



STAFF REPORT

TO: Environment & Planning Committee

FROM: Joseph Thomas – Resource Scientist –Water/Special projects

REFERENCE: W326

SUBJECT: **DOVEDALE VALLEY GROUNDWATER INVESTIGATIONS - REPORT EP08/08/04** - Report prepared for meeting of 28 August

1. INTRODUCTION

The Tasman District Council, following repeated requests by the community, undertook an investigation into the groundwater potential in the Dovedale Valley. This is an area where the Council had little direct information to determine the potential of an additional water resource. The investigation drilling and subsequent testing was started in the autumn of last year (April 2007) with final testing completed over summer this year (January / February 2008).

2. INVESTIGATIONS

One deep bore (500 metres) and eight shallower bores (10-42 metres) were drilled in the Dovedale Valley as part of the water resource investigations. Figure 1 shows the location of the bores, their final completed depth and where the intake screens were set.

The deep bore was drilled at the Dovedale Domain down to 500 metres with a solid steel casing cemented in-place to 69 metres. Cementing the casing was to remove the potential of shallow groundwater seeping down into the bore. This was necessary given that the bore was primarily to investigate the potential for deep groundwater from the Moutere Gravels in this area.

The shallow bores were drilled in the Dovedale valley floor from Eden Valley Road to Thorpe. It is noted that bore WWD4671 was drilled to 42 metres depth but then backfilled to 25 metres. No water bearing layers were encountered in this bore between 25 – 42 metres depth. The shallow bores were distributed down the valley to assess the potential for shallow groundwater potential in the valley infill and reworked gravels.

3. RESULTS

Flow testing of the deep bore WWD4668 showed there was no appreciable groundwater in this location (0-500 metres). For a 6 litres/minute pumping rate the drawdown (drop in the water level in the bore) exceeded 86 metres with the pump (set at 90 metres) sucking air. Unlike the Moutere Valley where water bearing layers were shown by blue grey gravels at depths exceeding 150 metres, here the gravel was clay- bound to the 500 metres depth. The bore has been capped and left unused at the present time.

