THE FUTURE OF WELL HEAD PROTECTION IN CHRISTCHURCH

MIKE THORLEY – BECA

LISA MACE – BECA

BRIDGET O'BRIEN - CCC

Havelock North, August 2016

Campylobacter outbreak

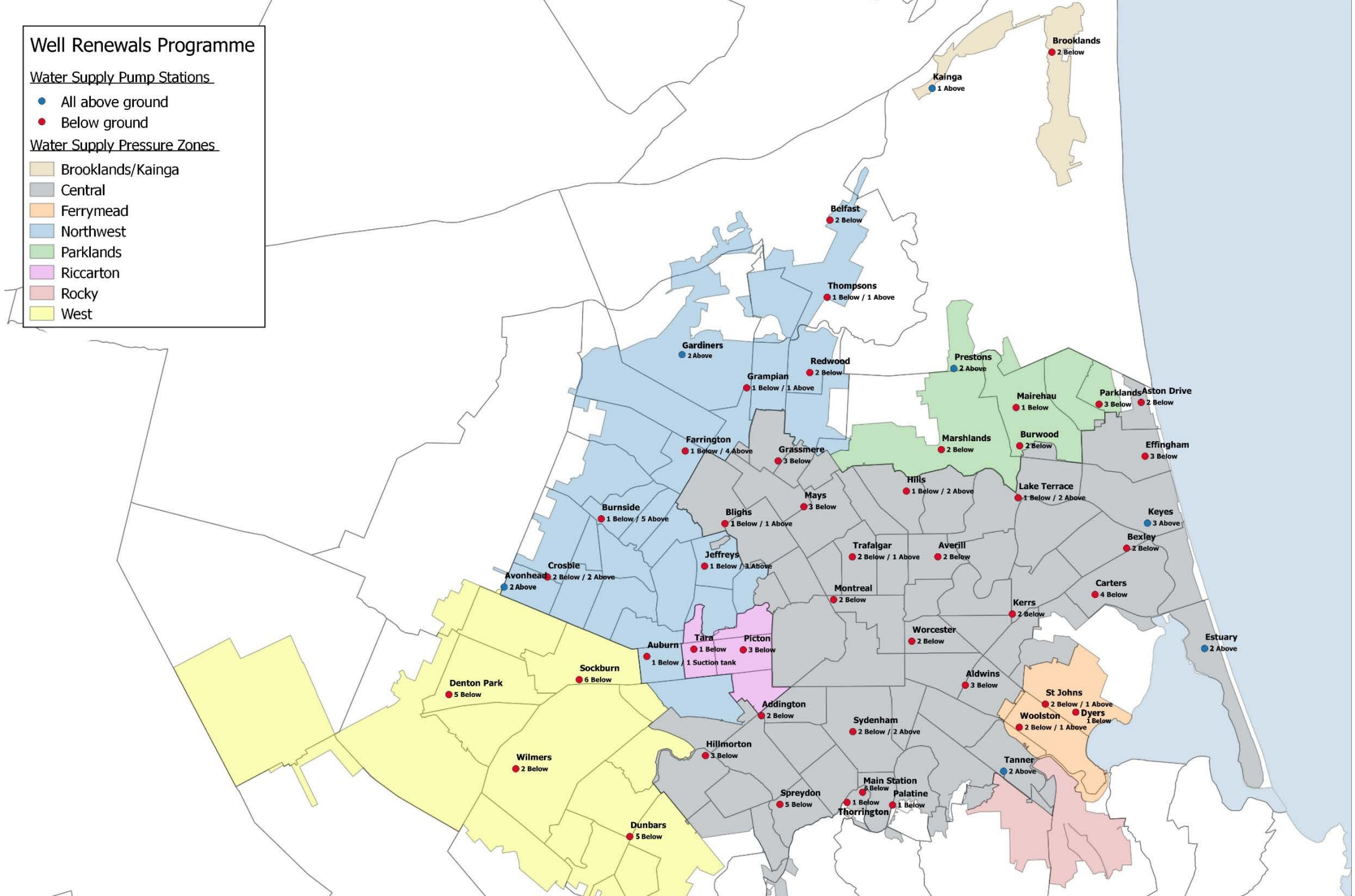
5,500 became ill, possible link to 3 deaths

