunnelling technology, 700 metres of sewer were laid under two fairways and one green to link the reticulated sewer to an existing pump station. This design avoided the need to build a second pump station, thus saving capital costs of about \$100,000 and considerable ongoing running and maintenance costs.

As with all infill sewerage projects, considerable effort was made to ensure effective communication was maintained with residents and other interested stakeholders. Information leaflets were distributed to all households and the infill sewerage information van was regularly on-site in the area. Every effort was made to minimise disruptions to traffic, particularly along Clement Drive, Pascoe Street and Francis Avenue, and the outstanding restoration work by the

contractor Premium Corporation Pty Ltd drew many favourable comments from residents.

Long time Karrinyup resident Mr Bob Primrose has a water bore and was very aware that septic tanks in the area could be polluting the groundwater. Bob is a keen gardener and at first was concerned when a section of his immaculate lawn was dug up and taken away. Bob was quickly reassured when Premium Corporation told him the lawn was removed to keep it alive for planting elsewhere. When restoration work was carried out on Bob's property, he was provided with top quality lawn. The street verge reticulation system was also restored with high quality materials.

Nearby resident Mr Ray Bender was impressed with the way the large project was managed and controlled. He had considerable praise for Premium Corporation. Nothing was too much trouble for the contractor and the result is excellent. There was absolutely no damage to his property and as a retiree

*“ as with all infill sewerage projects, great care was taken to minimise disruption to residents... ”*

Ray was very particular about the appearance of the garden and lawn. Also, Ray now enjoys a regular walk with his dog over the new footbridge.

### **Byford 1A Project**

In January 1999, planning commenced for the infill sewerage construction work in the Byford area. Byford is generally part of the Perth metropolitan area, but is semi-rural in nature with many large lots.

Among particular issues to be considered during the planning phase were:

- General ground conditions, being clay soils which become waterlogged in rainy winter periods and can limit or prevent construction work.
- The general area contained a number of large lots, over 1,200 square metres in size, and many would not be included in the area to be sewered.
- A number of properties were using Biomax systems which would become superfluous once the properties were connected to the reticulated sewerage scheme.
- Specific local environmental considerations, including the protection of sensitive native

vegetation and areas that had been rehabilitated by local school children.

- The need to minimise traffic disruption on the busy South Western Highway.
- The need to avoid disrupting rail traffic on the Perth to Bunbury railway line.
- The need to locate a suitable site and construct a sewerage pump station.
- The nearest point for linkage into the metropolitan wastewater scheme was the main sewer at Westfield, 8.5 kilometres to the north of Byford.

As with all infill sewerage projects, a major feature of the Byford project was explaining the overall aspects of the project to local residents and businesses, the Shire of Serpentine-Jarrahdale and other individuals and groups affected by the construction activities.

Direct mail contact was made with all affected parties and information provided through local media. In addition, on Saturday 6 November 1999, the same day as the Federal Election, members of the infill sewerage project team were available to answer



Micro-tunnelling techniques were used to take sewer mains under South Western Highway at Byford.

questions and provide information from the infill sewerage information van at the local shopping centre.

Overwhelmingly, residents were keen for the sewerage project to start as soon as possible, but there were some whose properties would not be included for sewerage and some who had expensive Biomax systems that would become obsolete once the reticulated sewerage scheme was available and connections were made. Residents mainly wanted an explanation of what will happen, when and why. At the commencement of construction, the information van was on-site for four days from 16 May to 19 May 2000 to further assist residents with any issues relating to the sewerage works and future connection.

The Byford project involved approximately 18 kilometres of reticulated sewer, and 8.5 kilometres of pressure main from the new pump station on Hopkinson Road to the existing main sewer at Westfield.

The contractor selected for the project was Premium

Corporation Pty Ltd who had extensive experience in this type of work. One particular consideration was the height of the ground water table during the winter months, which would limit or prevent work in the area. The contractor was able to manage this by alternating the labour force and machinery between the Byford project and another project with ground conditions suitable for construction all year round.

The parameters set for the Infill Sewerage Program for the Perth metropolitan area generally preclude properties over 1,200 square metres in size. Byford is comprised of a general mixture of normal and larger sized lots. This made it difficult to adhere to the focus of the program and provide sewerage to only normal sized lots. To sewer the normal sized lots it would be necessary for the sewer mains to front a number of larger lots and, by default, those lots would also be provided with a sewerage connection point. Therefore a general boundary was defined around the main centre of Byford, within which all lots would be sewered. While this approach would minimise future



A typical street in Byford after infill sewerage work was completed.

disruption through construction of sewer mains extensions throughout the core town area, it also raised questions and expectations from those residents outside the defined boundary. Those residents will be able to apply for sewer mains extensions, should they desire to connect to the reticulated sewerage scheme.

