FLAG MEETING NOTES: 27 May 2014

Purpose:	Waimea Plains Freshwater and Land Advisory Group (FLAG)– Meeting 2
Date:	27 May 2014
Time:	9.30am-12.30pm
Venue:	TDC Council Chambers
Present:	**FLAG members:** Zane Mirfin (council representative on FLAG) Matt Hippolite (iwi representative on FLAG) Nick Patterson (chair) Mirka Langford Philip Woollaston Gavin O'Donnell Martin Rutledge Lawson Davey Andrew Kinnimoth Heather Arnold **Staff:** Mary-Anne Baker (Environmental Policy Planner) Lisa McGlinchey (Environmental Policy Planner) Joseph Thomas (Resource Scientist – Water) Trevor James (Resource Scientist – Freshwater and Env. Quality) Glenn Stevens (Resource Scientist - Water & Land)
Apologies:	Pierre Garguilo
Notes taken by:	Lisa McGlinchey (supplemented by other staff)
Definitions and Abbreviations	FLAG=Freshwater and Land Advisory Group NPSFWM= National Policy Statement for Freshwater Management 2011 NOF= National Objectives Framework TRMP = Tasman Resource Management Plan **Unconfined aquifer** = are those where permeable strata are open to the ground surface. Surface water (rainfall and/or river flow) is able to seep from the ground surface directly to the aquifer. **Confined aquifer** = are those where permeable groundwater bearing strata are separated from the land's surface by an impermeable layer (such as silt or clay) that prevents surface water from directly seeping into the aquifer. Groundwater migrates to confined aquifers from an unconfined recharge area located elsewhere. AGUA= Appleby Gravel Unconfined Aquifer UCA=Upper Confined Aquifer LCA= Lower Confined Aquifer NIWA=National Institute of Water and Atmospheric Research GNS=Institute of Geological and Nuclear Sciences
Note: records of discussion points have been grouped into similar topics and are not necessarily in the order discussed at the meeting.	

Session 1 – Water Resources and Ecosystems*

Chair Nick confirmed with group that meeting notes from last meeting (16/4/14) were true and accurate.

* It was decided by group that Session one on the project plan, originally in the agenda, would instead be addressed at the end of the meeting once the presentations had been done.

Presentation 1: Water Resources in the Waimea Plains

Joseph Thomas gave a presentation on the water resources in the Waimea Plains.

Key Points:

There are three main aquifers: Appleby Gravel Unconfined Aquifer, Upper Confined Aquifer and Lower Confined Aquifer, plus numerous other minor confined and unconfined aquifers (e.g. Hope gravels).

Appleby Gravel Unconfined Aquifer (AGUA) are relatively young, approx 12-18m deep gravels which are connected to the Waimea River. The main source of groundwater recharge is from the Wairoa River in the 'Reservoir' water management zone downstream from the Wairoa Gorge, and from the length of the Waimea River down to Appleby. In the coastal areas there is also leakage from the Upper Confined Aquifer. The residence time of water in the AGUA is less than 1 year.

Upper Confined Aquifer (UCA) is an old buried river flow path, approx 15-22m deep at the coastal end. The main source of groundwater recharge is from the Wairoa River in the 'Reservoir' water management zone downstream from the Wairoa Gorge, with some recharge from the Hope Gravels which are recharged from rainfall infiltration in the Eastern Hills. This aquifer flows in a northerly direction and leaks into the Appleby Gravels at its coastal boundary where the overlying impermeable confining layer thins and pinches out. The residence time of water in the UCA is between 5-10 years.

Lower Confined Aquifer (LCA) is another older river flow path, approx 36-46m deep at the coastal end, which flows in a north-easterly direction. The main source of groundwater recharge is from the Wairoa River in the 'Reservoir' water management zone downstream from the Wairoa Gorge. Some recharge also occurs from the Hope Gravels which are themselves recharged from rainfall infiltration in the Eastern Hills and leakage from the overlying UCA. The residence time of water in the LCA is between 10-12 years [*note: the water will be younger the closer you are to the recharge source*].