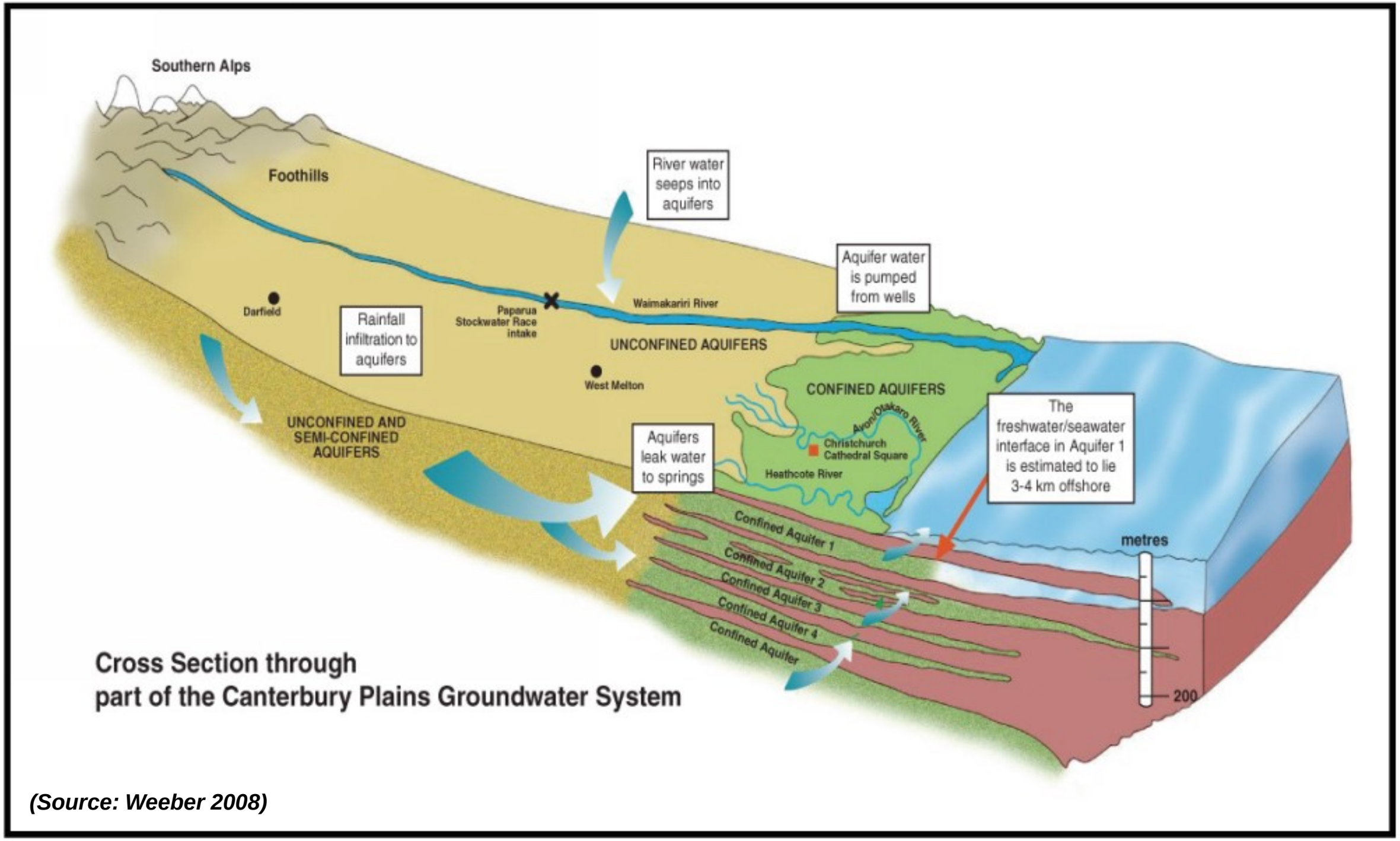
3 key recommendations from Inquiry Stage 2

