

Rangitikei District Council Telephone: 06 327-0099 Facsimile: 06 327-6970

## Assets/Infrastructure Committee Meeting

## **Order Paper**

## Thursday 15 September 2016, 9.30 am

Council Chamber, Rangitikei District Council 46 High Street, Marton

Website: www.rangitikei.govt.nz

Email: info@rangitikei.govt.nz

**Chair** Cr Dean McManaway

Deputy Chair Cr Mike Jones

Membership

Councillors Cath Ash, Nigel Belsham, Angus Gordon, Tim Harris, Soraya Peke-Mason, Ruth Rainey and Lynne Sheridan His Worship the Mayor, Andy Watson (ex officio)

Please Note: Items in this agenda may be subject to amendments or withdrawal at the meeting. It is recommended therefore that items not be reported upon until after adoption by the Council. Reporters who do not attend the meeting are requested to seek confirmation of the agenda material or proceedings of the meeting from the Chief Executive prior to any media reports being filed.





Assets/Infrastructure Committee Meeting Order Paper – Thursday 15 September 2016 – 9:00 a.m.

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#### The quorum for the Assets/Infrastructure Committee is 5.

At its meeting of 28 October 2010, Council resolved that "The quorum at any meeting of a standing committee or sub-committee of the Council (including Te Roopu Ahi Kaa, the Community Committees, the Reserve Management Committees and the Rural Water Supply Management Sub-committees) is that required for a meeting of the local authority in SO 2.4.3 and 3.4.3.

#### 1 Welcome

#### 2 Council Prayer

#### 3 Apologies/Leave of absence

#### 4 Confirmation of order of business

That, taking into account the explanation provided why the item is not on the meeting agenda and why the discussion of the item cannot be delayed until a subsequent meeting, ......... be dealt with as a late item at this meeting.

#### 5 Confirmation of minutes

#### Recommendation

That the Minutes of the Assets/Infrastructure Committee meeting held on 11 August 2016 be taken as read and verified as an accurate and correct record of the meeting.

#### 6 Chair's Report

A report will be tabled at the meeting.

File ref: 3-CT-13-4

#### Recommendation

That the Chair's Report to the Assets/Infrastructure Committee meeting on 15 September 2016 be received.

#### 7 Queries raised at previous meetings

- Broadway, Marton kerb and channelling
- Cost-benefit analysis of slip-lining technology
- Potential to extend operating hours at Bulls Waste Transfer Station

Comment will be provided to the meeting.

#### 8 Activity management

- Roading and footpaths
- Water (including rural water supplies)
- Sewage and the treatment and **d**isposal of sewerage
- Stormwater drainage
- Community and leisure assets (including parks)
- Rubbish and recycling

#### Recommendation

That the activity management templates for July 2016 for Roading, Water (including rural water supplies), Sewerage and the treatment and disposal of sewage, Stormwater drainage, Community and leisure assets, and Rubbish and recycling be received.

#### 9 Wrap up of Wanganui Road Project

A report will be tabled at the meeting.

File ref: 6-RT-5-6

#### Recommendation

That the report 'Wrap-up of the Wanganui Road project' be received.

#### 10 Bridge Management Professional Services

A report is attached.

File ref: 6-RT-1-0

#### Recommendation

That the Assets/Infrastructure Committee recommends that Council approves the award of Contract C1035 Bridge Management Professional Services to MWH New Zealand Ltd for a value of *Two Hundred and Fifty-Two Thousand, Six Hundred and Ninety-Nine Dollars and Eighty Cents excluding GST. (\$252,699.80 excl GST)*.

#### 11 Mangaweka Bridge strengthening

A report will be tabled at the meeting.

File ref: 6-RT-1-69

#### Recommendation

That the report 'Mangaweka Bridge strengthening' be received.

#### 12 Tutaenui Pre-feasibility study

An update will be provided to the meeting

File ref:

#### Recommendation

That the update 'Tutaenui Pre-feasibility study' be received.

#### 13 Taihape Pool – upgrade to filtration and heating

An update will be provided to the meeting.

File ref: 6-RF-2-3

#### Recommendation

That the update on the proposed upgrade to filtration and heating at the Taihape Pool be received.

#### 14 Glyphosate use on Council parks and reserves

A memorandum is attached.

File ref: 6-RF-1-1

#### Recommendation

That the memorandum 'Glyphosate use on Council parks and reserves) to the Assets/Infrastructure Committee meeting on 15 September 2016 be received.

#### 15 Parks Upgrade Partnership Application - Mt Stewart Reserve

A report is attached.

File ref: 6-RF-1-1

#### Recommendation

1 That the 'Parks Upgrade Partnership Application – Mt Stewart Reserve' be received.

2 That funding of \$14,226.00 from the Parks Upgrade Partnership Fund be allocated to the provision of a new Lookout Platform at Mt Stewart Reserve, Taihape, as outlined in the Expression of Interest received from the Friends of Mt Stewart and subject to successfully securing an additional \$28,453.40 from the community or other non-Council sources.

#### 16 Consent compliance – August 2016

A report is attached.

File ref: 5-EX-3-2

#### Recommendation

That the report 'Consent compliance – August 2016' to the Assets/Infrastructure Committee meeting on 15 September 2016 be received.

#### 17 Marton Wastewater Treatment Plant as at 8 September 2016

A report is attached.

File ref: 6-WW-1-4

#### Recommendations

That the report 'Marton Wastewater Treatment Plant as at 8 September 2016' be received.

#### 18 Late items

#### 19 Future items for the agenda

#### 20 Next meeting

This is the Committee's last meeting for the triennium.

#### 21 Meeting closed

## Attachment 1

## **Rangitikei District Council**



Assets/Infrastructure Committee Meeting Minutes – Thursday 11 August 2016 – 9:30 a.m.

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#### Present:

Cr Mike Jones (Chair) Cr Cath Ash Cr Nigel Belsham Cr Angus Gordon Cr Tim Harris Cr Soraya Peke-Mason Cr Lynne Sheridan His Worship the Mayor, Andy Watson

In attendance: Mr Ross McNeil, Chief Executive Mr Hamish Waugh, General Manager - Infrastructure Mr Michael Hodder, Community & Regulatory Services Group Manager Mr George McIrvine, Finance & Business Support Group Manager Ms Joanna Saywell, Asset Manager - Utilities Mr John Jones, Asset Manager - Roading Mr Glenn Young, Utility Projects Manager Mr Reuben Pokiha, Operations Manager - Roading Mr Andrew van Bussel, Operations Manager - Utilities Ms Samantha Kett, Governance Administrator

#### 1 Welcome

The Chair welcomed everyone to the meeting

#### 2 Council Prayer

Cr Jones read the Council Prayer.