Waimea River

During times of no rain the Waimea River becomes a 'losing river' with water flowing into the bed and adjacent gravels (i.e. the AGUA). The river will be dry at the bottom (from just above Appleby Bridge) when flows at the Wairoa Gorge are about 1800 L/s.

Coastal Springs

The coastal spring fed streams (e.g. Pearl, Neimann, Borck and O'Conners Creeks) receive water from a combination of sources. Pearl is from mostly Waimea River water, Neimann is a mix of upper confined and delta water (the coastal margin areas of the AGUA) and Borck Creek largely comes from the fans recharged by rainfall infiltration in the Eastern Hills and so goes dry in summer and is flushed following rain.

Flows in the Waimea River affected flows in the springs so it is important to retain river flows to retain spring flows and flushing of spring creeks.

Questions/topics of discussion arising from Joseph's presentation:

Where does the water go?

Water from the LCA seeps out into the sea. Monitoring bores are located to check salt water intrusion back into the aquifer as a potential result of over pumping. Given the aquifer characteristics it is unclear if salt intrusion, should it occur, would reverse readily.

What occurred in 2001 to cause salt water intrusion into the AGUA aquifer?

Salt water intrusion occurred in 2001 in the delta area (coastal margin) of the AGUA due to drought and continued abstraction and the Waimea River went dry for 3 weeks from just above the Appleby Bridge. The salt intrusion reversed naturally over 3-6 months.

There are two threats for saltwater intrusion – 1. That there is not enough flushing from the aquifer to stop salt water intrusion at the coast (resulting from low river flows and over pumping from the aquifer) and 2. That salt water can migrate up the river with the tide and then move laterally into the adjacent aquifer.

Is there a minimum flow at Appleby for the coastal springs to be replenished?

When the river flows drop, the springs flows drop, but there will always be water coming out of the aquifer. Spring flows are protected when flows are more than 500L/s at the Appleby Bridge.

Action: JT to send report on correlation of river and spring flows to FLAG members

Which aquifers provide the most water?

The AGUA is the greatest source of water for the Plains with the highest flow rate. Abstraction rates of ~200m^3/hr are possible with a 1m draw down. However, although the LCA and UCA are not as permeable with rates of only 30-50m^3/hr possible, and they have a greater draw down at 5-7m, they still provide importance sources of water. The Hope Gravels are variable with some bores being good producers and others not.

Richmond gets its drinking water from the LCA via bores located opposite the MDF plant. Council also has four drinking water supply sources in the Richmond, Delta, Redwood Valley and Brightwater areas. The new Water Treatment Plant about to be constructed will take surplus water [relative to the consented take] from the Delta zone and mix it with water from the LCA to create a buffer in the supply and ensure the water supplied meets the drinking water standards.

Is there a change at low river flows of the amount of water flowing into the aquifer?

The losses from the Waimea River resulting from groundwater abstractions (irrigation takes) from the AGUA increase as the river levels drop. The river flows typically drop between mid-January to mid-March. Such losses from the river will be greatest when flows fall to less than 2300 L/s at the Wairoa Gorge.

What is the relationship between flows in the upper and lower confined aquifers?

There is more rapid recharge and through flow in the AGUA. The UCA and LCA are constrained as to how fast recharging groundwater can migrate to, and then through, them. The rapid recharge and through flow in the AGUA provides a large volume of water for dilution of nutrients.

Infiltrating rainfall from the Eastern Hills gets into the LCA and UCA via the overlying Hope minor confined and unconfined aquifers. There is no link between the Hope aquifer and the AGUA.

Where the UCA passes directly over the LCA the two aquifers are only separated by 4 to 6 m. Some historic wells have screens in both the UCA and the LCA and/or have poorly sealed casings resulting in some leakage between the UCA and the LCA. There may also be natural connections given the close proximity of the two aquifers.

The top confining layer of the UCA thins to the north and pinches out completely such that the permeable gravels of the AGUA lie directly on top of the permeable gravels of the UCA. Where this occurs groundwater from the UCA and AGUA mix and the gravels are essentially a single unconfined aquifer.

A summary of the Waimea Plains water resources and risks to these is provided in Landcare's report "Assessing Water Quality Risks and Responses with increased Irrigation in the Waimea Basin" (March 2013) – to be added to the FLAG bibliography [action point].