Some residents on large lots within the area had invested around \$8,000 on Biomax systems to treat their wastewater on-site and provide 'grey water' for garden reticulation. By and large most of those residents realised the advantages of being connected to the reticulated sewerage system.

The Byford area has some environmentally sensitive vegetation, including grass trees (*Xanthorrhoea*), that would be disturbed by excavation work on some roadside verges, noticeably in Hopkinson and Larsen Roads. The Project Manager worked closely with the Shire of Serpentine-Jarrahdale's parks and gardens department to ensure that such vegetation was carefully removed and relocated in other areas.

In addition, local school children had been involved previously with the Shire in rehabilitating and planting native vegetation in Park Road. Every care was taken with aligning excavation work to minimise disruption to this and other vegetation and particular care was taken to minimise the removal of street trees throughout the project.

Micro-tunnelling techniques were used to avoid deep excavation and to take sewer mains under the South Western Highway. Even so, it was necessary to close one carriageway for a period of six weeks. Micro-tunnelling was also used to make one crossing of the railway line and was achieved with no disruption to services. A pump station was built on Hopkinson Road and linked to the existing main sewer at Westfield by 8.5 kilometres of pressure main.

As with all infill sewerage projects, great care was taken during construction to minimise disruption of residents access to properties. Any trees or shrubs removed were replaced. Any lawns, driveways or

paving that was disturbed were restored as near as practical to their original condition before construction commenced.

The \$5.2 million project provided 508 lots with the reticulated sewerage scheme and was completed in June 2001.

## **NEW SEWERAGE SCHEMES**

Since 1 July 1994, new sewerage schemes generally involving reticulation sewers, pumping stations, pressure mains and wastewater treatment plants have been constructed in the towns of Dardanup, Denham, Donnybrook, Onslow, York, Pemberton, Quairading, Toodyay and Walpole.

## **SMALL TOWN SEWERAGE PROGRAM**

On 17 April 2000, Cabinet approved a program for the provision of reticulated sewerage schemes in a number of small towns where generally the population is less than 500 persons. The Corporation is responsible for the establishment and initial implementation of the program known as the Small Town Sewerage Program.

This program is additional to the Government's existing Infill Sewerage Program. Initially, it is proposed that a pilot program be established. The towns of Hyden, Kondinin, Kukerin, Kulin and Tambellup have been selected for the pilot program that is provisionally scheduled to commence in the 2001/02 financial year and be completed over three years. Cabinet approval was conditional on a formal review of the program and funding after this stage.

## **COMMUNITY SERVICE OBLIGATIONS**

The Corporation provides certain services that are not commercially viable, but still essential. In these cases, the State Government has agreed to subsidies called Community Service Obligations. These subsidies are subject to ministerial approval and are considered on a project-by-project basis. The application of the Infill Sewerage Program in some country cities and towns is one of these obligations, and has arisen due to the



Customer Liaison Officer, Paul Gamblin with students from Weld Square Primary School.

Government's desire to satisfy the broader economic, health, environmental and social needs of the community.

#### SEWER CONVERSION CUSTOMER INFORMATION VAN

The Sewer Conversion Customer Information Van, a key component of the connection marketing strategy, has been operating for about three years. The van is staffed by a Customer Liaison Officer specialised in addressing the range of questions raised by customers about the Infill Sewerage Program, sewerage design aspects, construction projects and the process to convert properties from the use of septic tank systems to reticulated sewerage.

This initiative is aimed at increasing the rate that customers connect to reticulated sewerage once the system is available and it has assisted many customers. Since it commenced operating, the van has visited 422 locations within 60 infill

sewerage project areas. A total of 6,966 customers visited the van, had their enquiries addressed and were provided with a "Customer Information Kit" which explains the process for connecting to reticulated sewerage.

In addition, the van has been present at a number of schools, local festivals and trade displays generally promoting the Infill Sewerage Program.

#### INTERNET WEB SITE

The Infill Sewerage Program operates an Internet Web Site at [www.watercorporation.com.au/Infill](http://www.watercorporation.com.au/Infill). The site is aimed at providing up-to-date information on the program. The site contains information specific to the sewer conversion process, answers to over forty of the most commonly asked questions and information on what the customer can expect when an infill construction project commences.

An email address gives customers the opportunity to direct specific questions related to their own

situations. Email forwarded to the Branch is generally answered within one working day of receipt, and the replies contain contact names and telephone numbers should the customer require additional information.

A publications area within the site contains up-to-date copies of most infill publications including recent Annual Reports and Rolling Three Year Construction Programs. The site contains a copy of the Information Kit provided to customers prior to the construction process.

### **INFILL SEWERAGE PROGRAM'S SCHOOLS PACKAGE**

The Infill Sewerage Program's Schools Package is an element of the Corporation's Waterwise Schools Program. Infill sewerage information kits are provided to schools throughout the State that have infill construction works being undertaken in their vicinity.