#### 3 Apologies/Leave of absence

That the apologies for absence from Cr McManaway and Cr Rainey and the apologies for lateness from Cr Gordon, Cr Harris, and Cr Sheridan be received.

Cr Ash / Cr Belsham. Carried

#### 4 Confirmation of order of business

#### Resolved minute number 16/AIN/088 File Ref

That, taking into account the explanation provided why the item is not on the meeting agenda and why the discussion of the item cannot be delayed until a subsequent meeting, Pre-Feasibility Study for a Tutaenui Rural Water Scheme Update be dealt with as a late item at this meeting.

His Worship the Mayor / Cr Belsham. Carried

#### 5 Confirmation of minutes

#### Resolved minute number 16/AIN/089 File Ref

That the Minutes of the Assets/Infrastructure Committee meeting held on 14 July 2016 be taken as read and verified as an accurate and correct record of the meeting.

Cr Belsham / His Worship the Mayor. Carried

#### 6 Chair's Report

Resolved minute number

16/AIN/090 F

3-CT-13-1

That the Chair's Report to the Assets/Infrastructure Committee meeting on 11 August 2016 be received.

Cr Jones / Cr Sheridan. Carried

Cr Sheridan arrived 9.36am

File Ref

3-C

Ref

#### 7 Queries raised at previous meetings

The Committee considered the responses in the memorandum.

Further information was requested:

- the hourly rate for works identified within the current contract for the management of Council's Waste Transfer Stations;
- the cost/benefit analysis for bringing Waste Transfer Station services in-house.
- the cost of dumping the sludge from the Hunterville and Bulls Wastewater Treatment Plants in Feilding vs Bonny Glen Landfill.

A meeting has been arranged to discuss alternations to the entrance of SH-3 to Whangaehu Village, which will include staff, His Worship the Mayor, Cr Peke-Mason, Mr David Bebarfald (the author of the petition) and staff from the New Zealand Transport Agency.

#### 8 Activity management

Mr Jones and Mr Pokiha spoke briefly to the activity management templates for the Roading and Footpaths Group of activities. They highlighted that the works along Wanganui Road, Marton, will be completed once the weather improves and that the footpath programme for 201/17 has not been completely finalised. The Committee asked that updates on progress with the emergency works resulting from the June 2015 flood event be brought to the Committee periodically until all sites are complete. The Committee also identified that the agreed sealing of the final piece of the Turakina Valley Road needed to be added as a project to be reported on each month.

Ms Saywell and Mr Young spoke briefly to the activity management templates for the Water Supply, Sewerage and the treatment and disposal of Sewage, and Stormwater Groups of activities. July was mostly focussed on administration and planning for the projects for the new financial year. A newsletter will go out to Ratana residents with an update on progress with the upgrade of the water treatment plant. No further information has been received from Riverlands after their expression of interest to discharge to the Bulls Wastewater Treatment Plant. A consent renewal application has been submitted to Horizons Regional Council and it is unclear how adding the discharge from the Riverlands plant would affect this application. The Committee requested further information on stormwater at: Harris Street, Marton and asked for a full presentation on the slip-lining process currently being used in the District. Cr Gordon suggested that once works are completed in Paradise Terrace, Taihape, a news article should be published to publicise that.

Mr Waugh, Mr Hodder and Mr McNeil spoke to the activity management template for the Community and Leisure Assets Group of activities. A peer review of the proposed upgrades to the Taihape Pool is underway; this has identified a need to upgrade the electrical systems within the facility. The current budgets for works at the pool will not cover this work so Council will need to approve an additional budget and potentially the level of service provided by the facility. The Committee asked that the painting of the Marton Library be included in future templates for update. That the activity management templates for July 2016 for Roading, Water (including rural water supplies), Sewerage and the treatment and disposal of sewage, Stormwater drainage, Community and leisure assets, and Rubbish and recycling be received.

Cr Jones / Cr Gordon. Carried

Cr Gordon arrived 9.48am; Cr Harris arrived at 10.15am; Cr Harris 10.57am / 10.57am; Cr Peke-Mason 11.01am / 11.05am

#### 9 VDAM Rule – formal proposal for change

Mr Waugh and His Worship the Mayor spoke briefly to the item.

The consensus was not to make further comment on the Rule change.

#### 10 Bridge Maintenance Professional Services Contract

Mr Jones spoke briefly to the report.

The Committee queried whether or not there was capacity to do this design work in-house. Mr Jones considered the work was highly technical and it would not be feasible to employ someone to do this work; an external contractor was Council's best option.

Resolved minute number16/AIN/092File Ref6-RT-1-69

That the report 'Bridge Maintenance Professional Services Contract' to the Assets/Infrastructure Committee meeting on 11 August 2016 be received.

Cr Gordon / Cr Harris. Carried

Cr Ash 11.16am / 11.19am

#### 11 Outcome of liaison with NZTA on improvement to Mokai Road, Taihape

His Worship the Mayor spoke briefly to the item, informing the Committee that the business 'Mokai Gravity Canyon' is currently out for tender, along with the 'Taupo Bungy' business, and there was considerable interest in re-opening the business.

#### 12 Koitiata Campground and adjacent reserve – upgrading facilities

Mr Hodder spoke briefly to the report.

Resolved minute number 16/AIN/093 File Ref 6-CF-4-16

That the report 'Koitiata Campground and adjacent Reserve – upgrading facilities' be received.

Cr Belsham / Cr Gordon. Carried

Resolved minute number 16/AIN/094 File Ref 6-CF-4-16

- 1. That the water supply and electrical work at the Koitiata Campground be actioned, funded from the Operational Budget.
- 2. That the wood-fired BBQ at the adjacent Koitiata Reserve be replaced with a coinoperated gas BBQ, funded from the DISP Reserve account.

Hs Worship the Mayor / Cr Peke-Mason. Carried

#### **13** Initial Seismic Assessment (ISA) of Water Assets

Ms Saywell spoke briefly to the report, providing the Committee with an explanation around why this work was undertaken.

Resolved minute number	16/AIN/095	File Ref	6-WS-1-4
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That the report 'Initial Seismic Assessment (ISA) of Water Assets' be received.

