



Darfield and Kirwee Wastewater Public Meeting – 6pm

27 June 2019

Welcome and Introductions

Selwyn District Council

Sam Broughton	Mayor
Bob Mugford	Councillor
Murray England	Water Asset Manager
Alicia Paulsen	Water Services Planner

Stantec

Joanna Wilkins	Facilitator
Shane Bishop	Senior Wastewater Engineer
Rico Parkinson	Senior Wastewater Engineer

Agenda

- Reason for Public Meeting
- Potential Drivers for Change
- Background information
 - Community Growth
 - Environmental Assessments
 - Current Wastewater Configuration
 - Potential Wastewater Solutions
- Funding Options
- Focus on Drivers for Change

Reason for Public Meeting

- To Inform – by sharing previous studies and investigation work
 - Present growth predictions
 - Summarise current systems and issues
- To Share – Discuss possible servicing and funding options
- To Engage – to ask questions and gain feedback from the Community
- To Assess – is there a Case for Change

What could drive change

- Concerns for Public Health;
- Restrictions to Residential Growth or Intensification;
- Restrictions to Commercial Growth;
- Legislation changes;
- Consenting of existing systems;
- Perceptions of living in an un-sewered Community;
- Cultural acceptability of options;
- Others?

In the 2017/18 Annual Plan, Council signalled that a joint working party involving representatives from the Council, the Malvern Community Board, the Darfield and Kirwee Township Committees, Canterbury District Health Board and Environment Canterbury would further consider options for the possible establishment of a wastewater scheme.

The working party has previously indicated that, based on the available evidence, the existing system of onsite septic tanks is not currently having a detrimental effect on the environment. However the establishment of a reticulated scheme is an option for consideration as it may enable future commercial and industrial development and more intensive residential development in the area.

Over the first three years of this Long-Term Plan, further work will be undertaken by the Council, the working group and technical experts, to gather more information and undertake targeted consultation with the community. Information gathered over this time will then be consulted on through a future Long-Term Plan process.