- Prohibit new installations of below-ground wells
- Abolish secure bore water status
- Mandate universal treatment of supplies
- Provision should be made for exemptions to mandatory treatment only in very limited circumstances

Christchurch City Council

Beca


Well Renewals Programme
Water Supply Pump Stations
All above ground
Below ground
Water Supply Pressure Zones
Brooklands/Kainga
Central
Ferrymead
Northwest
Parklands
Riccarton
Rocky
West
Brooklands
2 Below
Kainga
1 Above
Belfast
2 Below
Thompsons
1 Below / 1 Above
Gardiners
2 Above
Redwood
2 Below
Grampian
1 Below / 1 Above
Prestons
2 Above
Mairehau
1 Below
Parklands
3 Below
Aston Drive
2 Below
Farrington
1 Below / 4 Above
Grassmere
3 Below
Marshlands
2 Below
Burwood
2 Below
Effingham
3 Below
Hills
1 Below / 2 Above
Lake Terrace
1 Below / 2 Above
Mays
3 Below
Burnside
1 Below / 5 Above
Blighs
1 Below / 1 Above
Keyes
3 Above
Bexley
2 Below
Trafalgar
2 Below / 1 Above
Averill
2 Below
Jeffreys
1 Below / 3 Above
Crosbie
2 Below / 2 Above
Avonhead
2 Above
Montreal
2 Below
Carters
4 Below
Kerrs
2 Below
Worcester
2 Below
Estuary
2 Above
Auburn
1 Below / 1 Suction tank
Tara
1 Below
Picton
3 Below
Sockburn
6 Below
Denton Park
5 Below
Aldwins
3 Below
St Johns
2 Below / 1 Above
Dyers
1 Below
Woolston
2 Below / 1 Above
Addington
2 Below
Sydenham
2 Below / 2 Above
Hillmorton
3 Below
Wilmers
2 Below
Tanner
2 Above
Main Station
6 Below
Spreydon
5 Below
Palatine
1 Below
Thorrington
1 Below
Dunbars
5 Below



(Source: Weeber 2008)

Drinking Water Standards Secure Bore Water Status

Criterion		Method of Demonstration
1	Not affected by surface or climatic influences	Age testing, constant composition and modelling
2	Bore head must provide satisfactory protection	Inspections by an expert in well head security
3	*E. coli* must be absent from bore water	Testing to a prescribed frequency

Late 2017

- Beca inspects 25 wellheads against Criterion 2. None have adequate protection

22 Dec 2017

- DWA revokes provisionally secure status of Christchurch Water Supply

January 2018

- City Council votes to temporarily chlorinate water supply while wellheads remediated