Presentation 2: Ecosystems and surface water quality in the Waimea Plains.

Trevor James gave a presentation on the ecosystems and surface water quality in the Waimea Plains.

Key points:

Council undertakes State of the Environment (SOE) and impact monitoring at several sites in the Waimea catchment. Specific monitoring programmes include: river water quality, bathing water quality, freshwater fish and estuary (broad-scale mapping and fine-scale) monitoring. We use standard, up-to-date methods and classifications which are tailored to site-specific characteristics.

Small streams

- Variety in habitat, meander, bed material, depth, width, bank slope and streamside vegetation is key.
- Residual pools are important during summer dry spells as refuges for fish etc. This is particularly true for streams flowing through Moutere Gravel geology.
- ~20% of structures provide barriers to fish – typically culverts, but also weirs
- Temperature of the water is an issue [particularly in small streams where shallow and unshaded]
- Wetlands provide for greater diversity and abundance of fish in associated streams. Wetlands are also very rare ecosystems in the Waimea.

Waimea River

- Generally good clarity. The Waimea River is getting less clear compared to the Wairoa River.
- Spaces between stones on bed are fundamental habitat – sediment clogs these voids reducing habitat. Sediment has natural and human sources.
- Cyanobacteria occurs in Waimea (from Waiti-Wairoa confluence down to SH60)
    - Poses a health risk to toddlers and dogs (3 dogs died in the 2012-13 summer) and taints the taste of fish giving trout a 'muddy' flavour.
    - Cyanobacteria more likely to occur in summer and there are long periods between flushing flows.
    - Cyanobacteria 'sticky' and 'mines' phosphorus from sediments that stick to its surface. It may be possible to control cyanobacteria growth through controlling sediment.
    - Cyanobacteria coverage in Waimea is up to 60% (guidelines = 20%), by contrast it is less than 5% and usually less than 1% in the Roding and Lee and upper Wairoa rivers.
    - Cyanobacteria cannot survive in salt water.
    - Several hypothesis why cyanobacteria may have recently become a problem in the Wairoa including: sediment inputs, dams upstream may create a favourable water chemistry for its growth, high water temperature and low flows (Nov- April) and good light availability (it requires high light levels).
- Riffles are very important habitats
    - Specialised fish live in riffles including torrentfish and blue gilled bullies
    - Important for juvenile fish and invertebrate food supplies
    - Riffles oxygenate water
    - At risk from vehicles crossing rivers at these points and loss of habitat area during low flows. NIWA research shows significant effects of vehicle crossings on invertebrates.
- [Lawson] Trout monitoring has shown improved fishery in last 6 years – due to good spring and summer flows at time of dive sampling

Spring Fed Streams

- Nitrate levels are high (often above NOF bottom line and well above levels considered suitable for survival of trout eggs) – levels are an order of magnitude

higher than in the Waimea River. Joseph noted some particularly high nitrate levels measured in tidal areas with potential impact being from organic material.
- Low dissolved oxygen due to over growth of aquatic plants and lack of shading
- Poor invertebrate populations – probably due to low dissolved oxygen and over growth of aquatic plants and algae
- No longer seem to contain Giant Kokopu – possibly due to above issues or due to sediment build-up on bed resulting from decaying aquatic plants – the mud is knee deep in places and bubbles with methane gas.

Questions/topics of discussion arising from Trevor's presentation:

Are spring upwellings in the Waimea River mapped?

[Lawson] No, but they move as the river bed gravels move, however they provide important temperature refuges over summer - as groundwater is typically about 12°C and spring refuges can be 18°C where adjacent waters are over 30°C.

Where do trout spawn in the Waimea?

[Lawson] Spawning occurs further up in the Waiti and tributaries of the Roding, Lee, and upper Wairoa. Spawning is not monitored, but electric fishing is done after spawning and there are not the juvenile numbers there use to be in the Waimea. Nitrates are thought to have a significant impact on egg survival above 2-2.4g/m^3.

Is it wrong to assume all sediment and debris is coming down the river or is there sediment coming up from tidal areas?