KEY

OPPORTUNITIES

UNDEVELOPED RESIDENTIAL LAND WITHIN THE TOWNSHIP

UNDEVELOPED BUSINESS LAND

CONSTRAINTS / ISSUES

LOSS OF RURAL LAND DUE TO RESIDENTIAL EXPANSION

PARKING ISSUES WITHIN TOWN CENTRE

RAILWAY LEVEL CROSSING - NEAR MISS ACCIDENTS

DISPERSED TOWN FORM

INTENSIVE FARMING OPERATION

FONTERRA DAIRY PROCESSING MANAGEMENT AREA

HIGH VOLTAGE TRANSMISSION LINES

CULTURAL VALUES

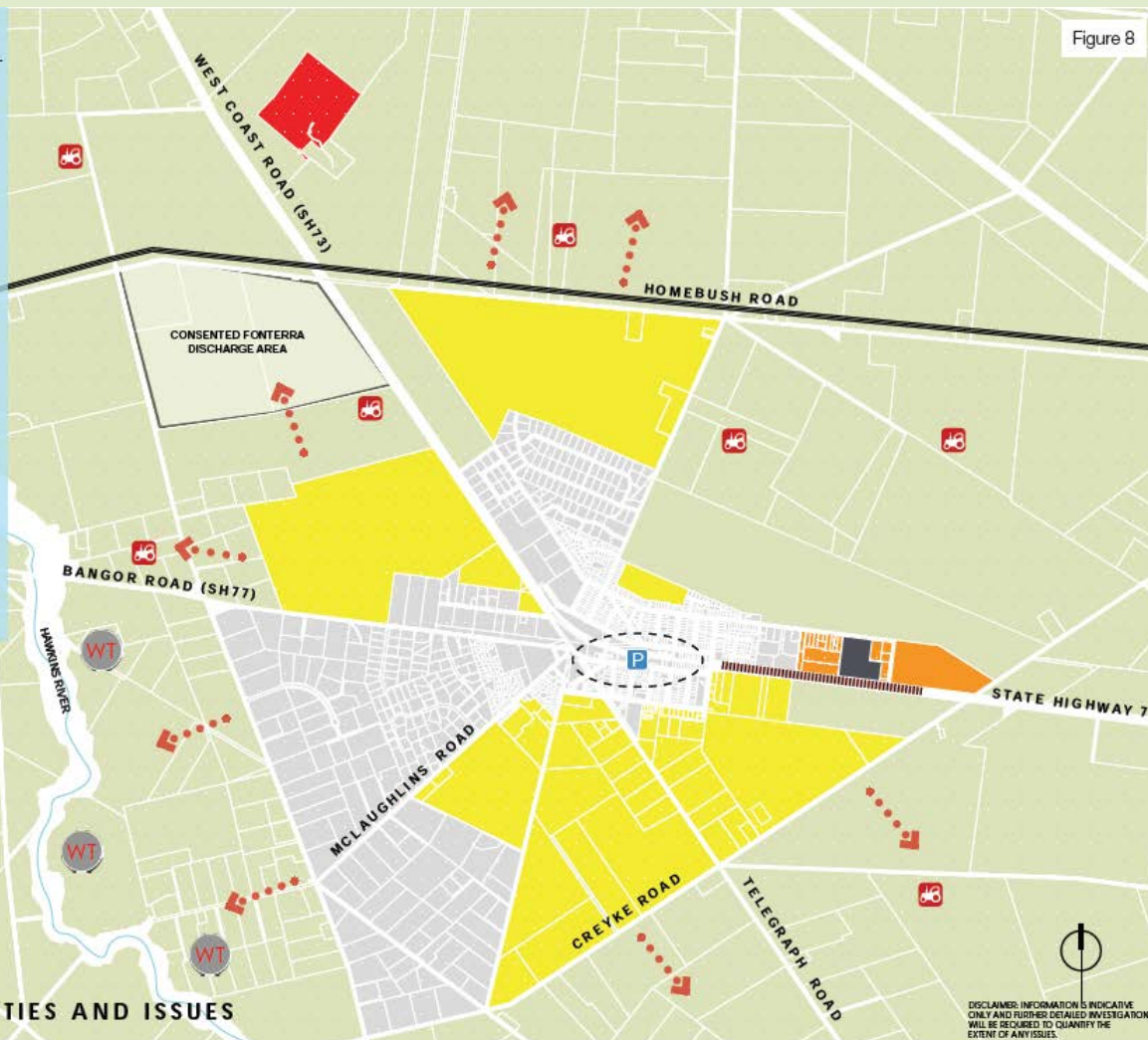


Figure 8

DARFIELD OPPORTUNITIES AND ISSUES

DISCLAIMER: INFORMATION IS INDICATIVE ONLY AND FURTHER DETAILED INVESTIGATIONS WILL BE REQUIRED TO QUANTIFY THE EXTENT OF ANY ISSUES.

2015 POPULATION
2,986

2031 PROJECTED
POPULATION
4,141

39% INCREASE
IN DARFIELD'S POPULATION

2015 HOUSEHOLDS
1039

2031 PROJECTED
HOUSEHOLDS
1,479
INCREASE OF 440 FROM 2015

2,274
ZONED HOUSEHOLD CAPACITY

1,320 PEOPLE
EMPLOYED

19ha
OF BUSINESS LAND

59ha
OF INDUSTRIAL LAND

DARFIELD SNAPSHOT

KEY

DEVELOPMENT

STANDARD TO LOW-DENSITY
RESIDENTIAL DEVELOPMENT

LOW DENSITY RESIDENTIAL
DEVELOPMENT

INTENSIFIED RESIDENTIAL
DEVELOPMENT

BUSINESS DEVELOPMENT

* MAY INCLUDE COMMERCIAL ACTIVITY

** ALTERNATIVE USES MAY INCLUDE
COMMERCIAL/INDUSTRIAL ACTIVITIES
AND/OR LOW DENSITY RESIDENTIAL
DEVELOPMENT

*** AREA MAY BE APPROPRIATE FOR LOW
DENSITY DEVELOPMENT AT HIGHER
DENSITIES THAN CURRENT DISTRICT PLAN
L2A(DEFERRED) ZONING PROVIDES