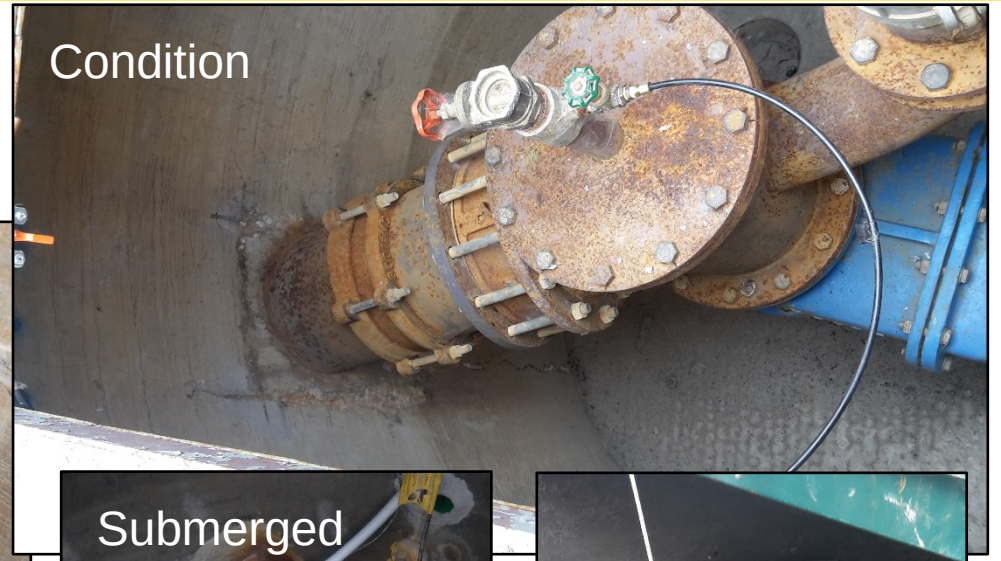
February 2018

- CCC kicks off the well head remediation programme


SFL
500
HYPOCHLORITE
SOLUTION
SODIUM
HYPOCHLORIT
91
RROSIVE TO SKIN AND EYES
COTOXIC TO THE AQUATIC ENVIRONM
IN EMERGENCY DIAL 111 FIRE, POLICE OR AMB
REGIONAL COUNCIL POLLUTION
RESPONSE SERVICE 03 366 466

