In The Matter of the Resource Management Act 1991 ("the Act") And

In The Matter Darfield Plan Change 63

OFFICER COMMENTS OF MURRAY ENGLAND

Introduction

1. My name is **MURRAY RUSSELL ENGLAND.** My qualifications are BE (Environmental) and NZCE (Civil).
2. I am the Asset Manager – Water Services for the Selwyn District Council ("the Council") and I am authorised to present this statement on its behalf. I have been employed by the Council since March 2009 initially holding the position of Stormwater Engineer and since May 2012 the position of Asset Manager Water Services.
3. I have the responsibility of managing Councils 5 waters which include Potable Water, Wastewater, Stormwater, Land Drainage and Water Races.
4. I have read the September 2019 Servicing Assessment by Survus Consultants Ltd, October 2019 Wastewater Infrastructure Option Report by Lowe Environmental Impact and further information supplied by the applicant dated April 2020.
5. I have considered the plan change application in relation to water supply, wastewater and stormwater management impacted by this plan change.

Water Supply

6. The Darfield Water Supply provides untreated secure groundwater to the Darfield community from bores L35/0980 and BX22/0006. These bores supply water to the network via a reservoir and booster pump station (**Refer Appendix 1 and 2**) .

7. Council's water take consent (CRC143985) limits the maximum rate of take to 83 litres per second and 6,000 cubic metres per day. There is 1000 cubic metres (plus 450 cubic metres of balance tank storage) of reservoir storage and a booster pumping system.

8. There is also an annual take limit which is calculated from an estimate of the population to be provided with the water supply for the 12-month period x 227.3m^3 (227.3 = (365 days x 0.519 m3/person) +20%). Therefore the annual take grows with development and demand.

9. Over the last 3 years, the maximum supply demand was 4,746[1] cubic metres per day. This means capacity for some growth is available.

10. The water supply provides both 'on-demand' connections via water meters and also restricted connections mainly to rural properties.

Future Growth Demand

11. In response to the accelerated growth within the Selwyn District, hydraulic models have been used to plan future water infrastructure for a number of water supplies including Darfield.

12. The master planning provides an assessment of the sizing and timing of new infrastructure for new water sources (wells) and pipelines to service growth. Part of the master planning requires a water balance to be developed to forecast growth, using historical peak demand per household. The water balance forecasts the peak instantaneous flow per year versus the water resources available to determine the staging of new wells.

13. Darfield is expected to see growth over the next 30-years and to meet this growth, a new well has been drilled to increase supply capacity.

[1] 13 Feb 2020

14. Preliminary testing of the bore is provided in **Appendix 3**. The bore produced 44.7 l/sec with a drawdown of 15.50m. This is a good result which confirms a reliable source of water.

15. A resource consent application to Environment Canterbury to abstract water from this new well is being prepared. Consent will be required before water can be abstracted.

Fire Fighting Capacity

16. The Darfield scheme was designed as a domestic supply which has been extended into the surrounding rural areas and therefore not all areas within Darfield water supply will comply with the NZ Fire Fighting Code of Practice due to reticulation sizing in the rural areas.

17. The Infrastructure Report accompanying the plan change 'Darfield Plan Change - Servicing Report' states that *"All reticulated supply would be unrestricted, and as such would be subject to the provisions of FW2 from SNZ PAS 4509:2008"*

18. Council confirms that all new subdivisions are required to be designed and constructed in accordance with Selwyn District Councils 'Engineering Code of Practice'. Section 7.5.4 – Fire service requirements, provides the following requirement:

    "The water supply reticulation should comply with the Fire Service Code of Practice. In particular, the reticulation must meet the requirements for firefighting flows, residual fire pressure and the spacing of hydrants.

    Location of hydrants shall comply with SNZ PAS 4509: 2008 with minimum hydrants spacing of 135 metres. Blue RRPM's (cat eyes) shall be installed to offset from the road centreline adjacent to all hydrants. Hydrant Marker posts are to be installed to comply with Section G3.4 of the NZ Fire Service Code of Practice. Hydrant posts are not required in urban areas. The type of hydrant marker required is shown on drawing WS10.0 (see Appendix V).'