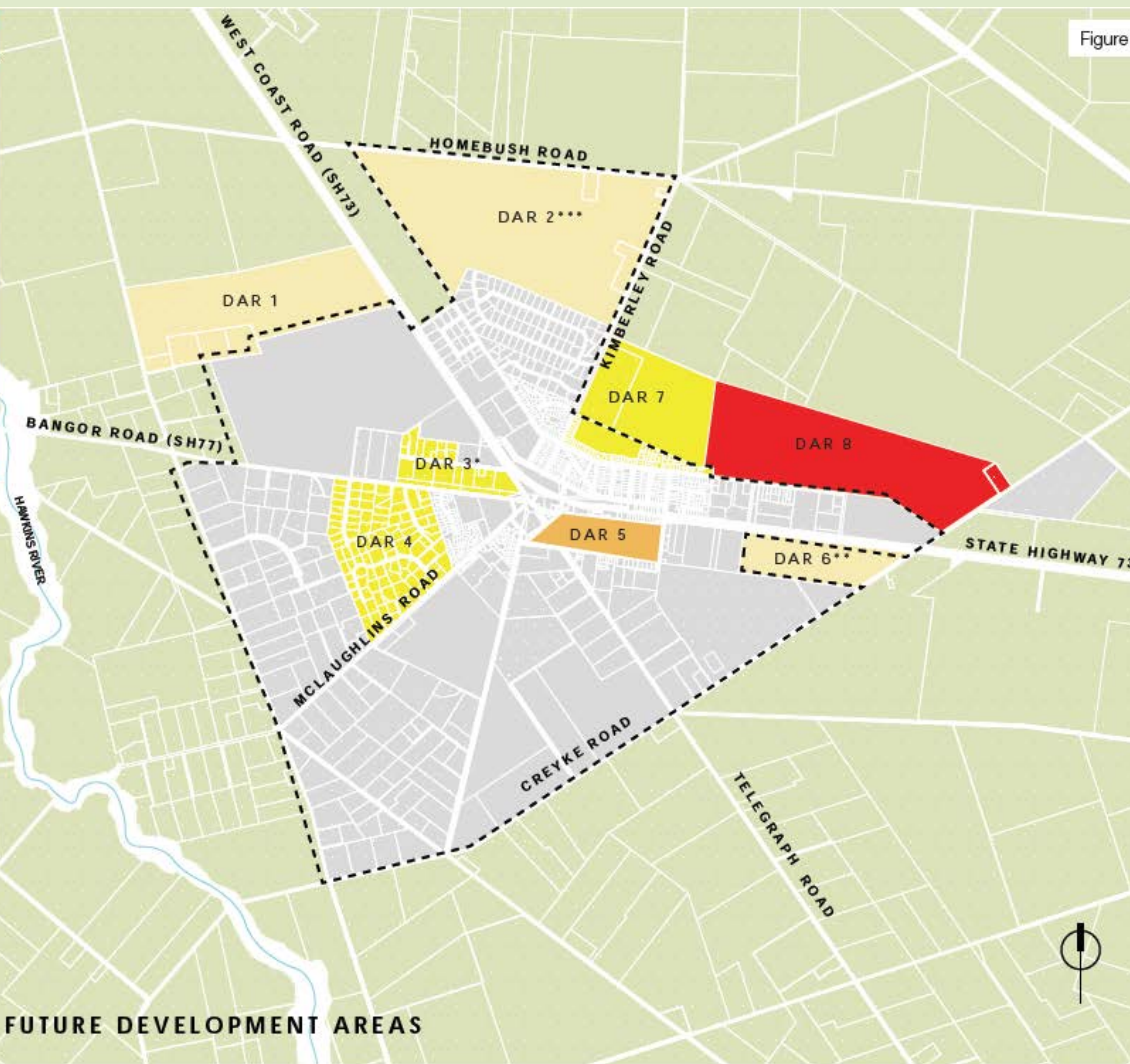


Figure 9

DARFIELD PREFERRED FUTURE DEVELOPMENT AREAS

2015 POPULATION
2,986

2031 PROJECTED
POPULATION
4,141

39% INCREASE
IN DARFIELD'S POPULATION

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DARFIELD SNAPSHOT

KEY

--- EXISTING TOWNSHIP BOUNDARY

RESIDENTIAL

RECREATION

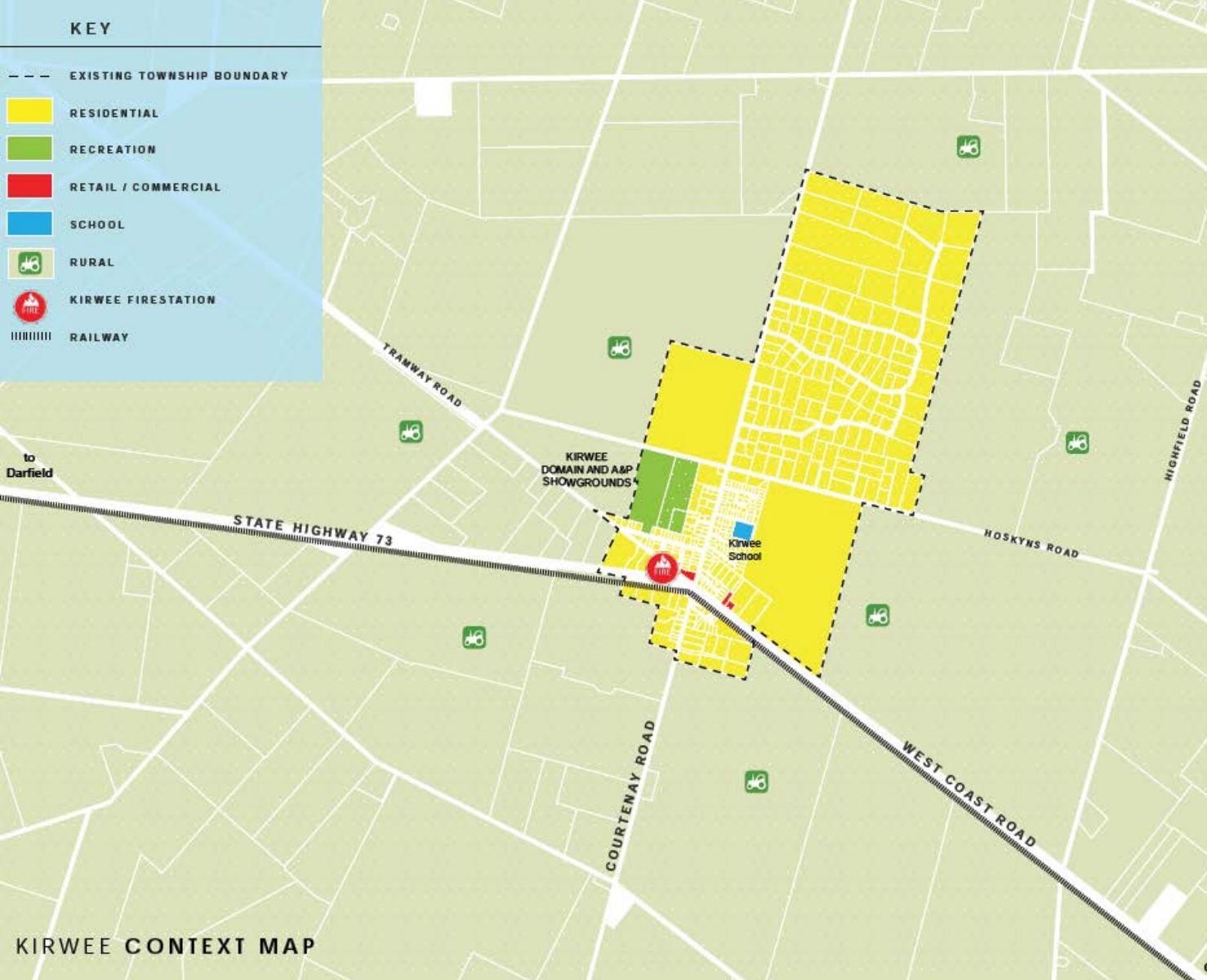
RETAIL / COMMERCIAL

SCHOOL