Cr Jones / Cr Peke-Mason. Carried

#### 14 Consent compliance – July 2016 update

Ms Saywell spoke briefly to the report, providing details on the impact of the current compliance levels on the renewal of various consents within the District.

Resolved minute number16/AIN/096File Ref5-EX-3-2

That the report 'Consent compliance – July 2016 update' be received.

Cr Belsham / Cr Harris. Carried

Cr Harris 11.40am / 11.42am

#### 15 Marton Wastewater Treatment Plant as at 4 August 2016

Ms Saywell spoke briefly to the report.

She gave the Committee an update on the recent meeting with Midwest Disposals Ltd regarding their pre-treatment of leachate from the Bonny Glen Landfill. The outcome of the

discussions is that the process seems to be going well. Tanks have also been installed at the Marton Wastewater Treatment Plant to allow for a constant flow of the pre-treated leachate to be accepted into the Plant.

Resolved minute number16/AIN/097File Ref6-WW-1-4

That the report 'Marton Wastewater Treatment Plant as at 4 August 2016' be received.

Cr Sheridan / Cr Harris. Carried

#### 16 Update on Bulls effluent disposal site

Mr Waugh spoke briefly to the item, highlighting the fact that the project is effectively onhold pending placement at the Bulls Multi-purpose Community Centre.

#### 17 Late items

#### Tutaenui Rural Water Scheme

Mr McNeil gave a brief update on progress with the pre-feasibility study for a Tutaenui Rural Water Scheme.

Both he and Mr Miller met recently with representatives from the Ministry for Primary Industries who cautioned that inviting expressions of interest from external contractors to complete the study might signal this to be a feasibility study rather than pre-feasibility study. They suggested a more direct approach instead.

An item will be included in the Administrative Matters report to Council at the end of the month on potential costs and consultants for this work.

#### 18 Future items for the agenda

Nil

#### 19 Next meeting

Thursday 15 September 2016, 9.30 am (this will be the Committee's last meeting for the triennium)

#### 20 Meeting closed – 12.03pm

Confirmed/Chair:

Date:

## Attachment 2

### ROADING AND FOOTPATHS GROUP OF ACTIVITIES 2016/17

Performance measures in LTP/Annual Plan						
What are they:	Targets	Progress for this reporting period	Progress to date			
Road Condition:	96.5%	Nothing to report for this period	Nothing to report to date.			
The average quality of ride on a sealed local road network	The most recent measurement was in June 2014. The					
measured by smooth travel exposure	mean rating for the sampled District's roads was 98%. This					
Road Maintenance:	8% of the sealed road network that is resurfaced	Nothing to report for this period	The beginning of the new year, nothing to report at this stage,			
The percentage of the sealed road network that is			however, planning to commence the reseal programme early			
resurfaced			November weather permitting.			
The percentage of the unsealed road network which is	At least 75% of notwork remotalled each year – 12 000m <sup>3</sup>	1832m3 placed on the network this period	4232m3 placed on the network to date			
remetalled during the year						
Footpaths:	At least 80% of footpath lengths in CBD areas in Bulls,	A reassesment is being undertaken to align the inspection	Normal footpath maintenance being carried out.			
The percentage of footpaths within the District that fall	Marton, Hunterville and Taihape are at grade 3 or higher	and actioning of faults identified as a result of such so tha				
within the level of service or service standard for the	At least 65% of sampled footpaths lengths outside CBD	the decision making follows the rating identified in the				
condition of footpaths that is set out in the Council's	areas are at grade 3 or higher	visual inspection process. To date inspections have been				
relevant document (such as its annual plan, activity	At least 90% of sampled footnaths assessed at grade 5 are	carried by Bri-Ken but the out come of this has not clearly				
management plan asset management plan, applial works	included in ungrade programme during the following two	identified such things as trip hazards e.g. The responsibilit				
programme or long term plan)	undruged in upgrade programme during the following two	has clearly been put back onto the contractor to identify				
	years.					
Note: A five point grading system to rate featbath						
Note: A five point grading system to rate rootpath						
condition based on visual inspections						
1) Excellent						
2) Good						
3) Fair						
4) Poor						
5) Very Poor						
Road Safety	No change or a reduction from previous year	No fatals or serious accidents to report for the month of	No fatals or serious accidents to report to date on the			
The change from the previous financial year in the number	During the year 1 July 2015 and 30 June 2016, there were	August.	network.			
of fatalities and serious injury crashes on the local road	nil fatalities and 3 serious injury accidents.					
network expressed as a number						
Adequacy of provision and maintenance of footpaths,	A greater proportion (than in the benchmark) or more than	Processes are in place to ensure that the evidence require	d Commitement made to improve the service to our customers			
street-lighting and local roads (annual survey)	10% of the sample believe that Council's service is getting	to give the required information is in place.	from Council.			
	better					
Response to service requests	95% after-hours callouts responded to within 12 hours	For the current month:36 callouts recorded with 29	Total callouts to date number = 83 (81% responded to on			
The percentage of customer service requests relating to	95% callouts during working hours, responded to within 6	responded to on time (81%) and 2 current (0.6%)	time)			
roads and footpaths to which the territorial authority	hours	Callouts after hours 3 (100%) responded to on time	Number of callouts after hours = $10(92\%)$ responded to on			
responds within the time frame specified in the long-term	85% of all callouts resolved (i.e. completed) within one	Potholes 1 (100% completed on time) Callouts complete	d time)			
nlan	month of the request	(one month prior): Callouts received 47 with 38 complete	Number of notholes $= 4 (50\% \text{ responded to on time})$			
	Specific reference to callouts relating to notheles	on time (81%) with 0 current (0%)				
		on time (81%), with o current (0%)				
Deadline Contract Deafanneance						
Roading Contract Performance						
Monthly update on the performance of Council's Roading	The performance of the contactor currently is progessing re	latively well. The only real concern for Council is still the la	k of prgress on the Wangahul Road Project and although the main			
contractor.	reason for the delay is mainly pointed to the weather never	the less the whole project has been dogged by a number of	aspects that could have ben managed better from the			
	contractor's perspective. A meeting is planned to discuss th	e whole project and the performance of all parties and a re	port will subsequently be collacted. The contractor has issued a			
	mowing programme early which is great as last year this was one of the areas that they failed in badly.					
Requests for Service						
What are they:	Responded in time Completed in time*	Responded late Completed late* Response overdu	e Uncompleted Response current Uncompleted			
	Sompleted in the		overdue* current*			
Bridges						
Maintenance (bridges)						