Fine sediment may be deposited in streams and the river during in-coming tides on windy days (resuspension of sediment on the estuary mudflats) or during storms with strong northerly winds. However, there is no evidence of marine derived debris making it far (eg not beyond Landsdowne Road on Neimann Creek nor, beyond tidal gates (eg Pearl Creek).

What is the relationship between river flow and habitat – is there a scoring system available? and if so, would the Waimea systems rank low on a 'traffic light' system and how would it compare to in the context of other NZ rivers?

The Waimea system is degraded relative to what could be there under natural conditions. This assessment is covered in detail in various reports by Cawthron (using IFIM methods). However, there is no scoring system in place – there are draft standards for ecological flows and this might be useful as guidance. The normalised mean annual low flow for the Waimea River is 1300L/s in winter and 1100L/s in summer. Abstraction takes this much lower. It is unclear how the Waimea might compare in the NZ context.

Session 2: Water Quality and Values and Uses

Presentation 3: Ground water quality in the Waimea Plains.

Glenn Stevens gave a presentation on the ground water quality in the Waimea Plains.

Key points:

Groundwater quality is affected by:

- the characteristics and geological make up of the aquifers (including the ultramafic geology in the upper catchment)
- degree of interaction between the groundwater and rock
- Human influence (i.e. land use practises – including fertiliser use)

Sixteen groundwater sites are monitored across the District with six of these in the Waimea plains. Nitrates are higher in the Waimea plains aquifers than elsewhere in the Tasman District.

Nitrate levels above 1.6 g/m^3-N are considered probably indicative of human influence, with levels above 3.5 g/m^3-N considered to be almost certainly indicative of human influence. The results for Waimea clearly show human influence. This influence has a historical component to it from past land use practises including the generous use of fertiliser and poor effluent management (in particular, a large piggery in the Hope area).

Nitrate concentrations in the LCA and UCA, at some locations, have been well above the drinking water standards in the past, but have been steadily decreasing for a number of years and have recently dropped to slightly below the drinking water standard. Further data is needed to confirm if nitrate concentrations will stay below the standards. Existing nitrate is likely to take 20 years to flow through the LCA to its furthest known coastal extent.

At some sites in the AGUA nitrate concentrations are getting up towards the drinking water standards. The WWD 802 (Waiwest) site – near the Appleby Highway, opposite O'Conner Road – has had some elevated nitrate concentrations in 2011-2013, but recent samples have fallen back to the usual range for this site (further data is required to clarify this trend).

Contours of nitrate concentrations across the Waimea plains have been determined from 2005 data (the last plains wide nitrate survey). Glenn noted that the boundary lines for these nitrate contour maps are indicative of the general distribution of nitrate and have been extrapolated from a number of sampled bores and the expected groundwater flow directions.

A key question regarding nitrate concentrations in the Waimea plains is to what extent that the observed nitrate concentrations are a legacy of historic inputs verses the impacts from current land use practises. Whilst there has been a decreasing trend of the very high historic nitrate concentrations it is unknown whether this is masking the impacts of current land use practises.

Questions/topics of discussion arising from Glenn's presentation:

Where did the nitrate levels for natural and human influence come from?

GNS report "Definition of Hydrochemical Facies in the New Zealand National Groundwater Monitoring Programme" (Daughney & Reeves 2005) provided the values of 1.6 g/m^3-N for natural and 3.5 g/m^3-N as being clearly human influenced – these were values for across NZ, not just Tasman.

Is there any truth that market gardeners used to put their fertiliser down their wells then draw it up to use it?

It is not acceptable practice now, but it is certainly possible that this has happened in the past.

Trevor noted a case where a cattle-truck wash closed and within 12 months there was a noticeable step drop in the nitrates measured in Borck Creek below Lower Queen Street. It is not certain that this was the cause, but timings suggest a link.

Do we know if nitrates are still trapped in soils (at hotspots) or have they migrated below where we can't do anything? Has there been any soil nitrate testing in hotspot areas?

Some surveys of landuse and fertiliser rates was done in the late 1990s, but not aware of any soil testing. We can probably assume there is still some material in these areas.