RURAL

KIRWEE FIRESTATION

RAILWAY



2015 POPULATION
1,186

2031 PROJECTED
POPULATION
1,711

44% INCREASE
IN KIRWEE'S POPULATION

2015 HOUSEHOLDS
424

2031 PROJECTED
HOUSEHOLDS
611
INCREASE OF 187 FROM 2015

218
ZONED HOUSEHOLD CAPACITY

125 PEOPLE
EMPLOYED

KIRWEE SNAPSHOT

KEY

OPPORTUNITIES

UNDEVELOPED RESIDENTIAL LAND

KIRWEE DOMAIN EXPANSION

CONSTRAINTS / ISSUES

WATER SUPPLY

SCHOOL

LOSS OF PRODUCTIVE RURAL LAND

INTENSIVE FARMING ACTIVITY

DISPERSED TOWN FORM

REVERSE SENSITIVITY ISSUES WITH SH73 AND RAILWAY LINE

POOR CONNECTIVITY DUE TO SH73 OR RAILWAY LINE

DEVELOPMENT

KIR A1 STANDARD RESIDENTIAL DEVELOPMENT



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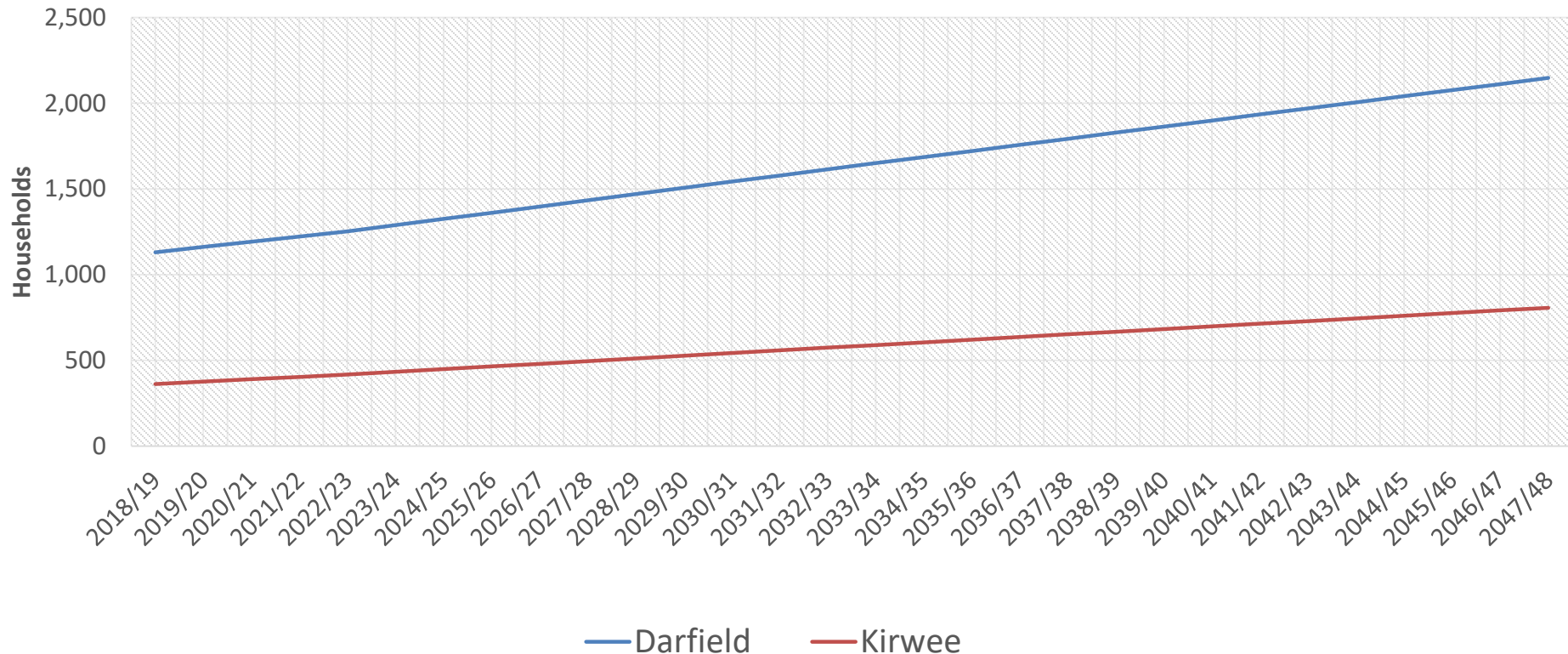
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EMPLOYED