### **GENERAL COMMUNICATION**

As construction of an infill sewerage project is about to commence, information sheets are distributed to all customers affected by the works. The information sheets provide details of the project and its likely duration, names and contact telephone numbers of the contractor and project manager and, in some cases, dates and times that the information van will be on site. Depending on the size and duration of the project, further information sheets are distributed as required.

Local Members of Parliament and Mayors or Shire Presidents are advised in writing of infill projects being constructed in their areas and invited to inspect the work activities. In a number of cases, positive feedback has been received on this initiative.

Media releases are prepared for most projects and published in respective newspapers. As well as providing information on a project, the releases generally remind customers of the potential threat posed by the use of septic tanks to the environment and groundwater sources and

encourage customers to connect to the reticulated sewerage scheme as soon as possible.

Signs are erected in strategic locations in areas where construction of infill sewerage works are underway. Wording on the signs reflects an emphasis on the health and environmental aspects of the program and encourages customers to connect to the reticulated sewerage scheme as soon as possible.

Numerous letters have been received from customers expressing their appreciation for the good work being carried out by the Infill Team and its construction contractors. Many of these have been published in the Water Corporation's "Company One" publication.

### **CUSTOMER SURVEY**

Market Equity Pty Ltd conducted an extensive customer survey for the Infill Sewerage Program during July 2000. This survey involved 300 households within the following project areas;

60 in Morley 28A

60 in Scarborough 15A

60 in Falcon 2A

40 in Walpole 2A

40 in Donnybrook 1A, 2A and 1D

40 in Toodyay 1A

The overall objective of the survey was to determine the level of satisfaction amongst affected stakeholders regarding the Water Corporation's process for infill sewerage, and to identify areas for improvement.

Specifically this involved measuring householder's satisfaction levels with each of the following groups:

Water Corporation

Project Managers

On-site Inspectors

Contractors

Each group's performance was measured on the dimensions of:

Overall performance:

Technical capacity

Problems experienced

Cleanliness / restoration efforts

Timing (expectation versus actual)

Communication:

Ease of contact

Information provided

Attitudes towards customers and other stakeholders

Approachability / friendliness

Each of these was addressed in terms of:

Level of satisfaction

Opportunities for improvement

Results of this survey were compared with those previously undertaken in order to highlight the performance of the program over recent years.

Summary of Key Findings (As reported by Market Equity).

- The level of overall satisfaction with the infill sewerage process has remained relatively constant, with no major changes since February 1999. The general trend since 1995 has shown an improvement in satisfaction, with results this year higher than those in 1995 and 1996.

- The incidence of construction problems has fallen since the last survey in August 1999 with a significant decline in the proportion of householders who considered the problem to be major. Satisfaction with how these problems were dealt with has improved considerably since 1999. Performance ratings of the construction process have improved marginally on most aspects. Safety precautions continue to receive the poorest ratings.
- Whilst still one of the main problems, incidences of damage to property have significantly declined since August 1999, bringing this year's result closer to that of other years. The level of inconvenience caused by the construction process was the most common construction problem.
- The incidence of experiencing restoration problems remained constant at 37% although satisfaction with how these problems were dealt with has fallen considerably since August 1999. Damage to property during the restoration process was the most common problem but incidence rates have declined since its peak level in August 1999. The level of inconvenience caused by the restoration process has also declined significantly since the last survey.
- Awareness of information received or seen has remained high, with prompted awareness of project signs at 82% as a first time measure. Prompted awareness of letters from the Corporation and the contractor, however, has declined.



### Recommendations by Market Equity.

It is recommended that the following issues be considered for future infill sewerage works.

- Communication was again a key element raised by householders. It seems that customers are most satisfied when informed of what is happening to their property in terms of actual physical processes as well as timeframes in which the work will be completed. Most customers are understanding of delays in the process so long as they are notified of the delay and the reasons for the hold up, which are often beyond the control of the Corporation. Given that more personal contact was a common request, any opportunity for communicating relevant information on a personal level should be pursued, particularly in the smaller country areas.
- The results indicate that, whilst the construction process has improved in terms of performance ratings and number of problems and satisfaction with how these problems were dealt with, the restoration process has not had the same positive results. This should be an area of focus for future infill sewerage phases with particular attention given to the level of inconvenience caused and the time taken to complete the restoration. This is especially important in the country areas where the length of time taken to complete the restoration exacerbates the level of inconvenience. This may have more far reaching consequences for example, limiting access to the one grocery store operating in a small country town.

- As with the past survey safety precautions have again drawn attention, indicating that initiatives since the last survey have either not been effective or simply not visible enough.

The Infill Sewerage Program has incorporated the above into its objectives, as part of its ongoing continuous improvement process.