19. In summary, the reticulated water supply for this proposed plan change would need to be designed to meet firefighting standards.

Conclusion

20. The ODP area can be adequately serviced with potable water supply.

21. Firefighting requirements can be met.

22. It is noted that development contributions are payable for any additional lot developed. For the year ended 30 June 2022, water contributions in Darfield are $7060 per HUE + GST

Wastewater

23. There is no reticulated sewage network within Darfield

24. The application considers a number of wastewater servicing options. The response to the request for further information notes "As outlined in the application, the WWTP and land treatment area are intended to be a short-term solution as there is currently no reticulated network within Darfield. Once SDC have a reticulated network that is within 50 metres of the proposed developments boundary, the WWTP will be decommissioned…"

Darfield and Kirwee Reticulated Wastewater

25. Following public consultation on the 2021-31 Long Term Plan which included Darfield Wastewater as one of the main consultation topics, the Council deliberated and arrived at an agreed position. This was recorded as follows[2]:

26. *"Council approves the project and breaks it into the following stages:*

Stage 1*: Complete the pipeline to the Pines and require all new developments to connect immediately. Install and connect the Main St of Darfield in 2022/2023 for proposed construction with the timeframe for connection being 2023-2024*

Stage 2: *Work with Environment Canterbury to determine risk areas around consented and unconsented septic tanks with the timeframe being 2021-2023. Undertake a funding review for consultation as part of the 2023/24 Annual Plan.*

Stages 3 and 4 *are subject to Stage, with a provisional timetable of:*

- *Stage 3: Installation of reticulation to high risk areas, (probably those areas with no consents in the older parts of townships) with the timeframe being 2025-2030 •*

2 DRAFT LONG TERM PLAN 2021– 2031 SUBMISSION DELIBERATIONS HELD IN THE COUNCIL CHAMBERS, ROLLESTON THURSDAY 20 MAY 2021, COMMENCING AT 9.00AM

- *Stage 4: Installation of reticulation to non-high risk areas, (probably the newer areas of townships with existing discharge consents) with the timeframe 2031-2035"*

27. Subject to the approval or otherwise of this plan change, Council will work with the developer to ensure Council wastewater services are provided in a timely manner to the boundary (or agreed location).

Conclusion

28. There are viable means to dispose of wastewater from this plan change area.

29. Early connection to the Councils proposed wastewater system as approved in the 2021 Long Term Plan should be a condition of any subdivision consent. I understand that this would require a change to the existing District Plan provisions in relation to wastewater disposal in Darfield.

30. Development contributions would be payable for any additional lot developed land connected to the wastewater network. For the year ended 30 June 2022, wastewater contributions in Darfield are $4809 per HUE + GST

Stormwater

31. It is anticipated by the applicant that stormwater will discharge to ground via sump to soakhole. The discharge of stormwater to ground is appropriate.

32. Resource consent for stormwater discharge from Environment Canterbury would be required before any future subdivision consent could be approved.