It is important to look at the hotspots and determine what the baseline nitrate levels are. We need some soil nitrate samples done in deeper soils – deeper than would normally be done for farm testing.

Action: Staff to provide summary of likely soil testing requirements, costs and whether this would be achievable within FLAG timeframe.

Some hotspots might be easily explained – for example localised point source close to the sampling point (such as a septic tank near the sampled bore).

It may be worthwhile looking at the historic piggery site to determine the extent and fate of this historic contamination and the extent it contributes to the observed nitrate concentrations further down (north) along the aquifer. Also need to understand if historic levels are masking current use effects.

Nitrates are very soluble so will already be in groundwater at historic hotspots and might not be able to influence this much. We need to set limits so we don't make problem worse.

Trevor noted that the level for nitrate toxicity in spring streams is lower than the drinking water standards and could be a driver for limits. There is also potential for 'treating' ground water before it discharges to the streams (e.g. pump and treat or passive infiltration trenches).

Chris Hicky at NIWA has done research looking at water hardness reducing nitrate toxicity. This may lower required limits, but unlikely to be significant mitigating factor. This detailed information can be provided to the FLAG when looking to set limits later in process.

How far a distance might a point source/hotspot have on the groundwater results?

This will be dependent on the source, the nitrogen loading at the source, the permeability of the aquifer and the groundwater flow rates. A plume of nitrate will form. In some cases this plume will be quite localised, others may affect large downstream areas.

Can pollution collect in hotspots?

Not usually as this would need to have some constricting geological features.

There are no hotspots/high recordings showing in the Hope Unconfined Aquifer, does this suggest the historic piggery source has not affected this aquifer?

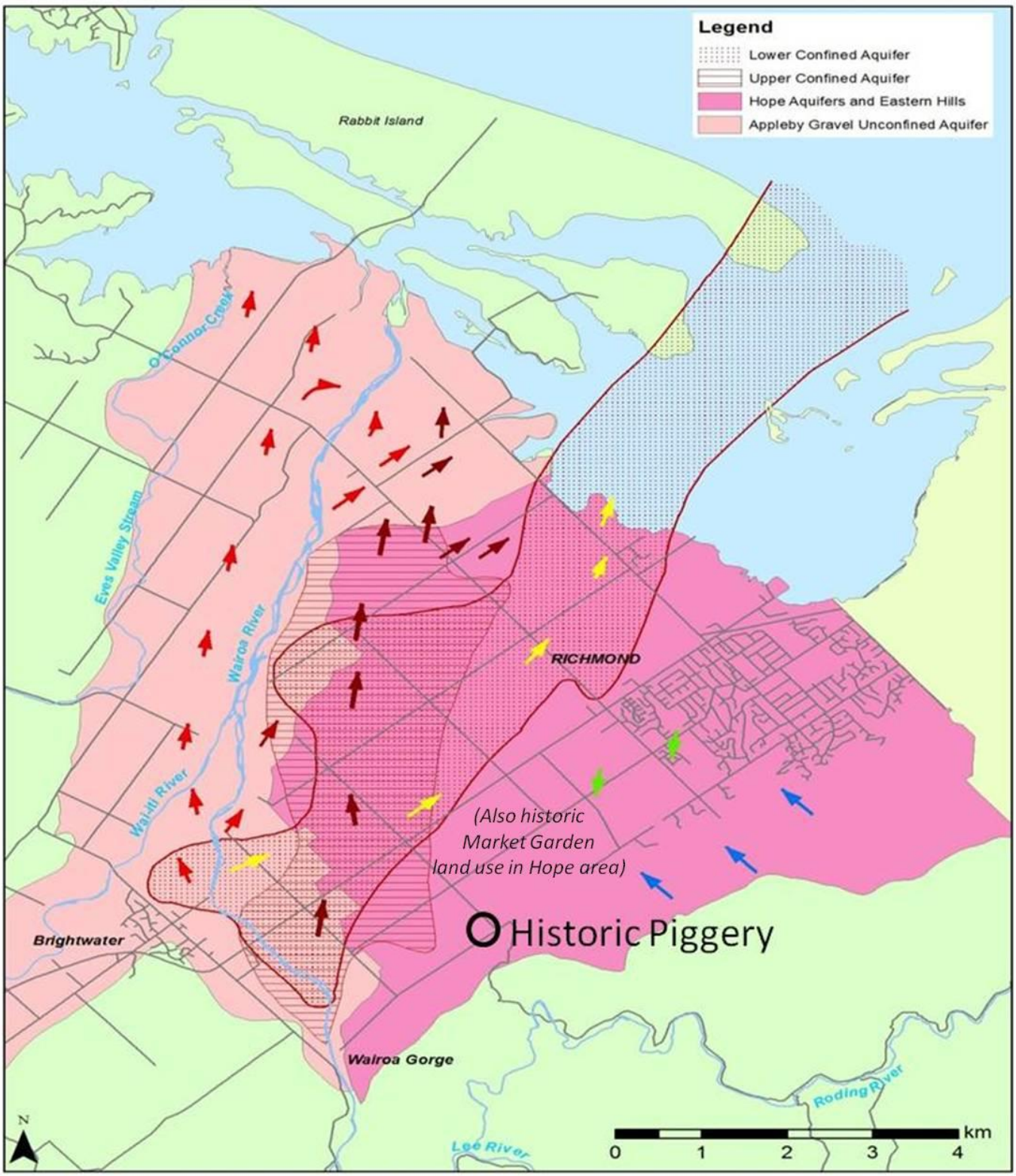
We do not have much data for this aquifer as sampling is restricted to where current bores exist and there is not much use of the Hope Aquifer. In general the nitrate concentrations in the Hope aquifers are higher than AGUA.