Culverts/Drainage								
Maintenance (culverts/drainage)	2	3		2				
Footpaths								
Maintenance (footpaths)	2				1	2		
Road Signs								
Maintenance (road signs)	6	2						
Roads						-		
Maintenance (roads - potholes only)	2	3			- Receiver and the second second			
Maintenance (roads - not potholes)	14	19	1	3				
Roadside Berm Mowing			March Marth Charles				Colored Constant of Product of the	
Rural/Urban berm mowing						×		
Roadside Weeds/Vegetation/Trees								
Maintenance (roadside weeds/vegetation/trees)	1	7	1		2	1		
Street Cleaning and Litter Bins								
CBD cleaning - Turakina and Mangaweka only		1						
Street Lighting								
Maintenance (street lighting)	2	3		1			2	

\* Data is for the month PRIOR to allow for correct analysis

#### ROADING AND FOOTPATHS GROUP OF ACTIVITIES 2016/17 Major programmes of work outlined in the LTP/Annual Plan 2016/17

August

Major programmes of work outlined in the LTP/Annual Plan	2016/17						
Pavement Rehabilitation	Route Position	Status	Start date	Completion date			
	Length						
Wanganui Road	0-544		Jan-16	Mid September			
		Report on the Wang	<u>anui Road Project</u> .	This project regard	s the placement of the		
		final Asphaltic Surfa	cing (AC)continues	to be affected by th	e weather and has		
		become most frustra	ating. The major co	ncern is that the sul	obase of the road still		
		has quite a high mos	iture level through	intrusion through t	he surface and needs to		
		be dried out before	the AC surface can	sately be applied. T	he relatively low road		
		temperatures also h	as not helped with	the ability to dry ou	it the subbase. The		
		placement of the AC	surface is program	nmed for commence	ement Wonday		
		(dependent) Council and the contractor are locked into a number of weather					
		dependent) Council and the contractor are locked into a number of weather					
		the herm tonsoiling has been completed. Some minor concrete work still a be					
		completed.					
		-					
Marton - Bond Street/Skerman Street (94m)		Initial investigations					
Marton - Wanganui Road/Skerman Street (70m)		Initial investigations					
Franklin Road (580m)		Work In Progress	Jul-16	Nov-16	· · · · · · · · · · · · · · · · · · ·		
Paraewanui Road (1,403m)		Initial investigations					
Taihape-Napier Road (880m)		Initial investigations					
Te Moehau Road (450m)		Initial investigations					
Griffins Road (920m)		Design Complete	Sep-16	Dec-16			
Sealed Road Resurfacing (over 200m)	Route Position Length	Status	Start date	Completion date			
Broadway (Marton)							
Daniell Street							
Kauangaroa Road							
Koeke Road	· · · · · · · · · · · · · · · · · · ·						
Leedstown Road							
McHardies Road							
Mangahoe Road							
Matawhero Road							
Mellingon Road							
Moa Street							
Mt Curl Road							
Neumans Line							
Otuarei Road							
Potaka Road							
Putorino Road							
Rangatira Road							
Ruanui Road							
Stantialls Road					i		
Tennent Court							
Turakina Beach Road							
Tutaenui Road							
Union Line							
Waiaruhe Road			·····				
Wellington Road							
Capex report 2016/17	cumulative to 30/09/2016	cumulative to 31/12/2016	cumulative to 30/3/2017	cumulative to 30/6/2017	Budget		
Sealed road surfacing:	2010 1 2019 1 2019 1 2019 2 2018 2 2019 2 2019 1 2019 2 2019 2 2019 2 2019 2 2019 2 2019 2 2019 2 2019 2 2019 2				2,390,746		
Drainage Renewals					500,000		
Pavement rehabilitation					1,770,000		
Structures component replacement					316,993		
Traffic services renewal					224,900		
Associated improvements					25,000		
Unsealed road metalling					460,125		
TOTAL		And The State III A A FORM IN THE CLASS AND ADDRESS AND ADDRESS ADDRESS ADDRESS ADDRESS ADDRESS ADDRESS ADDRESS	URMANISTRY TO FINANCE SING VIA MARKET		5,687,764		
Streetlight renewals	Design/ Scoping	Tender/Contract	Under	Complete			
		docs	construction				

The proposed LED streetlight replacement program will					A deposit of 10% has been
initially target areas in Marton as there are several large					paid to the manufacturer and
streetlight circuits which intermittently suffer from outages					LED'S expected early October.
due to overloading. Installation of LED's will reduce the					LED'S
connected load and alleviate these issues. Once this stage of					
the program is completed it is anticipated that the program					
will continue through to 2018 in other areas of the district as					
current renewal budgets allow. In 2018 progress will be re-					
assessed and specific funding may be sought through the 2018					
– 2021 N7TA funding cycle					
Footpath Renewals	Design/Scoping	Tender/Contract	Under	Complete	
	878	docs	construction		
Taihape: Robin Street	Design - 100% complete	This site part of contract		Being reconsidered	Crimpy's
	(length 70m)	1007			
Marton: Lower High Street	Design - 100% complete	This site part of Contract	completed	Completed May	Loader's
Taibane: Hautanu Street	Design - 100% complete	This site part of contract	contract has	Completed	Crimpy's
	(length 73m)	1007	commenced		
Taihape: Hawk Street	Design - 100% complete	This site part of contract	contract has		Crimpy's
	(length 25m)	1007	commenced.	Completed	
Taihape: Kaka Road	length 160m	1007.	under construction	approx 75% complete	Crimpy s
Monitor upgrades of footpaths in Turakina including the laving					
lof chipseal					
New Footpaths	Design/Scoping	Tender/Contract	Under	Complete	
		docs	construction		
Bulls: Hammond Street	Design - 100% complete	This site part of contract	completed	Completed May	Loader's
	(length 190m)	1008.			
Ratana: Taihauauru Street	Design - 100% complete	This site part of contract	completed	Completed May	Loader's
Ratana: Tairawhiti Street	Design - 100% complete	This site part of contract	completed	Completed May	Loader's
	(length 100m)	1008		,	
Ratana: Rangatahi Road	Design - 100% complete	This site part of Contract	completed	Completed May	Loader's
	(length 75m)	1008		1	
		The footpath program	mme for the 16/17 year	is still being worked on.	T
Bulls: 136-160 High Street (investigate costs only)	Completed.		<u></u>	] 	
Taihape: SH1 to Dixon Way (investigate costs only)	this particular project is a n	hajor one running from the	10 driver for Dixon way near	ting south and potential	y will traverse along the SH.
Ratana: Te Taitokerau and Seamer Streets	side of the street but the r	th approx 230m - 1.4wide -	-10 driveways. Seamer s s a lot of parking of buse	treet was identified to ha	we a footpath on the opposite
(investigate costs only)	,		The second parking of pass		
Minor safety improvements	Design/ Scoping	Tender/Contract	Under	Complete	
		docs	construction		147 J. J
Orchard Road	investigated	Roading contract			November.
Turakina Valley 3 - widening Majuba Bluff RP 9450-9660	Design completed.	Being compiled.			Work planned to commence
(in conjunction with flood damage repair work)					January.
Parewanui Road seal widening	This site being				Planning to commence this
	investigated.				section February. There are a
					number sections along this
Other major programmes of work carried out during 2016/17	1	I	1	1	
Projects	Design/Sconing	Tender/Contract	Under	Complete	
	12 co.8.1, 200p.1.8	docs	construction	comprote the second sec	
Makirkiri Road seal widening RP 8500-8820	Design completed.	Gribbons's Contractor	Work commenced	Widening completed.	
(in conjunction with new milk tanker entranceway @ McCarthy's)		and Higgins	late February.	Second coat seal	
				planned for 16/17.	
Note. At Ratana, the speed humps have been constructed and barriers		<u></u>			
and bollards have been placed on the grass verges to stop people by					
passing the speed humps and driving on the grass. A request for an					
additional speed hump has been requestd. It is planned to have the					
street light at the end of Rangatahi Street erected in September.					
	1	1	1	1	

