



Stormwater Quality Improvement Project

Monitoring Report June 2001 - January 2002

for

At-Source RSF 100 Solid Pollutant Filters

at

**Forster
Bulahdelah
Hawks Nest
Nabiac
Stroud
Tuncurry
Tea Gardens**



INTRODUCTION

The Great Lakes region on the mid-north coast of New South Wales includes the seven townships of Forster, Bulahdelah, Hawks Nest, Nahiab, Stroud, Tuncurry and Tea Gardens. The region has very diverse catchments that include a large lake system, extensive stretches of coastline, and state forests in the hinterland areas.

The Great Lakes Council identified the need to address the quality of stormwater discharges from the central business districts of each of the seven townships and decided that at-source stormwater filtration was the most appropriate and cost-effective solution. Other forms of treatment, such as gross pollutant traps, were not considered appropriate owing to the difficulties presented by tidal influences at many of the proposed locations. The capital costs were also prohibitive.

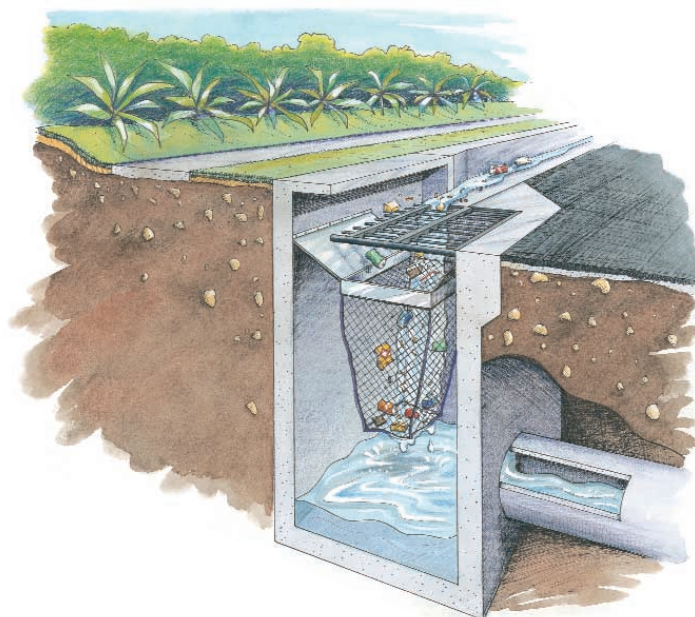
In 2001, Council successfully applied for a NSW Stormwater Trust grant to carry out the necessary works. It considered various at-source filtration systems and decided to install the Ecosol At-Source **RSF 100** Solid Pollutant Filter in all seven townships.

THE ECOSOL RSF 100 SOLID POLLUTANT FILTER

The Ecosol **RSF 100** offers a cost-effective means of removing gross pollutants from stormwater flows. The ability to fit the units to existing systems means that drainage lines serving pollutant-generating catchments such as schools, shopping precincts and central business districts, can be effectively targeted for treatment at significantly reduced cost.

The unit is fitted into existing gully pits and will treat all flows entering the pit either through the grate or kerb lintel until the collection basket is full. All subsequent flows pass through the pit via the patented by-pass flaps with no reduction in the inlet capture performance of the pit.

Ecosol has now fitted 114 of the **RSF 100** units to pits throughout the seven townships in the Great Lakes region.



The Ecosol **RSF 100** Solid Pollutant Filter in the field



CHOOSING THE ECOSOL RSF 100

Several factors were considered by Council in its decision to use the **RSF 100** Solid Pollutant Filter. Whilst cost was a major factor, it was the following key benefits that proved to be of greatest value:

- **Customised fitting**

Each **RSF 100** unit is manufactured to suit the configuration of each specific pit. This proved to be a significant feature as there is a wide range of pit dimensions and depths across the seven townships.