KIRWEE SNAPSHOT

KIRWEE OPPORTUNITIES AND ISSUES | PREFERRED FUTURE DEVELOPMENT AREAS

Population Projections

Projected Population Growth (based on LTP Water Connections)



Understanding Public Health Risk

In 2014, Community and Public Health (CPH) identified a concern that discharge of minimally-treated wastewater to ground from Darfield and Kirwee may pose an unacceptably high public health risk.

CPH conducted a three investigation to assess the potential risk:

- Potential Hazard On-Site Wastewater Treatment Systems
- Existing On-site Wastewater Treatment System Assessment
- Public Health Risk Assessment

Potential Hazard On-Site Wastewater Treatment Systems

at a regional scale, there is no clear evidence that decentralised treatment systems in Darfield and Kirwee, with their present population densities, are greatly affecting overall groundwater quality.

at the township scale, the present population densities may add enough nitrate to the background concentration in the water to exceed nitrate's maximum acceptable value at the water table.

an increase in population density will increase the likelihood of nitrate exceeding its maximum acceptable value in groundwater below the onsite systems, or down gradient from them.

The Potential Hazard On-Site Wastewater Treatment Systems in Darfield and Kirwee
Present to Local Groundwater Quality and Critique of Current Assessment Methods

Prepared as part of a Ministry of Health
contract for scientific services

by

Dr Lee Burberry

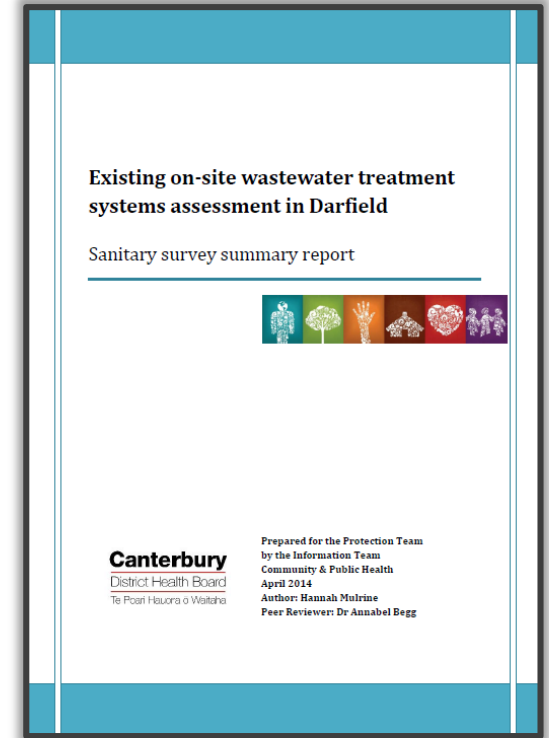
February 2014

Existing On-site Wastewater Treatment System Assessment

Greater awareness and proactive maintenance from non-residential land owners compared to residential properties.

Greater rigor around emptying of the onsite systems on a regular basis by high-load businesses.

Greater risk of exposure to wastewater on site for residential properties due to irregular/poor maintenance.