### WATER SUPPLY GROUP OF ACTIVITIES 2016/17

Performance measures in LTP/Annual Plan			
What are they:	Targets	Progress for this reporting period	Progres
Safety of Drinking Water The extent to which the local authority's drinking water supply	No incidents of non-compliance	There was an incident of noncompliance at Bulls WTP due to turbidity levels on 16 and 18 August. This has been noted and followed up.	Not Ach
complies with: (a) part 4 of the drinking-water standards (bacteria compliance criteria), and			
(b) part 5 of the drinking-water standards (protozoal compliance criteria).	No incidents of non-compliance	Throughout August 2016 multiple plants have not been able to demonstrate protozoa compliance due purely to issues establishing the correct UV treatment monitoring regime. This regime is currently in the process of being established to ensure ongoing monitoring.	Not Ach
Compliance with resource consents	No more than one incident of non-compliance with resource consents	Marton WTP backwash and alum sludge discharge to settling ponds exceeded consent limits.	The new addresse
Number of unplanned water supply disruptions affecting multiple properties	Fewer unplanned water supply disruptions affecting multiple properties than in the previous year (there were zero unplanned water interruption during 2015/16)		None
Maintenance of the Reticulation Network: The percentage of real water loss from the local authority's networked reticulation system (including a description of the methodology used to calculate this).	Using a sampling approach, Water Outlook enables SCADA information to be interrogated in-house. The target is less than 40%	Using Minimum Night Flow calculations, the estimated water loss for August 2016 (including industry flow which may be a legitimate use) is 47%. Note: end of year bench loss figures will be lower.	Estimate calculati figures v
Demand Management The average consumption of drinking water per day per resident within the territorial authority district.	600 litres per person per day	The average daily consumption of drinking water during August 2016 was 549 l/day.	The aver year was
Fault Response Times Where the local authority attends a call-out in response to a fault or unplanned interruption to its networked reticulation system, the following median response times measured: (a) attendance for urgent call-outs: from the time that the local authority receives notification to the time that service personnel reach the site, and	Specified standard: 0.5 hours Target is less than the previous year During 2014/15, there were 27 notifications of urgent callouts. Of these, 24 were responded to in time. The request for service system is being adapted to record median response times to set the benchmark. In the interim, the benchmark used is the prescribed service standard.	As previously noted, the request for service system does not calculate the actual times taken, so is unable to provide a median time. In April 2016, Council staff developed a formula which allows the median times to be determined, and this formula was applied to provide median times for the nine-month Statement of Service Performance. The formula will be applied again at the end of the year to provide updated median times for the full twelve months.	As previo actual tir Council s determir nine-mo again at twelve m
(b) resolution of urgent call-outs: from the time that the local authority receives notification to the time that service personnel confirm resolution of the fault or interruption.	Specified standard: 24 hours Target is less than the previous year During 2014/15, there were 27 notifications of urgent callouts. Of these, 21 were resolved in time. The request for service system is being adapted to record median response times to set the benchmark. In the interim, the benchmark used is the prescribed service standard.	As previously noted, the request for service system does not calculate the actual times taken, so is unable to provide a median time. In April 2016, Council staff developed a formula which allows the median times to be determined, and this formula was applied to provide median times for the nine-month Statement of Service Performance. The formula will be applied again at the end of the year to provide updated median times for the full twelve months.	As previo actual tir Council s determir nine-mo again at twelve m

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w consent application has been filed for this plant and this in part ses the alum sludge discharge issue.

ed water low for the year to date, using Minimum Night Flow ions, is currently 47.5%. However, the actual end of year bench loss will be lower due to the more accurate nature of the calculations.

rage daily consumption of drinking water during the last financial s 537 l/day.

iously noted, the request for service system does not calculate the imes taken, so is unable to provide a median time. In April 2016, staff developed a formula which allows the median times to be ined, and this formula was applied to provide median times for the onth Statement of Service Performance. The formula will be applied t the end of the year to provide updated median times for the full months.

iously noted, the request for service system does not calculate the imes taken, so is unable to provide a median time. In April 2016, staff developed a formula which allows the median times to be ined, and this formula was applied to provide median times for the onth Statement of Service Performance. The formula will be applied the end of the year to provide updated median times for the full months.