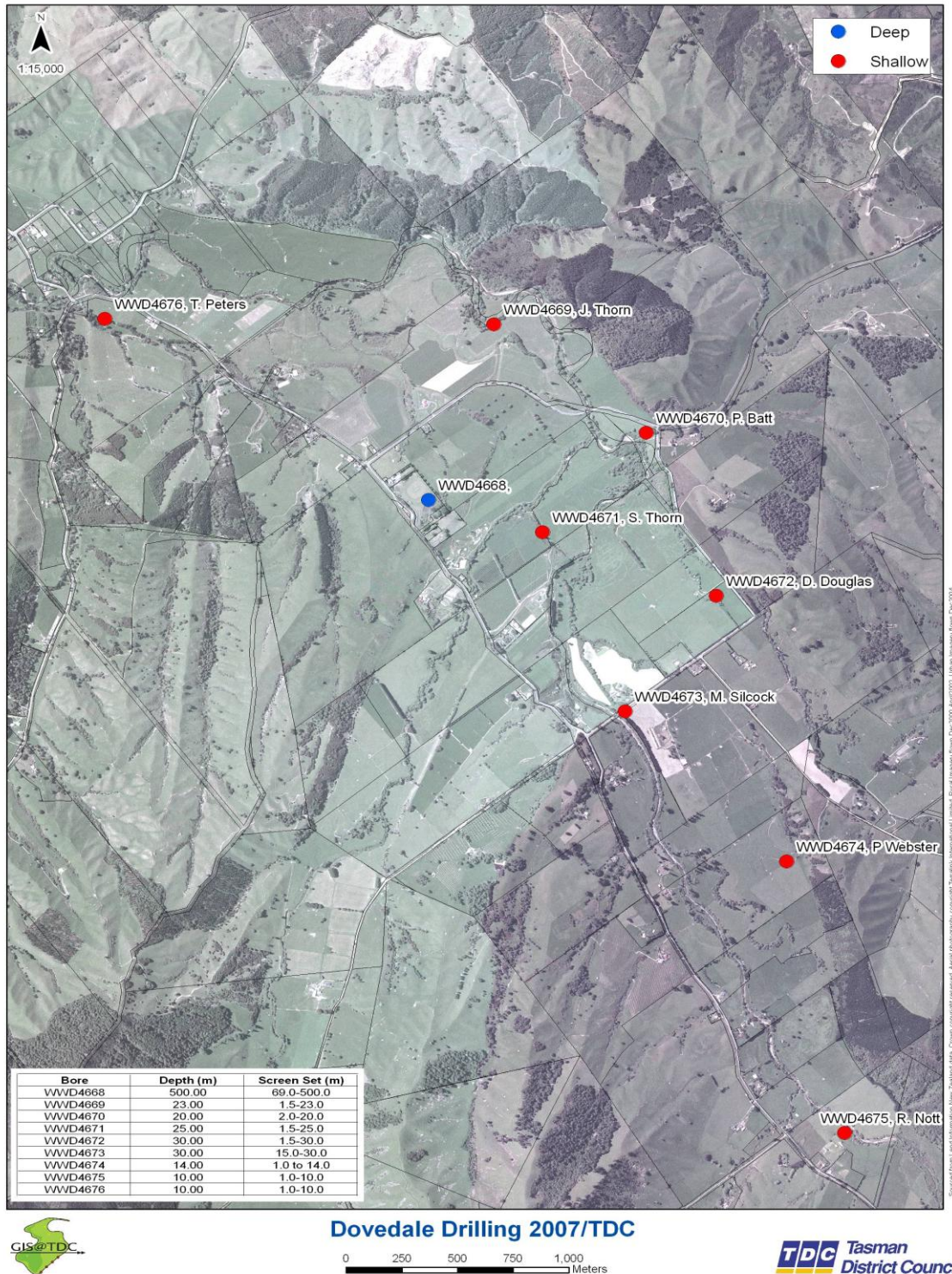


Figure 1: Location of investigation bores in the Dovedale Catchment

Drilling of the shallow bores showed the thickness of the reworked gravels in the valley floor to be between 2.5 to just over 5 metres depth before progressing to the clay-bound Moutere Gravel. Three of the eight bores (the ones further from the Dove River) had no appreciable groundwater. Four bores generally the ones nearer the river showed variable but generally very low flow rates i.e. 11 litres/minute (0.66 m³/hour, 145 gph) to 34 litres/minute (2.04 m³/hour, 449 gph). One bore (WWD4673) close to the river by Thorn Road showed a reasonable flow rate 192 litres/minute (11.52 m³/hour, 2534 gph).

Council has had a level recorder operating on this bore since last summer to get data on local shallow groundwater levels, variability and connectivity to the Dove River. Table 1 below shows the results of the flow testing from the shallow bores in January 2008. These flows will be reflective of summer flows.

Dovedale Bores Flow Test Data - Jan 08				
Date	Bore	Max Drawdown (m)	Average Flow Rate (L/min)	Average Flow Rate (L/sec)
17/01/2008	WWD4669	3.155	34.20	0.570
17/01/2008	WWD4670	1.120	11.82	0.197
16/01/2008	WWD4673	0.365	192.00	3.200
15/01/2008	WWD4675	1.185	18.58	0.310
11/01/2008	WWD4676	0.370	25.88	0.431
	WWD4674	Wells not pumped - not enough water		
	WWD4672	Wells not pumped - not enough water		
	WWD4671	Wells not pumped - not enough water		

Table 1: Flow test summary shallow bores Dovedale January 2008

4. SUMMARY

The groundwater investigations show that there is no appreciable deep groundwater in the location of the deep test bore.

The shallow groundwater investigations show that there was only a limited amount of shallow groundwater nearer the main-stem Dovedale River. The results of these investigations have been used to support a small increase for consumptive use from the shallow groundwater in the Dovedale Water Management Zone.

The Dovedale Catchment has a significant amount of irrigable land with an irrigation potential of 1200 hectare (potential peak water demand of about 500 l/s at 250 m³/hectare/week). Currently there are only 13 water permits to take from the river and shallow groundwater and one to take from storage for irrigation of about 100 hectares. The take from the river and shallow groundwater totals 35.34 l/s with one take from storage of 4.13 l/s. Based on these investigations there is no significant groundwater resource within the Dovedale Zone to meet potential full irrigation demand. Other sources of water e.g. storage and out of zone supply will have to be considered if significant irrigated agriculture is to progress in the area.

The results of this investigation have been presented to a Dovedale Residents Committee on 27 August 2008.

5. RECOMMENDATION

That the Council receive this report.

Joseph Thomas
Resource Scientist – Water/Special Projects