- **Patented By-Pass Overflow**

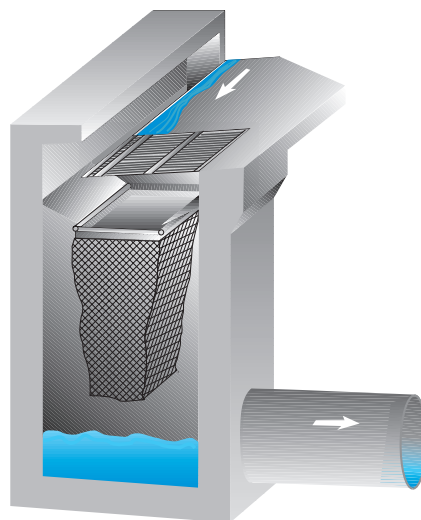
Council had concerns that the installation of other type of devices may cause blockages that would result in localised flooding. The **RSF 100** unit's unique design includes a patented by-pass flap that ensures inflows can continue to pass through the pit even when its collection bag is full.

- **Ease of Cleaning and Maintenance**

It was important that the system did not impose on Council a major cleaning and maintenance burden and could be managed by its own cleaning crews. The **RSF 100** units can be easily and quickly cleaned by either suction from a street sweeper style vehicle or manually removing the collection bag liner.

- **Reduced Pipeline Maintenance**

Certain catchments within the Great Lakes region generate significant quantities of silt and sediment run-off. Trapping these pollutants at-source reduces the sedimentation build-up and also on-going maintenance costs in down stream pipelines.



The Ecosol **RSF 100** Solid Pollutant Filter



DATA COLLECTION

Since installation of the Ecosol **RSF 100** at-source units in June 2001, Council has been collating performance data as part of the requirements of the Stormwater Trust Grant. The information was collected by Council staff, who, at each clean, recorded the weights and composition of the captured material.

The following tables detail the collection performance in each of the seven townships - Attachment 1 has more detail, including monthly rainfall intensities for each township:

TOTAL POLLUTANTS (kg)

| Towns | June | July | August | September | October | November | December | January |
|--------------|--------------|--------------|--------------|---------------|---------------|--------------|--------------|--------------|
| Bulahdelah | 5.0 | 1.0 | 1.5 | 2.0 | 2.0 | 2.5 | 3.0 | 5.0 |
| Forster | 110.0 | 103.0 | 83.0 | 111.0 | 59.0 | 95.0 | 237.0 | 93.4 |
| Hawks Nest | 380.0 | 195.0 | 250.0 | 700.0 | 620.0 | 380.0 | 250.0 | 195.0 |
| Nabiac | 54.0 | 38.5 | 31.0 | 41.0 | 53.0 | 25.0 | 60.0 | 60.0 |
| Stroud | 270.0 | 160.0 | 140.0 | 34.0 | 36.0 | 140.0 | 120.0 | 40.0 |
| Tea Gardens | 100.0 | 55.0 | 280.0 | 350.0 | 310.0 | 190.0 | 130.0 | 111.0 |
| Tuncurry | 50.0 | 38.5 | 41.0 | 68.0 | 65.0 | 67.0 | 77.0 | 60.0 |
| Total | 969.0 | 591.0 | 826.5 | 1306.0 | 1145.0 | 899.5 | 877.0 | 564.4 |

SEDIMENT (kg)

| Towns | June | July | August | September | October | November | December | January |
|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Bulahdelah | 3.2 | 0.6 | 0.8 | 1 | 1.1 | 1.5 | 1.8 | 3.3 |
| Forster | 22 | 20.6 | 14.9 | 30 | 18 | 26.6 | 56 | 23.6 |
| Hawks Nest | 285 | 117 | 175 | 525 | 496 | 285 | 187.5 | 146.3 |
| Nabiac | 20 | 13.5 | 7.8 | 15.2 | 14 | 4 | 16 | 10.2 |
| Stroud | 162 | 112 | 77 | 8.5 | 14.2 | 112 | 66 | 20 |
| Tea Gardens | 70 | 27.5 | 182 | 227.5 | 272.8 | 142.5 | 91 | 77.7 |
| Tuncurry | 7.5 | 11.6 | 11.1 | 21.1 | 21 | 10.7 | 35 | 37.8 |
| Total | 569.7 | 302.8 | 468.6 | 828.3 | 837.1 | 582.3 | 453.3 | 318.9 |