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(c) attendance for non-urgent call-outs: from the time that the	that the Specified standard: 24 hours , vice Target is less than the previous year a		As previously noted, the r	request for service system	does not calculate the	As previously noted, the request for service system does not calculate the		
local authority receives notification to the time that service	Target is less than the previous year		actual times taken, so is unable to provide a median time. In April 2016,			actual times taken, so is unable to provide a median time. In April 2016,		
personnel reach the site, and			Council staff developed a formula which allows the median times to be			Council staff developed a formula which allows the median times to be		
	During 2014/15, there were 382 notifi	determined, and this forn	nula was applied to provic	e median times for the	determined, and this formula was applied to provide median times for the			
	these, 346 were responded to in time.		nine-month Statement of	Service Performance. Th	e formula will be applied	nine-month Statement of	Service Performance. The	e formula will be applied
		again at the end of the ye	ear to provide updated me	dian times for the full	again at the end of the ye	ar to provide updated me	dian times for the full	
(d) resolution of non-urgent call-outs: from the time that the	Specified standard: 96 hours		As previously noted, the r	request for service system	does not calculate the	As previously noted, the r	equest for service system	does not calculate the
local authority receives notification to the time that service	Target is less than the previous year		actual times taken, so is u	inable to provide a mediai	n time. In April 2016,	actual times taken, so is u	nable to provide a media	n time. In April 2016,
personnel confirm resolution of the fault or interruption.	5		Council staff developed a	formula which allows the	median times to be	Council staff developed a	formula which allows the	median times to be
	During 2014/15, there were 382 notifi	cations of non-urgent callouts. Of	determined, and this forn	nula was applied to provid	le median times for the	determined, and this forn	nula was applied to provid	e median times for the
	these, 342 were resolved in time.		nine-month Statement of	Service Performance. Th	e formula will be applied	nine-month Statement of	Service Performance. Th	e formula will be applied
			again at the end of the ye	ear to provide updated me	dian times for the full	again at the end of the ye	ar to provide updated me	dian times for the full
			twelve months.			twelve months.		
Customer Satisfaction	Total number of complaints is less tha	n 45/1000	0.4/1000			0.8/1000		
The total number of complaints received by the local authority								
(a) drinking water clarity								
(d) drinking water tasta	Total number of complaints is less than 45/1000		0/1000			0/1000		
(c) drinking water pressure or flow	Total number of complaints is less tha	Total number of complaints is less than 45/1000		0/1000				
(d) continuity of supply and	Total number of complaints is less than $45/1000$ 0.4		0.4/1000			0.4/1000		
(e) the local authority's response to any of these issues	Total number of complaints is less than 45/1000 0.8/1		0.8/1000			1.2/1000		
expressed per 1000 connections to the local authority's			0.0/1000		1.2/1000			
networked reticulation system								
Ensure fire-fighting capacity in urban areas through random	98% of checked fire hydrant installations are in compliance Prog		Programme of hydrant ch	necks is ongoing		Programme of hydrant checks is ongoing		
flow checks at the different supplies	98% of checked fire hydrant installations are in compliance							
What are they: Rural water supplies	Targets		Progress for this reporting period			Progress to date		
Compliance with resource consents	No incidents of non-compliance with	resource consents				Achieved.		
The percentage of real water loss from the Council's rural	A sampling approach will be used. W	ater Outlook enables SCADA				Cannot be completed as there is no appropriate industry methodology to		
water schemes	information to be interrogated in-hour	se.				assess the rural unmetered water supply.		
Where the Council attends a call-out in response to a fault or	The request for service system is being	g adapted to record median response	e No change from previous reporting period			Connections on the rural schemes are not metered, therefore no formal		
unplanned interruption to its rural reticulation system, the	times to set the benchmark. In the inte	erim, the benchmark used is the				assessment of water loss can be undertaken with any degree of certainty.		
following median times are measured	prescribed service standard. However,	given the nature of rural water						
(a) attendance time: from the time that the Council receives	schemes, the target is to continue ach	ieving the benchmark.			In terms of day-to-day scheme operation, water losses are identified by the			
notification to the time that service personnel reach the site,	Specified standard:				exceedances of the limits imposed in the relevant resource consents. Refer			
and	a) 24 hours					to the Jun Consent Compliance Report for a summary of consent compliance		
(b) resolution time: from the time that the Council receives	b) 96 hours							
notification to the time that service personnel confirm								
resolution of the fault of interruption								
Requests for Service								
What are they:	Responded in time	Completed in time	Responded late	Completed late	Response overdue	Completed overdue	Response current	Uncompleted current
Bad tasting drinking water								
Dirty drinking water	2	2						
HRWS Maintenance required		1						
HRWS No water supply		1						
Location of meter/toby/other utility	2	2						
Low drinking water pressure (non urgent)	2	2						
No drinking water supply (urgent)	1		1	1				
Replace lid (uncent)	1		1	1				
Replace IIG (Urgent)	10		1					
Noter flooding (other than stormuster and wastewater)	10	5						
Water look Council owned notwork		0						
Water leak at meter/toby	с С	9						
water leak at meter/toby		4						

WATER SUPPLY GROUP OF ACTI	VITIES 2016/17			Aug-16
Major programmes of work outlined in the LTP/Annual Pl	an 2016/17			
Projects	Design/ Scoping	Tender/Contract docs	Under construction	Complete
Marton: WTP Seismic assessment of Clarifier & strengthening	Detailed seismic investigation underway.	EOI invited, tender awarded to Kevin		
(\$300k)		O'Connor & Assoc		
Marton: Complete replacement of line from Calico Line bore	Renew existing 100 mm AC water main			
and commence design for replacement of Tutaenui Road falling	down Calico Line towards Nga Tawa School.			
main from Jenersons Line to Town (\$748k 2017/18)	Opsize to 150 mm to provide fire flows.			
	place in 2015-2017 this budget will be used			
	for that project instead, and Calico Line will			
	linstead take place in 2019-2020 as per the			
	Long Term Plan.			
Taihape: Water Treatment Plant structural renewals and	Reservoir deemed earthquake prone			
various reticulation renewals including design and preparation	requiring \$200-\$300k of earthquake			
work for renewals of 1.2km of trunkmain (\$1.91M 2017/18)	strengthening. Reservoir is also in need of			
	new roof supporting structure. Investigate			
	option of a new reservoir to replace existing			
	and report by 30 September 2016. Work			
	may be required over two years.			
Taibane: Reticulation ungrade for Dixon Way and Mangaone	Investigation followed by capital works:			
Valley Road (\$104k)	level of upgrade to be determined:			
	investigate Rauma Rd school connection;			
	need to report back to Council on options			
	i.e. on demand, trickle feed, complete ring			
	main. Replacement of small diameter mains			
	with 50mm NB mains (JS). Brief already			
	issued for investigation.			
Buils: Renewals to reservoirs and lift pumps. Improved	New reservoir at Trickers, seismic			
(\$757k)	at Bridge St (act \$100.\$200k) and possible			
(27.574)	strengthening of mushroom at Bulls New			
	reservoir to be minimum 900m <sup>3</sup> , preferably			
	1200m <sup>3</sup> , with new access track on legal title.			
	Seismic assessment of mushroom indicates			
	\$300-\$400k of strengthening work required.			
	Money available will depend on cost of new			
	reservoir and a requirement for the			
	mushroom to remain as a feature of Bulls.			
	Annual Plan budget - renewals to reservoirs			
	and lift pumps (\$757,000 plus \$633,000			
	carry over for seismic strengthening). Note			
	that costs may include some rising main			
	off Flower Street along alternative route			
	Taumaihi, Kittyhawk, High Street, Johnson			
	Street)			
Mangaweka: WTP Structural improvements to reservoir, river	Seismic assessment shows reservoir needs			
pump station, renewal of mains in Weka Street,	approx \$200-\$300k of strengthening.			
Mangawharariki Road and Broadway (\$820k)	Investigate options for a new reservoir with			
	an increased neight and size. Investigate			
	structures to enable renowal of concert for			
	abstraction.			
Hunterville: Treatment and reticulation upgrades (rural & urban	Operations carrying out initial investigation	1	1	
schemes), Erewhon and Omatane rural schemes (\$475k)	& prioritisation			
		1		

