



DIRECTOR SHIRE SERVICES REPORT

8th February 2005

DSS3 HAT HEAD SEWERAGE
FILE: S8-24 DH

SUMMARY:

Reporting on the operational performance of the Hat Head sewerage system.



The potential for infrastructure in Hat Head to support any additional development is partly determined by the ability of the sewerage system to cope with peak demand periods and the adequacy of the village water supply. The variables determining capacity of this infrastructure is listed below.

- The actual peak loadings compared to the design capacity of the sewerage treatment plant, sewerage pumping station and reticulation systems.
- The performance of the dune disposal area.
- Water supply bore pumps capacity and licence limits during peak periods.

Sewerage Treatment Plant

The design capacity of the sewerage treatment plant is 500KL/d. The average load prior to the peak holiday period was approximately 50 – 60 KL/d and the load over the Christmas 2004 peak period was approximately 200KL/d.

This indicates that the load during the holiday peak was 40% of the plant capacity.

Table 1: Current Connections to Hat Head Sewage Scheme

Connection status	Number of Premises Aug 2004	Number of Premises Dec 2004
Connections	114	163
Unconnected	148	99
Vacant Blocks	44	44
TOTAL	306	306

Commercial connections

- Caravan park (2,000 people – Fully booked/300 sites) + DAY VISITORS
- Country club
- Garage/Post Office
- Take Away shop
- Jordon's fish shop

There have been a number of unforeseen and continuing failures with the Sewerage Treatment Plant since its commissioning in August 2003.

The current failures over this Christmas peak period and the last ten months have resulted in:

- Blackouts and damage to modem, computer, PLC resulting from lightning strikes.
- Plant mechanical breakdowns (chemical leaks/line breaks, blowers, diffusers)
- Equipment failure resulting in EPA license failures. (**81%** as reported by the EPA at the meeting).

In an attempt to resolve the above issues a meeting was held on the 6th January 2005 with the Contractor United KG. This resulted in a commitment by the Contractor to resolve the problems and provide more operational support to Council. The next time the plant will be under a peak period condition (once these problems have been addressed) will be at Easter 2005.

Reticulation & Sewerage Pumping Station

- Designed pump rate – 22 L/s
- SPS flooded twice Christmas 2003 and April 2004 (due to mechanical failures-this flooded the dry well containing the transfer pumps and electrical motors)
- Christmas 2004 period saw ongoing vacuum problems due to mechanical failures together with high tourist numbers, lightning strikes (power outages of up to 12 hrs) and Mag-flow meter splitting.

Due to the ongoing problems of the pumping station transfer pumps, the Contractor, Air Vac, installed a pressure relief valve in an attempt to reduce the noise and vibration of the pumps. This resulted in a reduction in the vacuum pressure in the reticulation system, which caused the overflow of raw sewage at several sites around the township.

A meeting with Air Vac and New England Excavations was held on the 13th January 2005 to discuss the operational problems. An agreement was reached to replace the transfer pumps and motors

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including an extension of the warranty for a further twelve-months on completion of installation.

On the 17th January 2005 high rainfall resulted in a number of Vacuum failures from stormwater infiltration into a number of gullies at the Caravan Park reticulation system. This resulted in the overloading of the Sewerage Pumping Station. This contributes to the uncertainty of the reticulation system being able to cope with future storm events and peak flow periods.

Figures indicate that the Vacuum pumps were working for over 80% of the time during the day. This leaves little spare capacity for extra load. In fact, if all houses were connected, it is likely that the pumps would run continuously.

This performance does not meet design requirements and is being investigated by the Contractor.

Dune Disposal

After examining the final report of the post commissioning groundwater monitoring Study for the Hat Head's effluent dune disposal site, it is concluded that, to date, the implementation of the effluent disposal within the dune area to the north of Hat Head, has had no measurable detrimental impact upon Korogora Creek, groundwater quality in the vicinity of the disposal area or groundwater beneath the township. However, due to the proximity of the dune disposal site to Korogora Creek and the township of Hat Head, groundwater and creek water monitoring will be continued.

It should be noted that the dune disposal infrastructure failed (flooded) during heavy rain in the week ending 21st January 2005.

Water Supply

Water usage	Kilolitres/yr	Kilolitres/d/peak Dec/Jan	Kilolitres/d/norm Month /Av
2001-02	60179	693	115
2002-03	56425	456	138
2003-04	66133	408.6	160.8

Mean 8.7% increases in usage over the last three years.

- Hat Head Bore-field 3 x Bores total capacity 15 l /s. Licensed 146 MI / yr
- 3 Bores operating off-peak pump approx. 0.91 MI / 17 Hr day
- Hat Head water treatment plant reservoir capacity of 1.78 MI

The current bore pumping operating hours are

	Hrs run/ per-bore /day	KL / day
Normal operating period	2.25	163
Holiday peak period	7.1	399

The Hat Head water supply has been able to keep up with the peak demand and operate within the Australian Drinking Water Guidelines as set by the National Health & Medical Research Council.

With the pumps operating 7.1hrs/day each (out of an available 17hrs off-peak) they are producing approximately 42% of their maximum available capacity.

Therefore, water supply from the existing system will not inhibit further development under DCP37 in the short term.

SUMMARY:

Due to the operational problems that have occurred since the commissioning of the sewerage scheme at Hat Head and the most recent peak period loads, it is believed that the system requires further assessment once all the repairs and operational changes are completed and are in place for testing prior to the next peak period at Easter.

REPORT IMPLICATIONS:

- ***Environmental***

Nil.

- ***Social***

Further development will be restricted in Hat Head in the short term.

- ***Economic (Financial)***

Nil.

- ***Policy or Statutory***

Continued application of DCP37 to restrict development.

- ***Director's Review***

It is disappointing that so many aspects of the sewerage system experienced serious problems when placed under significant load from holiday makers.

The system is still in its proving period and must be brought up to standard by the Contractors. It seems, however, that this may take some time.

Another heavy loading period will not be experienced until next summer.

RECOMMENDATION:

1. That the moratorium on further development in Hat Head be maintained by Council under DCP37.
2. That a further report be submitted to Council following further investigations into outstanding problems and repairs carried out.

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K J Finnie
DIRECTOR SHIRE SERVICES