LITTER (kg)

| Towns | June | July | August | September | October | November | December | January |
|--------------|--------------|---------------|--------------|--------------|--------------|---------------|---------------|--------------|
| Bulahdelah | 1.3 | 0.05 | 0.1 | 0.2 | 0.1 | 0.05 | 0.15 | 0.3 |
| Forster | 72.6 | 72.1 | 64.7 | 76.9 | 41 | 68.4 | 181 | 69.8 |
| Hawks Nest | 19 | 9.8 | 12.5 | 0 | 31 | 7.6 | 12.5 | 9.8 |
| Nabiac | 17.8 | 17.3 | 18 | 22.1 | 39 | 21 | 44 | 49.8 |
| Stroud | 27 | 8 | 56 | 0 | 0 | 1.4 | 1.2 | 2 |
| Tea Gardens | 5 | 2.8 | 11.2 | 0 | 6.2 | 0 | 6.5 | 5.6 |
| Tuncurry | 35 | 19.2 | 22.1 | 44.2 | 44 | 56.3 | 42 | 22.2 |
| Total | 177.7 | 129.25 | 184.6 | 143.4 | 161.3 | 154.75 | 287.35 | 159.5 |

ORGANICS (kg)

| Towns | June | July | August | September | October | November | December | January |
|--------------|--------------|---------------|--------------|--------------|--------------|---------------|---------------|-----------|
| Bulahdelah | 0.5 | 0.35 | 0.6 | 0.8 | 0.8 | 0.95 | 1.05 | 1.4 |
| Forster | 15.4 | 10.3 | 3.4 | 4.1 | 0 | 0 | 0 | 0 |
| Hawks Nest | 76 | 68.2 | 62.5 | 175 | 93 | 87.4 | 50 | 38.9 |
| Nabiac | 16.2 | 7.7 | 5.2 | 3.7 | 0 | 0 | 0 | 0 |
| Stroud | 81 | 40 | 7 | 25.5 | 21.8 | 26.6 | 52.8 | 18 |
| Tea Gardens | 25 | 24.7 | 86.8 | 122.5 | 31 | 47.5 | 32.5 | 27.7 |
| Tuncurry | 7.5 | 7.7 | 7.8 | 2.7 | 0 | 0 | 0 | 0 |
| Total | 221.6 | 158.95 | 173.3 | 334.3 | 146.6 | 162.45 | 136.35 | 86 |

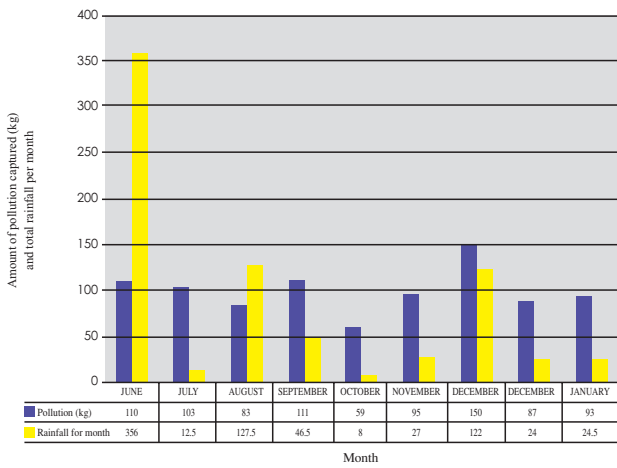


DATA COLLECTION (cont)

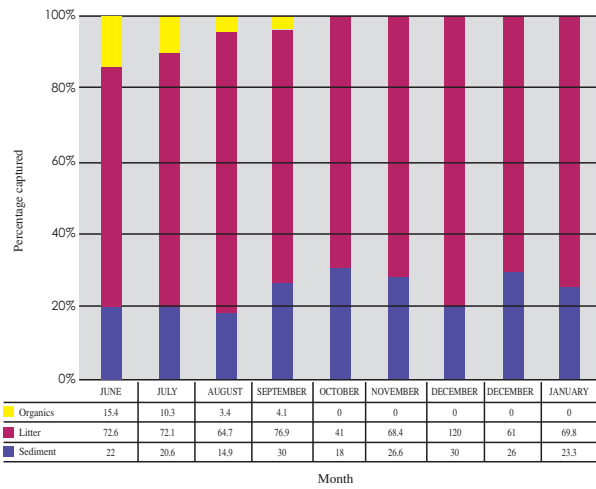
The following tables and graphs highlight two of the townships' data detailing monthly pollutant capture performance and rainfall intensities:

Forster¹

Total Quantities Collected - Forster

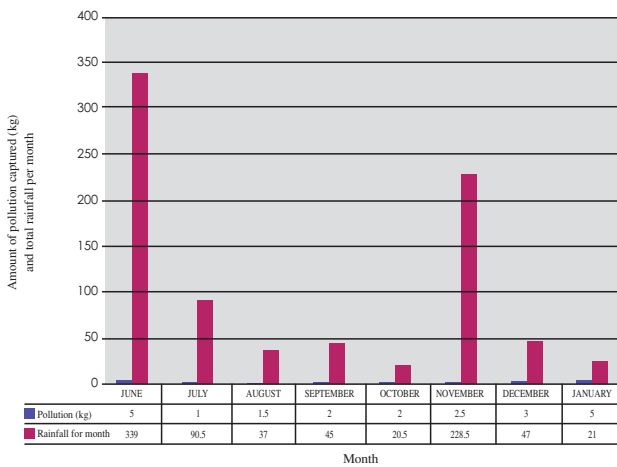


Percentage of Material Captured - Forster

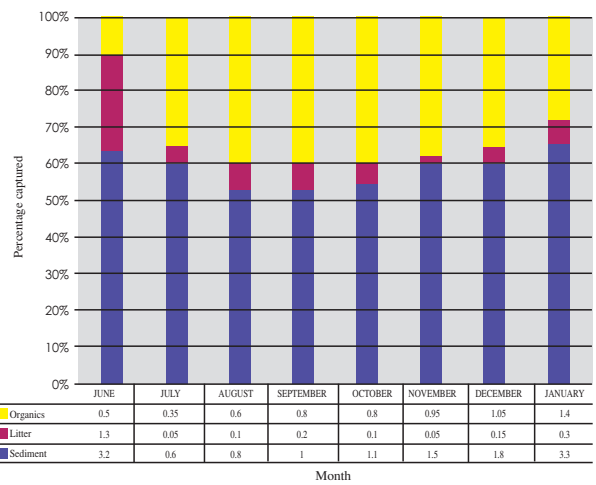


Bulahdelah

Total Quantities Collected - Bulahdelah



Percentage of Material Captured - Bulahdelah



The above graphs clearly highlight the variation in pollutant types generated by different catchments. Pollutant loading in the Forster catchment is predominantly litter whereas sediments and organics are the major pollutants in Bulahdelah.

¹ Please note that there were two cleans in December 2001



SUMMARY

The Ecosol **RSF 100** units installed in the seven townships captured more than **7,178 kgs** in the eight-month period from June 2001 to January 2002 that was monitored by the Great Lakes Council. This damaging material would otherwise have entered the surrounding waterways causing significant degradation to water quality in the region.

The project also had other positive outcomes including:

- It is likely that without the **RSF 100** system, much of the 7,178 kgs collected to date would otherwise have become trapped within the pipe system and would have required costly removal. This trapped material can also greatly reduce the hydraulic performance of the drainage system.
- Since installation of the **RSF 100** units, Council now has a greater understanding of the pollutants generated within each catchment and can actively set about tracing the pollution sources. For example, the Forster CBD is an alcohol-free zone but significant quantities of mixed-spirit cans are regularly removed from the pit baskets.
- The data collection exercise has provided Council with a valuable resource for use in awareness campaigns to communicate to the public the extent of pollution generated in each area. The data can also be used to support policies or any other intervention strategies Council may consider appropriate in the future.

FURTHER INFORMATION

Information relating specifically to the Great Lakes Project can be obtained by contacting Council's Drainage Engineer, Mr Ian Jackson on **02 6591 7273**.

Ecosol contacts are as follows:

| | |
|--------------------------|------------------|
| Queensland Office: | Ph. 07 3368 3966 |
| South Australian Office: | Ph. 08 8395 4116 |
| New South Wales Office: | Ph. 02 9669 6000 |
| Victorian Office: | Ph. 03 9543 5644 |
| New Zealand Office: | Ph. 0800 104 899 |