Major projects Carry-forwards 2015/16				
Projects	Design/ Scoping	Tender/Contract docs	Under construction	Complete
Marton: Broadway duplication (\$140k)	Programme was for 2015-2016 ahead of major Roading work; approx. 460 m between High St and Signal St; duplicate existing 150 mm AC on east side with new 150 mm on west side. Design only and defer to year 6 or later to align with replacement of AC main. We will now instead renew the main in the Follett to Signal block, upsizing from 150 mm to 200 mm.			
Taihape: WTP Structural repairs as a result of seismic assessment (\$129k)	Reservoir deemed earthquake prone requiring \$200-\$300k of earthquake strengthening. Reservoir is also in need of new roof supporting structure. Investigate option of a new reservoir to replace existing and report by 30 September 2016. Work may be required over two years.			
Taihape: Complete installation of lamella clarifier (\$70k)	Complete installation of lamella plate clarifier; will need pad for it to sit on and reinstatement of ladders and handrails. Allow \$50k for removal of old clarifier, \$20k for 1&E.	Design complete, tender awarded to Andrew Morris Construction	Foundation works underway	
Taihape: Reticulation upgrade for Dixon Way & Mangaone Valley Road (\$70k)	Investigation followed by capital works; level of upgrade to be determined; investigate Rauma Rd school connection; need to report back to Council on options i.e. on demand, trickle feed, complete ring main. Replacement of small diameter mains with 50mm NB mains (JS). Brief already issued for investigation. Design complete, Tender issued, closes	Tender/Contract docs issued. Blackley contractors awarded.	Contractor commenced early September, Programmed completion Oct 2016	
Bulls: Design and construction of new reservoir as a result of seismic assessment (\$633k)	In conjunction with above.			
Mangaweka: Structural repairs as a result of seismic assessment (\$80k)	In conjunction with above.			
Ratana; water supply upgrade - new reservoir, bore and treatment system. (Est \$1.6M)	Water treatment system under design	Water treatment building Tender awarded to Kiwispan Ltd. (est\$130k) Water treatment processing awarded to Filtec. (est \$630k). Application made to Ministry for extension of time to complete works June 2016. Approved.	Building works programmed Dec 2015 Treatment works programmed Jan 2016 Reservoir & Network Connections TBC. Meeting with Dairylands & Ricky Taiaroa, land ownership issues resolved. Meeting with Ratana Waipu Trust Feb 14 to sign lease. Survey plan to be prepared to give effect to lease. Site access to be upgraded. Building Consent application made. Building foundation works to commence early April. Delays with KiwiSpan NZ commencing the construction of the process building. Letter from the Engineer to the Contract (Hamish Waugh) to be sent to KiwiSpan NZ in the week beginning 9 May 2016 instructing them to order the building kit and commence construction of the foundations.	Water reticulation network completed. Reservoir completed. Bore installation completed. Land Entry (easement) agreement signed with Ratana Waipu Trust. Filtec has fabricated most of the equipment. this stored at their Auckland factory. Final Engineering design completed, Building Consent applied for. Works on treatment shed to commence mid Sept, shed completion mid October commissioning complete end Dec 2016.

### SEWERAGE AND THE TREATMENT AND DISPOSAL OF SEWAGE GROUP OF ACTIVITIES 2016/17

Performance measures in LTP/Annual Plan			
What are they:	Targets	Progress for this reporting period	Prog
Discharge compliance Compliance with the Council's resource consents for discharge from its sewerage system measured by the number of (a) abatement notices	No abatement notices	No abatement notices received.	Achie
(b) infringement notices	No infringement notices	No infringement notices received	Achie
(c) enforcement orders, and	No enforcement orders	No enforcement orders received	Achie
(d) convictions received by the Council in relation to those resource consents	No convictions	No convictions received.	Achie
Routine compliance monitoring of discharge consents	6 out of 7 systems comply		Achie
System and adequacy The number of dry weather sewerage overflows from the Council's sewerage system, expressed per 1000 sewerage connections to that sewerage system	Not more than one per 1,000 connections	0/1000	0/100
Fault response time Where the Council attends to sewerage overflows resulting from a blockage or other fault in the Council's sewerage system, the following median times are measured (a) attendance time: from the time that the Council receives notification to the time that service personnel reach the site, and	Specified standard: Urgent 0.5 hours Non-urgent 24 hours Target is less than the previous year. The request for service system is being adapted to record median response times to set the benchmark. In the interim, the benchmark used is the prescribed service standard. During 2014/15, there were 35 faults reported during first nine months of the year. Of these, 34 were responded to in time.	As previously noted, the request for service system does not calculate the actual times taken, so is unable to provide a median time. In April 2016, Council staff developed a formula which allows the median times to be determined, and this formula was applied to provide median times for the nine-month Statement of Service Performance. The formula will be applied again at the end of the year to provide updated median times for the full twelve months.	As pr actua Coun deter nine- again twelv
(b) resolution time: from the time that the Council receives notification to the time that service personnel confirm resolution of the fault of interruption	Specified standard: Urgent 24 hours Non-urgent 96 hours Target is less than the previous year. The request for service system is being adapted to record median response times to set the benchmark. In the interim, the benchmark used is the prescribed service standard. During 2014/15, there were 35 faults reported during first nine months of the year. Of these, 32 were resolved in time.	As previously noted, the request for service system does not calculate the actual times taken, so is unable to provide a median time. In April 2016, Council staff developed a formula which allows the median times to be determined, and this formula was applied to provide median times for the nine-month Statement of Service Performance. The formula will be applied again at the end of the year to provide updated median times for the full twelve months.	As pr actua Coun deter nine- again twelv
Customer satisfaction The total number of complaints received by the Council about any of the following: a) sewage odour b) sewerage system faults c) sewerage system blockages, and d) the Council's response to issues with its sewerage systems expressed per 1,000 connections to the Council's sewerage system.	Less than 18/1000 The request for service system currently does not show all complaints for any one incident so there is potential under-reporting. Benchmark figures from 2014/15 are: (a) 4/1000 (b) 7/1000 (c) 14/1000 (d) 10/1000* The total is 35/1000	(a)0/1000 (b)0.2/1000 (c) 0.2/1000 (d) 0.5/1000	(a) 0,
Requests for Service			