Public Health Risk Assessment

In Darfield and Kirwee:

- it is **unlikely to very unlikely** that onsite systems contribute to illness in the towns, or properties down-gradient, through drinking-water contamination.
- there is a **very low likelihood** of residents becoming ill through indirect exposure to contaminants from the clustered onsite systems.
- for future developments; an increase in the density of onsite systems will result in an increase in the nitrate concentration in the groundwater beneath the respective communities

Public health risk assessment
of sewage disposal by onsite wastewater
treatment and disposal systems
in the Darfield and Kirwee Communities

Prepared as part of a Ministry of Health
contract for scientific services

by

Elaine Moriarty
Chris Nokes

October 2014

Ground Water Monitoring

Liquid Earth, 2012:

“little indication of contamination likely to be associated with the on-site wastewater land application in both the Darfield and Kirwee areas. Both spatial and temporal variations in groundwater quality were thought to be largely associated with other land use activities in the surrounding area”

Liquid Earth, February 2019 :

“sample results indicate groundwater quality in the Darfield/Kirwee area is high with little indication of contamination likely to be associated with on-site wastewater disposal”.

ECan Comments

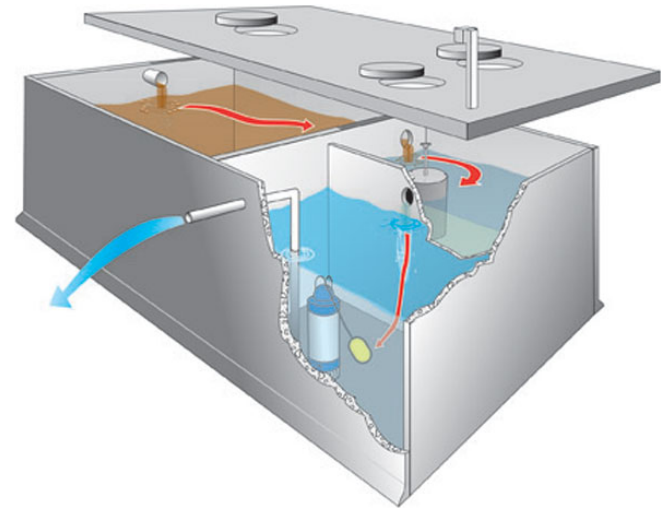
Comments related to the wastewater infrastructure (2016):

- Consultation on reticulation for Darfield (and Kirwee) is needed
- Concerned on-site systems cannot be sustained if housing becomes even higher density as there would then be no room for disposal
- Problem of section sizes and disposal areas, especially for infill housing
- Acknowledged concern about costs and funding

Current System Overview

Septic Tank Treatment or On site Aerated Treatment System and Land Disposal

- Lot by Lot
- Disposal on site
- Varying quality and age of infrastructure



Options Considered - Treatment

- **Centralisation** - District: to the Pines WWTP
 - **Centralisation** - Local: at one location (Darfield)
 - **Decentralised:** WWTP at both Darfield and Kirwee
-
- **High Technology:** Activated Sludge Plant (ASP) with biological nutrient removal (BNR),
 - **Medium Technology:** lowly loaded Trickling Filter (TF) plant, and
 - **Low Technology:** Waste Stabilisation Pond (WSP).



Options Considered – Disposal

Disposal via Land Based Irrigation



Options Considered - Collection

- **Gravity Sewer** – decommission of onsite system direct connection to reticulation, some catchment pump stations
- **Low pressure sewer system** – decommission onsite system, install new pump pot, connect to pressure reticulation
- **Septic Tank Effluent Pump (STEP) system** – reline onsite system, install new pump pot, connection to pressure reticulation
- **Vacuum sewer system** – decommission onsite system, gravity connection to pot in berm, connection to vacuum reticulation

Funding Options

- Council needs to consider why the service is to be provided, who benefits, who /what is causing the need and over how long costs should be spread
- Funding may come from:
 - local loan rate (e.g. pay back over 20 yrs) or lump sums (over 2 years with no interest)
 - from existing property owners, contributions from future land developers, rates paid by the wider Selwyn District?
- Operating costs would be funded through annual rates
- ***Any funding model will be linked to the drivers for change***

Questions

What are your Drivers for Change?