Conclusion

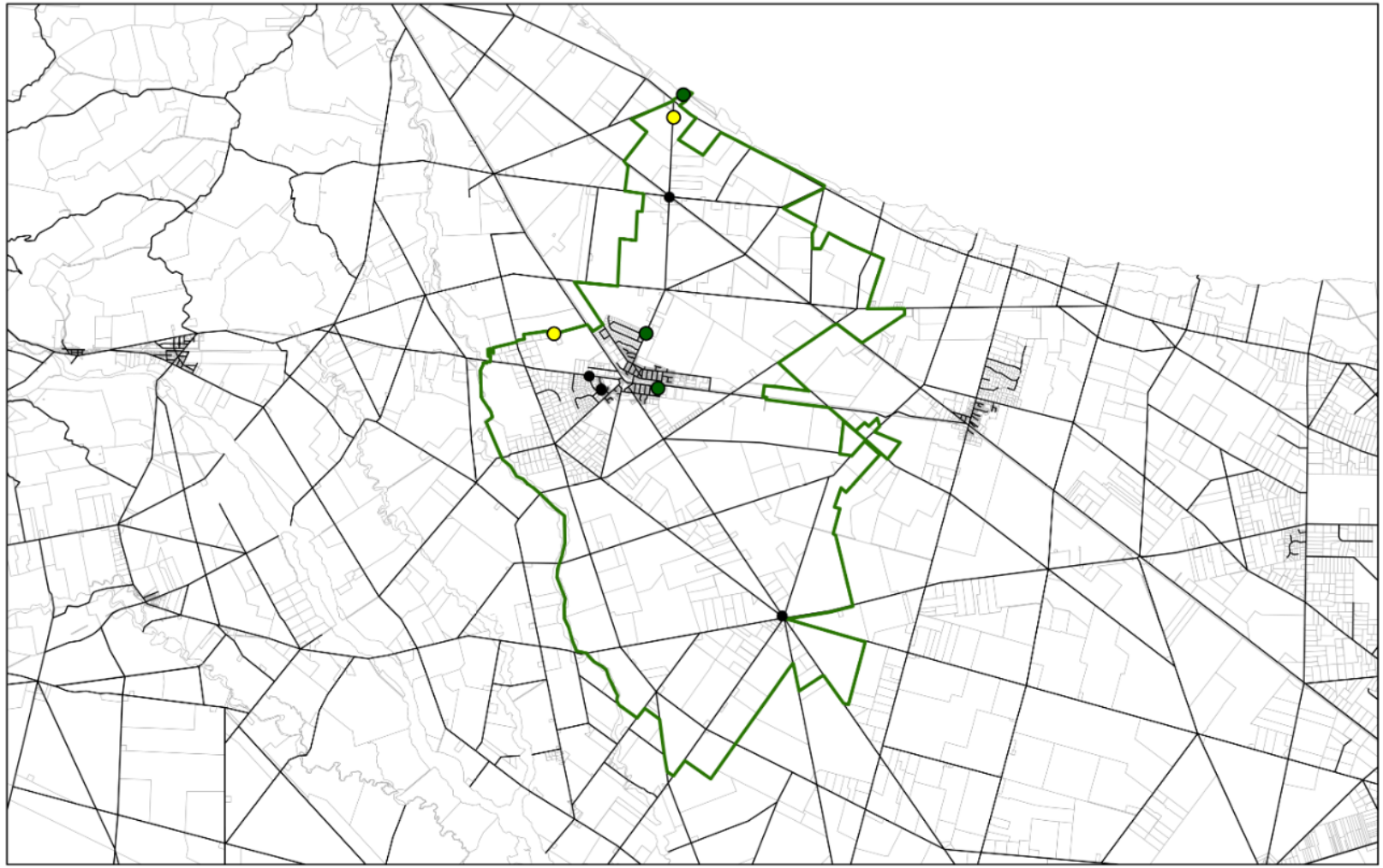
33. There is a viable means to dispose of stormwater for this plan change area. As a matter of process, I would recommend that a stormwater consent is obtained from Environment Canterbury prior to subdivision consent been applied for from Selwyn District Council.