How deep are the UCA and LCA at the historic piggery hotspot?

[note the historic piggery was located at the western corner of the junction of Aniseed Valley Road and Haycock Road – refer Figure 1]

Immediately underlying the area is the Hope Gravel which contains minor confined and unconfined aquifers of limited and variable extent. The bulk of the UCA is located to the west. The eastern edge of the UCA extends to this area at a depth in the order of 15 to 20 meters below ground level, although the UCA boundary is somewhat indistinct being a transitional rather than an abrupt change in permeability. In this area some recharge to the UCA occurs by downwards leakage from the overlying minor aquifers within the Hope Gravel. The LCA is located to the northwest towards Clover Road and not directly below this area.

Figure 1 Waimea aquifers with approximate historic piggery and historic market garden locations



Can FLAG access nitrate soil leaching tests done by farmers?

Mirka could provide some information for dairying sites.
Council staff are in the process of contacting groups – e.g. HortNZ to find out what information is available. There are gaps in knowledge of what is occurring on market garden sites. Nutrient budgeting would be helpful in linking state of the environment monitoring and land use causes.
Staff sought access to soil data done by fertiliser companies in 1998 but landowners were not keen to provide the data.

It is likely that we will need to understand nitrate levels further down in the soil column than would normally be tested for in farming activities. We may need specific testing work to determine the baseline in hotspot areas.

Are there monitoring sites in the market garden areas?

One regularly monitored bore (WWD 802) is located near market gardens, but may be subject to influences from other land uses too. Better information on what effects market gardening is having would be useful.

The flows through the aquifers differ and the data mapped is from 2005, is it possible that the same sites might not find the same levels now?

It is likely that the levels will be different as results have been showing a decreasing trend, but it is likely that the pattern will still be similar as this has not been changing significantly and has persisted for decades. For the LCA the results have decreased from very high but are still high and of concern.
We can't make decisions based on 2005 data – will need to collect and use more recent data when setting water quality limits.

There is a difference in results at Lansdowne Road – has the plume yet to reach there?

The plume is well established, but at that distance from the historic piggery source there will be much dispersion and mixing so nitrate concentrations will be less than at the piggery source. Also there is a real potential for other sources of nitrates to influence the groundwater encountered at Lansdowne Road area as well as effects from the historic plume.

Do we understand flow rates in the aquifers?

Yes, data can be provided to FLAG.

Can we assume that nitrates are representative of phosphorus levels also?

No. Phosphorus levels are typically low due to clays.

Do we have enough data? Are there any plans to repeat tests?