Condition Findings

- General Observations

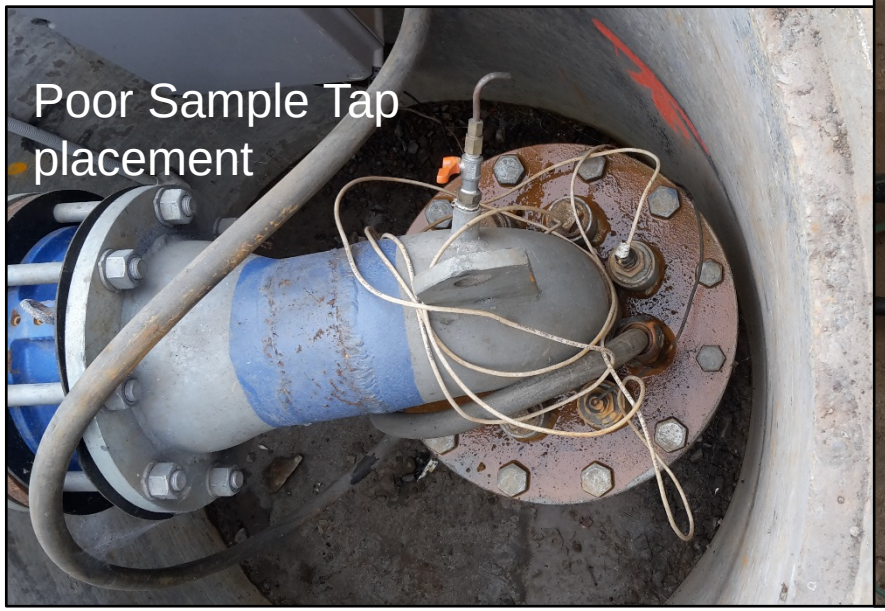


Condition Findings

- Surface Drainage Pathways

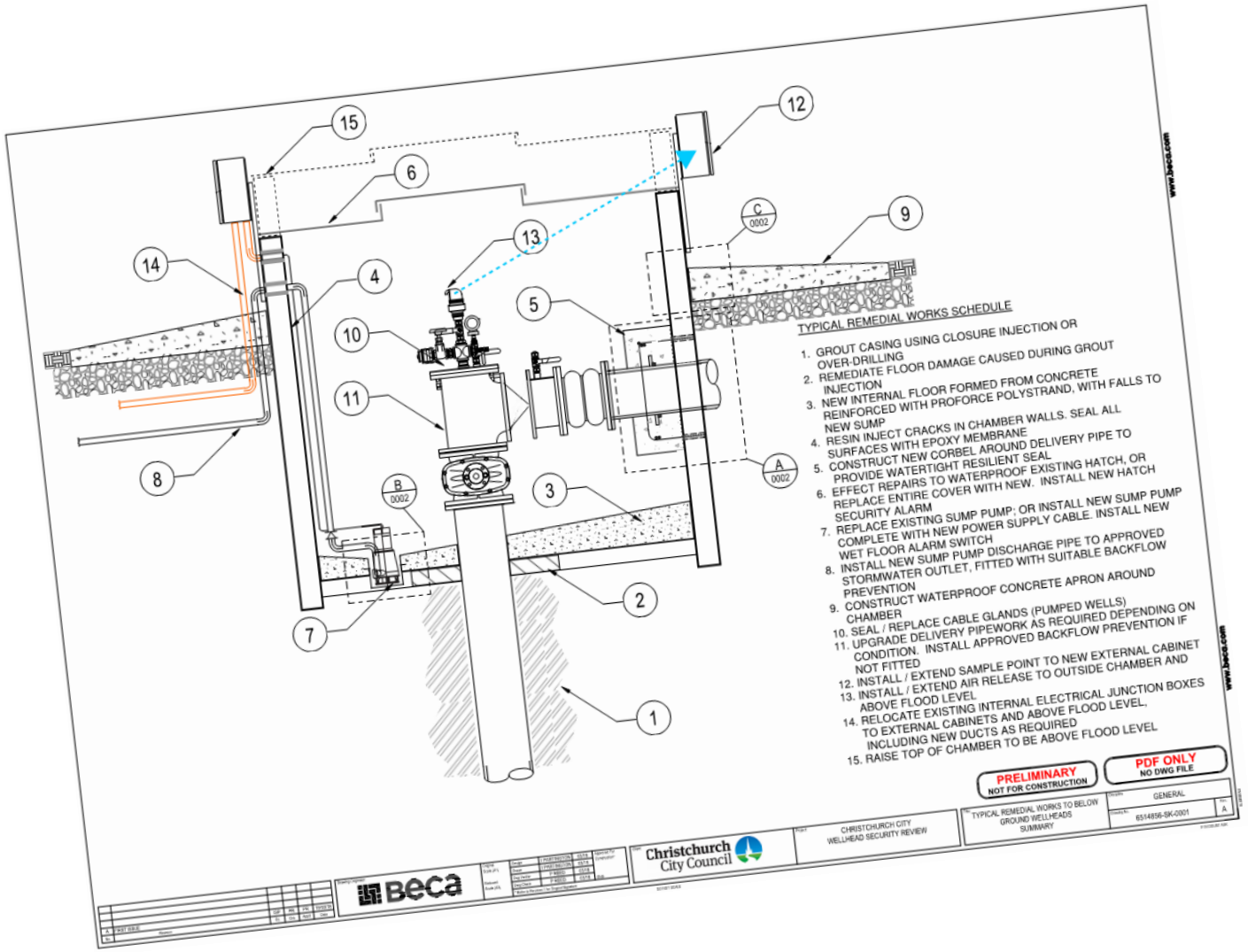
Condition Findings

- Vents and Sampling



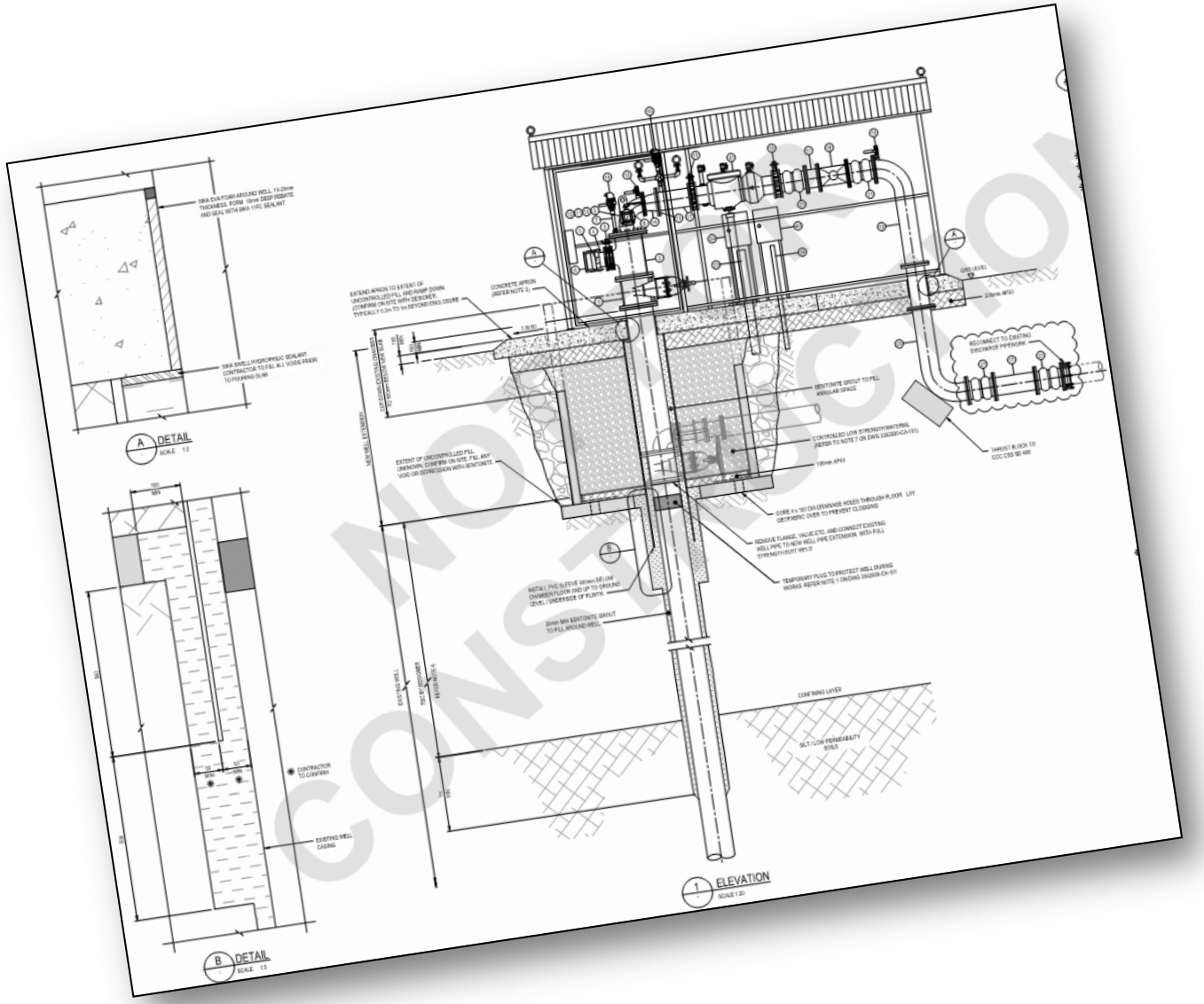
Christchurch City Council

Beca