Murray England

22 June 2021

Appendix 1

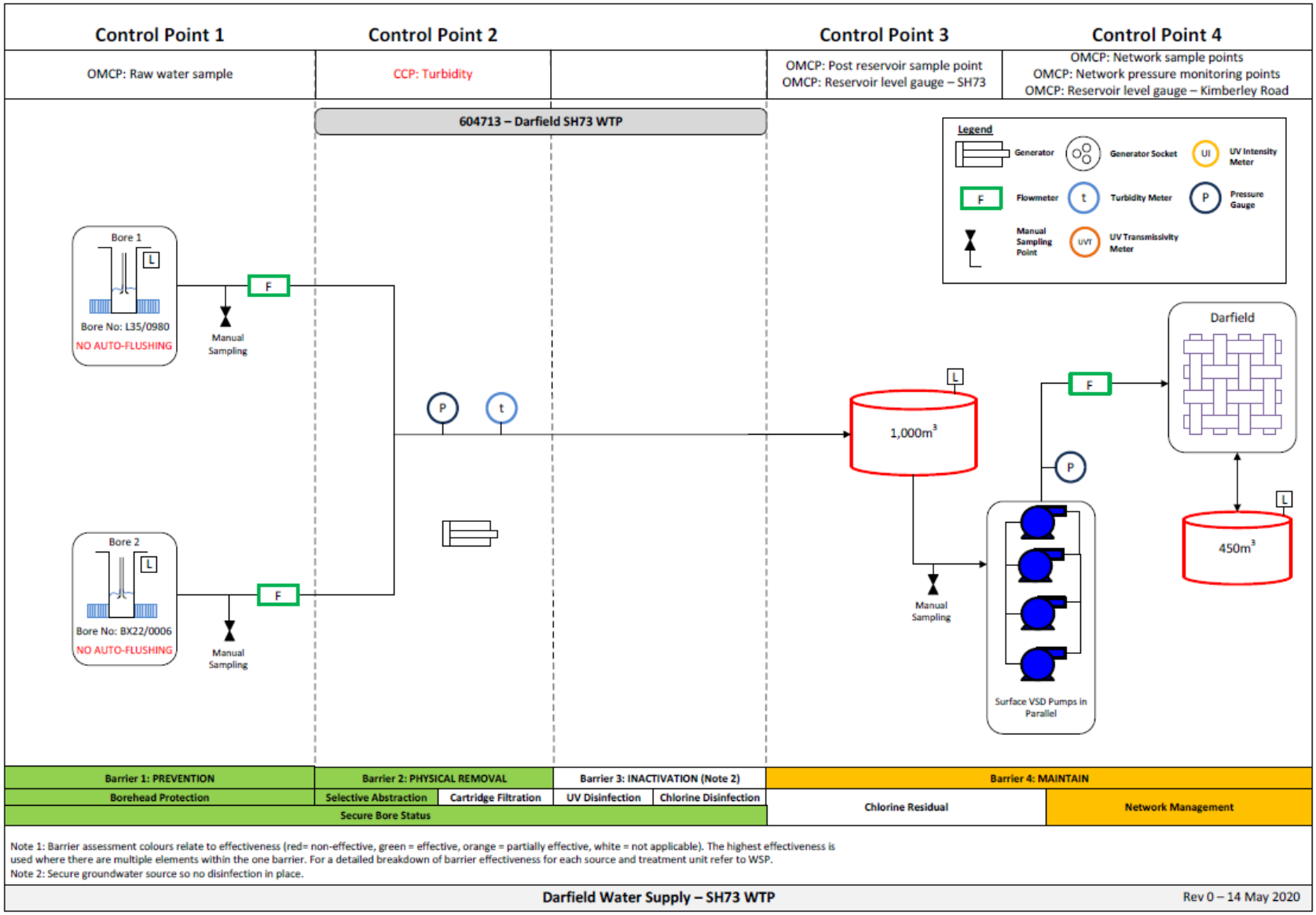
Scheme Map – Water



Date: 9/03/2020

Appendix 2

Process Diagram – Water



Appendix 3

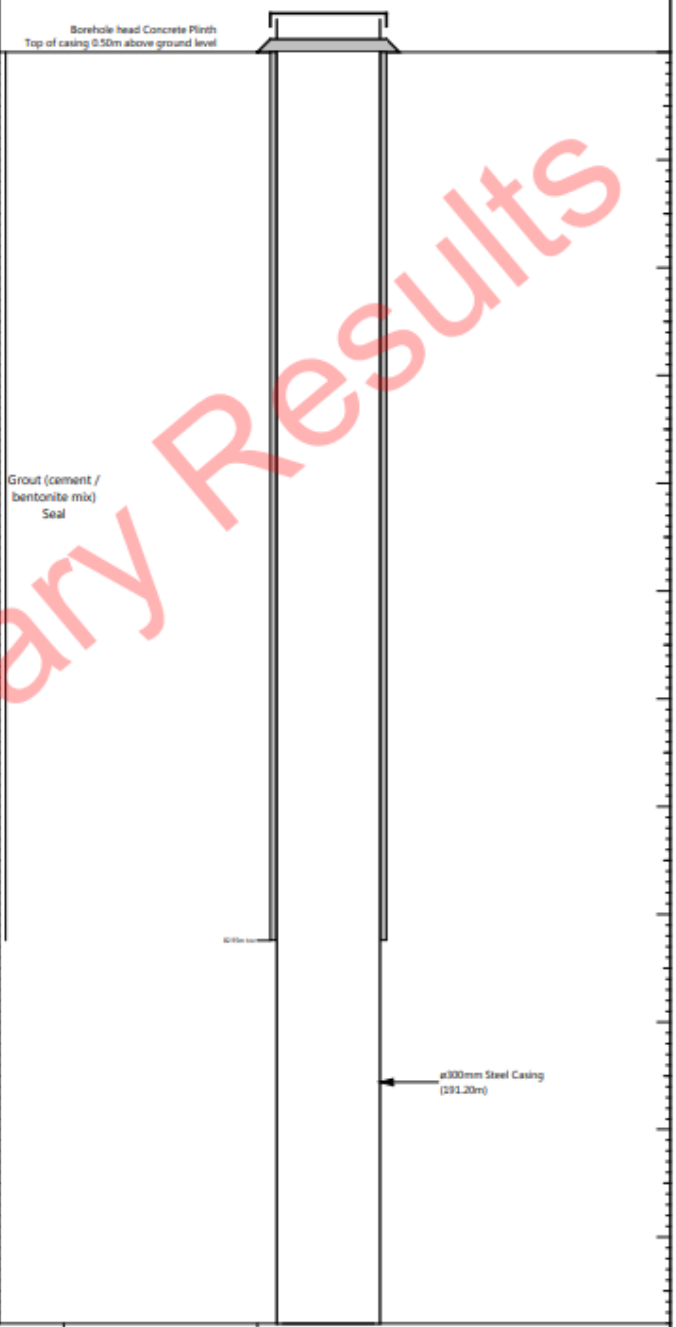
McMILLAN Drilling

Client: Selwyn District Council	**Bore No.:** BX22/0212
Project: Drilling of New 12" (300mm) Well	**Job No.:** 18416

Site Location: Creyke Road, DARFIELD
Grid Reference: 1530403m E, 5184100m N (NZTM) Handheld GPS
Lot Number: Part Lot 1 DP 6651
Date: 31/3/2021
Rig Operator: A. Gibellini, C. Hill
Method / Rig: Rotary Percussion

Material Description	Graphic Log	Depth (m)
TOPSOIL.		
Silty coarse GRAVEL.		
Sandy GRAVEL.		
Silty GRAVEL.		
Sandy GRAVEL with some silt.		
Silty GRAVEL.		

Casing & Screen Installation



Remarks:
Well completed with table E flange, blank and dressing kit. Concrete plinth poured in place (2m x 2m x 0.2m)

Development Duration (hr): 100.75

Pumping Duration (hr):

Flow Rate (gpm)	Flow Rate (l/sec)	Draw Down (m)	Duration (hr)
135	10.2	1.31	1.00
273	20.7	3.58	1.00
400	30.3	6.42	1.00
528	40.0	10.61	1.00
597	45.2	13.98	1.00
590	44.7	15.50	18.50