Council planning to repeat the Plains-wide nitrate survey, however given new potential issues such as dam and intensification, we have be reviewing the monitoring programme and need to determine the best use of funds – e.g. do we sample 80 sites or only 30 and use the rest of money for other research?

It is important to separate out impacts from current land use practises from historical land use. We need to understand this for setting limits, e.g. what is the baseline for the historic piggery?

The FLAG need to identify information gaps so these can start to be filled as soon as possible.

We have a lot of useful data but need to update some of it, need to look more closely at baseline nitrate levels in hotspot areas.
Action: Determine what is required to answer hotspot soil questions, the cost and timing
Action: Initiate discussions with HortNZ etc regarding land use practice data collection

Is there general information on each sector regarding fertiliser use etc?

[Mirka] There has been a reduction in fertiliser use over last 20 years (up to 20% reduction per year).

Assume market economics have driven improvements.

Fertiliser use becoming less volume, more frequently. Nutrient inputs are also more precise due to monitoring and more accurate equipment in use.

However there has also been a shift from less to more soluble fertilisers – unclear on impact of this.

Data to back up fertiliser practice is not readily accessible.

Glenn noted that work on nitrate isotopes by Mike Stewart has been able to identify sources of nitrate to some extent (e.g. manure versus fertiliser) as well as the age of nitrates in groundwater. The report shows a bimodal source of historic and diffuse non-point sources.
Action: Glenn to summarise report and provide to FLAG

Does more water in an aquifer mean quicker flushing?

The rate of water movement is important. If we reduce inputs and flushing remains the same we should see a reduction over time. However, because an aquifer is a pour media with multiple pathways flushing will take a significant amount of time (i.e. an aquifer is not like a pipe which can be flushed relatively easily).

What lives in groundwater?

[Martin] there are all sorts including amphipods and shrimps (with estimates of ~200 animals per cup of water) – the general term is 'stygofauna'. We don't know much about them, but what research has been done shows that the fauna in the Waimea Plains is diverse. This biology is important in processing nutrients in groundwater and we need to consider this when discussing water quality.
Action: Martin to provide FLAG with summary of stygofauna research available.

Presentation 4: Uses and Values Summary

Mary-Anne Baker gave a brief overview of the uses in values listed within Schedule 30B of the TRMP.

Key points:

Uses and values are listed for the following water bodies:

- The three main aquifers (AGUA, UCA, LCA)
- Waimea River
- Pearl, Neimann and O'Connor Creeks
- Wairoa, Roding and Lee Rivers
- Coastal water in the Waimea Inlet

The values include (not all are listed on every water body):

- Aquatic ecosystems
- Recreational values
- Cultural and spiritual
- Landscape values
- Human consumption
- Irrigation
- Industrial uses
- Community water supply
- Stock and farm water supply

The values are not listed in Schedule 30B in any priority order.

Questions/topics of discussion arising from Mary-Anne's presentation:

Why aren't cultural values listed for the Wairoa, Roding and Lee Rivers – or for the aquifers?

This is possibly an oversight when drafting and will need to rectify through a plan change. It is within the terms of reference for the FLAG to recommend changes to the uses and values to Council, however need to bear in mind that the uses and values have gone through a plan change process already.

In addition to determining the uses and values, the FLAG will also need to understand what needs to be provided to meet the identified uses and values before limits can be set.

Trevor noted that there will be a coastal report on the Waimea Estuary due out soon (July 2014) – this is the third sampling of the estuary. This will provide important information to understand the state of coastal waters. Action: Trevor to provide summary of report to FLAG when it is available.

Session 3: Action Planning

Further Information Requirements

Soil science was already identified as key piece of information in discussions above. Further discussion on other information needs identified by the FLAG members are outlined below:

Exactly where are the boundaries of the FLAG brief in a spatial sense – how far into the Coastal Marine Area does brief go?

The FLAG is managing fresh water and in the coastal area this means to the extent that fresh water affects the coastal environment – so this could potentially be all of the Waimea Estuary. Landward wise the brief extends to all the upper water management zones.