| Volume and Composition of Material Collected - June 2001 to January 2002 | | | | | | | |
|--|------------|------------|-----------|------------|-----------|-------------|------------|
| | Stroud | Bulahdelah | Nabiac | Forster | Tuncurry | Tea Gardens | Hawks Nest |
| No. of Ecosol RSF 100 Units | 7 | 2 | 10 | 12 | 13 | 13 | 13 |
| Vol Collected JUNE (kg) | 270 | 5 | 54 | 110 | 50 | 100 | 380 |
| % Sediments | 60 | 65 | 37 | 20 | 15 | 70 | 75 |
| % Litter | 10 | 25 | 33 | 66 | 70 | 5 | 5 |
| % Organics | 30 | 10 | 30 | 14 | 15 | 25 | 20 |
| Total rainfall | 268 | 339 | 268 | 356 | 268 | 598.4 | 598.4 |
| Vol Collected JULY (kg) | 270 | 5 | 54 | 110 | 50 | 100 | 380 |
| % Sediments | 70 | 60 | 35 | 20 | 30 | 50 | 60 |
| % Litter | 5 | 5 | 45 | 70 | 53 | 5 | 5 |
| % Organics | 25 | 35 | 20 | 10 | 17 | 45 | 35 |
| Total rainfall | 10 | 90.5 | 0 | 12.5 | 0 | 232.9 | 232.9 |
| Vol Collected AUGUST (kg) | 140 | 1.5 | 31 | 83 | 41 | 280 | 250 |
| % Sediments | 55 | 50 | 25 | 18 | 27 | 65 | 70 |
| % Litter | 5 | 5 | 58 | 78 | 54 | 4 | 5 |
| % Organics | 40 | 45 | 17 | 4 | 19 | 31 | 25 |
| Total rainfall | 97 | 37 | 101.5 | 127.5 | 101.5 | 73 | 73 |
| No. of Ecosol RSF 100 Units | 17 | 2 | 10 | 20 | 21 | 25 | 19 |
| Vol Collected SEPTEMBER (kg) | 34 | 2 | 41 | 111 | 68 | 350 | 700 |
| % Sediments | 25 | 50 | 37 | 27 | 31 | 65 | 75 |
| % Litter | 0 | 10 | 54 | 69 | 65 | 0 | 0 |
| % Organics | 75 | 40 | 9 | 4 | 4 | 35 | 25 |
| Total rainfall | 11.8 | 45 | 52.5 | 46.5 | 52.5 | 49 | 49 |
| Vol Collected OCTOBER (kg) | 36 | 2 | 53 | 59 | 65 | 310 | 620 |
| % Sediments | 34 | 55 | 26 | 35 | 32 | 88 | 80 |
| % Litter | 0 | 5 | 74 | 65 | 68 | 2 | 5 |
| % Organics | 66 | 40 | 0 | 0 | 0 | 10 | 15 |
| Total rainfall | 38.5 | 20.5 | 25.5 | 8 | 25.5 | 44.8 | 44.8 |
| Vol Collected NOVEMBER (kg) | 140 | 2.5 | 25 | 95 | 67 | 190 | 380 |
| % Sediments | 80 | 60 | 16 | 28 | 16 | 85 | 75 |
| % Litter | 1 | 2 | 84 | 72 | 84 | 0 | 2 |
| % Organics | 19 | 38 | 0 | 0 | 0 | 15 | 23 |
| Total rainfall | 161 | 228.5 | 15 | 27 | 15 | 42.2 | 42.2 |
| Vol Collected DECEMBER (kg) | 120 | 3 | 60 | 237 | 77 | 130 | 250 |
| % Sediments | 55 | 60 | 27 | 24 | 45 | 70 | 75 |
| % Litter | 1 | 5 | 73 | 76 | 55 | 5 | 5 |
| % Organics | 44 | 35 | 0 | 0 | 0 | 25 | 20 |
| Total rainfall | 45 | 47 | 100 | 144 | 100 | 41 | 41 |
| 2002 | | | | | | | |
| Vol Collected JANUARY (kg) | 40 | 5 | 60 | 93 | 60 | 111 | 195 |
| % Sediments | 50 | 65 | 17 | 25 | 63 | 70 | 75 |
| % Litter | 5 | 5 | 83 | 75 | 37 | 5 | 5 |
| % Organics | 45 | 30 | 0 | 0 | 0 | 25 | 20 |
| Total rainfall | 44 | 21 | 37.5 | 24.5 | 37.5 | 28.2 | 28.2 |



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