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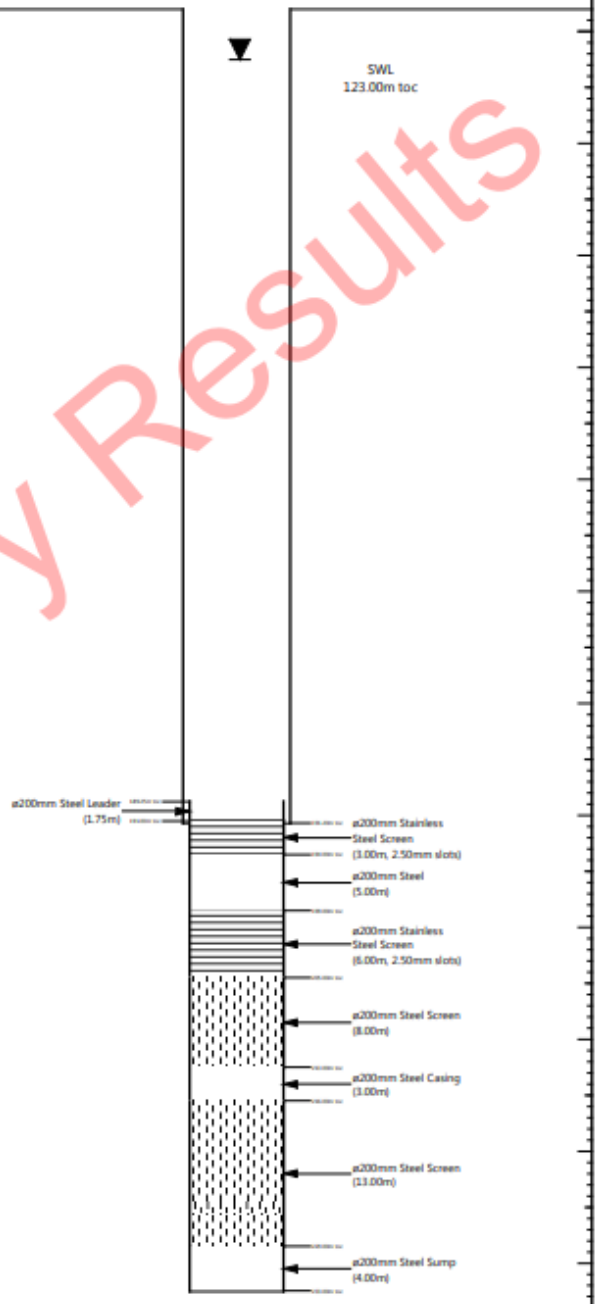
Method / Rig: Rotary Percussion

Material Description	Graphic Log	Depth (m)
Sandy GRAVEL with some silt. Sand, fine to coarse.		118.00m
Sandy COBBLES. Sand, coarse.		130.00m
Sandy GRAVEL. Saturated; sand, fine to coarse.		132.00m
Sandy GRAVEL with some silt.		161.00m
Sandy COBBLES with some gravel. Saturated; sand, coarse.		162.00m
Sandy GRAVEL with some silt. Sand, coarse.		164.00m
Sandy GRAVEL. Saturated; sand, fine to coarse.		192.00m
Silty GRAVEL.		194.00m
Sandy GRAVEL with some silt. Saturated; sand, coarse.		199.00m
Sandy GRAVEL with some silt. Saturated; sand, coarse.		204.00m
Sandy GRAVEL. Saturated; sand, fine.		207.00m
Sandy GRAVEL. Sand, coarse.		211.00m
Sandy GRAVEL. Saturated; sand, fine to coarse.		213.00m
Sandy GRAVEL with some silt.		213.00m
Sandy GRAVEL with some cobbles. Saturated; sand, fine to coarse.		216.00m
Sandy GRAVEL with some silt.		219.00m
Sandy GRAVEL. Saturated.		224.00m
Sandy GRAVEL with some silt.		229.00m

Casing & Screen Installation



Remarks:
Well completed with table E flange, blank and dressing kit. Concrete plinth poured in place (2m x 2m x 0.2m)

Bore Diameter: 300mm
Total Bore Depth: 233.00m toc
Static Water Level: 123.00m btoc
Total Depth Drilled: 233.00m bgl

Development Duration (hr): 100.75
Pumping Duration (hr): 23.5

Flow Rate (gpm)	Flow Rate (l/sec)	Draw Down (m)	Duration (hr)
135	10.2	1.31	1.00
273	20.7	3.58	1.00
400	30.3	6.42	1.00
528	40.0	10.61	1.00
597	45.2	13.98	1.00
590	44.7	15.50	18.50