The focus has been on nitrates as a key issue, but will need to consider other parameters as well – e.g. sediment

Urban catchments are not in Schedule 30b of TRMP, but are being dealt with through the Catchment Management Planning process and other project work that Lisa McGlinchey is involved in. Lisa can provide a brief on these projects at a later date if needed.

More information is needed on wastewater processes and potential sources of other contaminants.

More information on groundwater stygofauna – including shallow vs deep aquifers – Martin to summarise.

Need to further define uses and values.

Some further information already exists such as detailed survey of swimming uses in 2010-11. Trevor James can provide this at a later date as required.

The Amendments to the NPSFWM and the Parliamentary Commission for the Environment report on water quality are key readings for the FLAG. Can staff generate a bibliography?

Action: Staff to generate a bibliography of reports – MAB suggested this could be achieved using the FLAG web pages on Council's website. Staff to look into use of 'dropbox' or similar facility also.

Action: repackage staff presentations for inclusion on website.

A summary of where the national policy is at and the timeframes for further work is needed. We shouldn't be getting ahead of national projects.

Action: Mary-Anne to provide summary of MfE work programme and linkages with other national projects

Can more information be provided on the other water quality attributes that need to be considered (other than nitrate)?

Yes - but this issue is also something to be considered specifically at a later meeting. Also the FLAG will need to identify the uses and values and which attributes are important for these before looking more at the attributes themselves.

Is the FLAG also looking at Schedule 30A in the TRMP?

No – only Schedule 30B. Schedule 30A deals with management of water quantity related uses and values.

Communications Plan

FLAG members happy to use meeting notes and document library on website as main communications for now – too early to use other interfaces.

Some information is commercially or culturally sensitive – it would be useful to have a classification of information so FLAG members know the state of the information and provide alternative access to information that is confidential.

Agenda Items for Next Meeting

- Andrew Burton (Resource Scientist – Land) to provide presentation on soils. Soil science research questions raised to be amalgamated into this presentation.
- Clair Barton (ex Horizons) to be asked to speak about Horizons One Plan approach to setting limits.
- Groundwater biology summary from Martin
- Summary of national policy status from Mary-Anne
- Summary of wastewater and other potential contaminants in Waimea

Session 4: Project Plan - Decisions and Milestones

No changes where suggested as yet to the project plan provided to the FLAG. It can be changed as the FLAG progresses through the process.

The Council decision on whether the Waimea dam will be funded is due in June 2015 for the Long Term Plan.

Action Points – Council Staff

No.	What	Who
1	Joseph to send report on correlation of river and spring flows to FLAG members.	MAB
2	Provide FLAG members with electronic copies of powerpoint presentations and repackage presentations for inclusion on website (talk to Richard Liddicoat on options for this).	MAB
3	Staff to provide summary of likely soil testing requirements to answer hotspot questions, the likely costs of this and whether this would be achievable within the FLAG timeframe.	MAB
4	Initiate discussions with HortNZ etc regarding land use practice data collection.	MAB
	Glenn to summarise Mike Stewart's nitrate isotopes report and provide to FLAG.	GS
	Trevor to provide summary of Waimea Estuary report to FLAG when it is available.	TJ
5	Staff to create a FLAG bibliography - look at using web pages for ready access. Discuss options with IS for use of 'dropbox' or similar facility also.	MAB

Action Points – FLAG members

No.	What	Who
1	Martin to provide FLAG with summary of stygofauna research available.	Martin

Next meeting

Date	14 July 2014 (Meeting 3)
Time	9.30-12.30
Venue	TDC Council Chambers
Chair	Nick Patterson
Draft Agenda Items	Andrew Burton – soil summary Clair Barton – Horizon One Plan approach Martin Rutledge – Stygofauna Mary-Anne Baker – national policy status Mary-Anne Baker – wastewater and other contaminant sources
Preparation	See FLAG action points above

Subsequent meeting

Date	15th September 2014 (Meeting 4)
Time	9.30-12.30
Venue	TDC Council Chambers
Chair	Nick Patterson?

FLAG MEMBERS PLEASE NOTE: If you have any questions or need anything between meetings, then please contact Mary-Anne Baker by email: marya@tasman.govt.nz or by phone ddi 03 543 8486.