Christchurch City Council

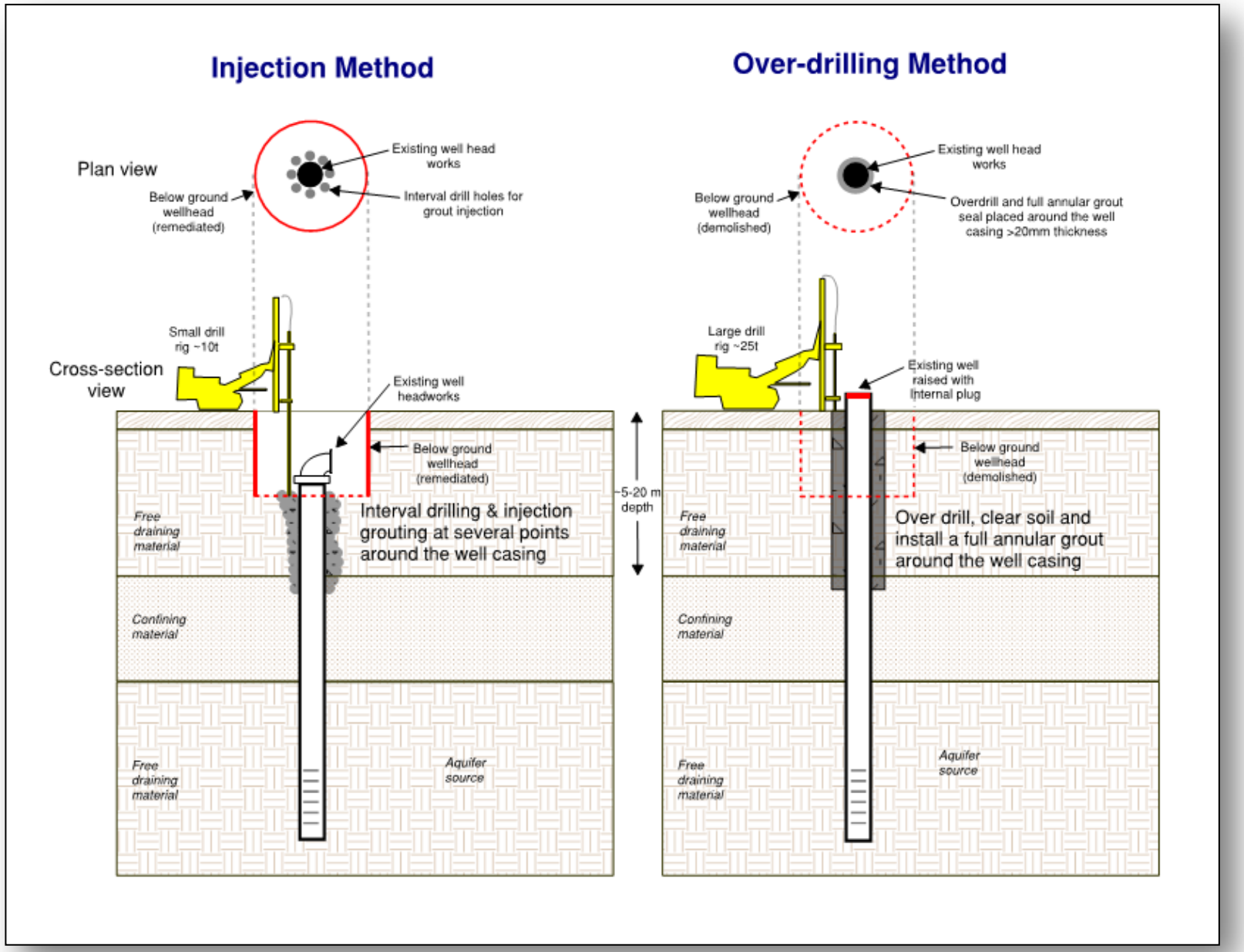
Beca



Christchurch City Council

Beca

Grout Sealing



Christchurch City Council

Beca

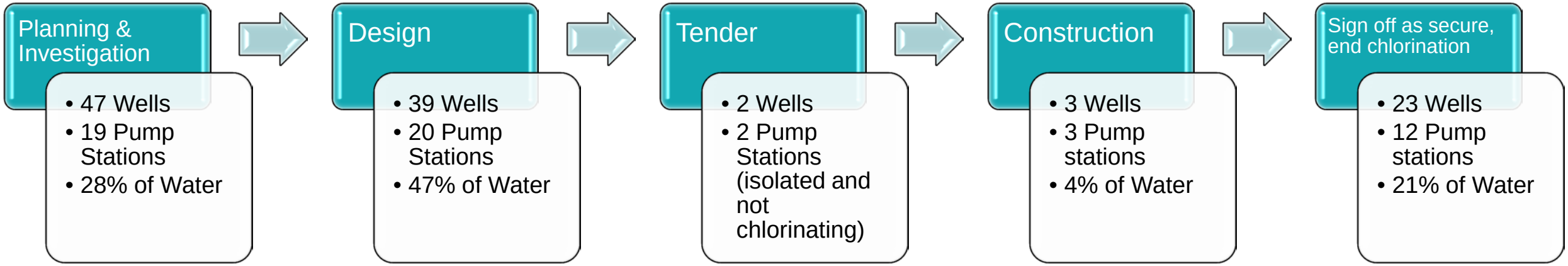
Design Standardisation is the key to success

Hydraulics	Well Head Enclosures
Flood Level	Utilities
Annular Seal	Landscaping
Backflow Prevention	Seismic Resilience
Scour Line	Durability
Plinth	Structural Loadings
Connections	Consenting
Provision for Future Treatment	Approval and Sign Off

Christchurch City Council

Beca

Programme Achievements So Far…



The Future….?




Beca

#wemakethingshappen

Christchurch City Council