Requests for Service								
What are they:	Responded in time	Completed in time*	Responded late	Completed late*	Response overdue	Completed overdue*	Response current	Uncompleted current*
Caravan effluent dump station								
Maintenance (wastewater)	1							
Wastewater blocked drain	1	1		1				
Wastewater leak				1				
Wastewater network failure (follow up item only)								
Wastewater odour								
Wastewater overflow (dry weather)								
Wastewater overflow (wet weather)								

\* figures are for month prior

	Aug-16
ress to date	
eved	
eved	
eved	

eved

eved - no recorded overflows from the network this month.

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reviously noted, the request for service system does not calculate the nal times taken, so is unable to provide a median time. In April 2016, ncil staff developed a formula which allows the median times to be ermined, and this formula was applied to provide median times for the e-month Statement of Service Performance. The formula will be applied n at the end of the year to provide updated median times for the full live months.

reviously noted, the request for service system does not calculate the nal times taken, so is unable to provide a median time. In April 2016, ncil staff developed a formula which allows the median times to be ermined, and this formula was applied to provide median times for the e-month Statement of Service Performance. The formula will be applied n at the end of the year to provide updated median times for the full live months.

/1000 (b) 0.2/1000 (c) 0.7/1000 (d) 1.2/1000

Diago grammes of work custome in the UTP Annual Rine 2016/17       Description       Descripion       Description       Des	SEWERAGE AND THE TREATMENT AND DISPOSAL OF S	EWAGE GROUP OF ACTIN	/ITIES 2016/17		
Direct       Design Strates       Design Strates       Ender Strates       Other Addition       Consider         and norm of plant spranders and installation of infinites agaleting and used with Assistance in this agaleting parks, und is senaded as.       Interaction improvements and used with Assistance information agaleting parks, und is senaded as.       Interaction       Interaction         Matrix WHP Asserbits pendideduction in the assistance in th	Major programmes of work outlined in the LTP/Annual Plan 2016/17				
Bulk WVTP Aradion indicements and installation of infinitetion guidelies and restment plant tograde (2):1.00 Minton WTP oppades of treatment system to improve effect effect from togen termsols indiality, adds grant and statution of infinitetion guidelies and the output of the o	Projects	Design/ Scoping	Tender/Contract docs	Under construction	Complete
ind traditions (Joint uggraded so thanges to incent system to improve efflicers guality, joints enroval etc. http://www.india.com/efficients/system to improve efflicers investigation, obstantially incestisation, ob	Bulls: WWTP Aeration improvements and installation of infiltration galleries	Operations completing			
Marton. WPU Digrades or threatment system to improve effuent meetigation Marton: WPUTP Anserobic point disilludging reads investigation, particularly assesses of the improvements in the web is assessed of this cape removal; reads investigation, particularly sever main networks in Singer and Provides Terrises (5504) Linkel Singer and Provides Terrises (5504) Terrises and Provides Terrises (5504) Linkel Singer and Provides Terrises (5504) Terrises and Provides Terrises (5504) Linkel Singer an	and treatment plant upgrades (\$1.2M)	investigation			
quality, coloris removal cpt.       Investigation         Marton: WWTP Anarobic point diskludging       Upgrade for introgen removal; users investigation, potentially users investigation, potentially users investigation, potentially users intervestigation, potentially users intervestigated operatione pipots.       Users intervestintervestig	Marton: WTP Upgrades or changes to treatment system to improve effluent	Operations completing			
Marton: WWTP Anaerobic pond desjudging media free digitage of on integer removal, media free digitage Tahape, Improvements to reliculation, particularly sever main renewals in Sis Sever and 24 bare distances (S301k) Line 4 Street and Paradise Tensee (S301k) Line 5 Street and Paradise Tensee (S301k) Tahape: WWTP Improvements at treatment plant including darifier to part charles a Street with the a 64 miniph of 150 mm diameter earticeware gravity main. Tahape: WWTP Improvements at treatment plant including darifier to part charles a streatment plant including darifier to part charles a few miniph of 150 mm diameter earticeware gravity main. Tahape: WWTP Improvements at treatment plant including darifier to part charles a definition of tenedia part darifier. Joint molecular with Clarifier. Differ Joint Miniph proteopole Miniph Differ Joint Miniph Differ	quality, solids removal etc.	investigation			
Ineditions planninghy     Ineditions planninghy       Inhibite: Improvements to reticulation, particularly sever main renewals in     Design underway, 23-33 Linet       Unnet Street and Paradise Terrace (\$304k)     Sever and 7.8 Linet 5. Sever have been assessed as being in Condition 5 (Very Poor) and requires either enling or spot       Inhibite: MWTP improvements at treatment plant including darifier to protect methods for (\$3000)     Sever and 7.8 Linet 5. Sever have been assessed as being in Condition 5 (Very Poor) and requires either enling or spot       Tollape: WWTP improvements at treatment plant including darifier to protect methods for (\$3000)     Complete installation of lametly addition of lametly of 150 mm diameter eartherware gravity main.       Tollape: WWTP improvements at treatment plant including darifier to protect methods for (\$3000)     Complete installation of lametly direct of the reling or spot reparts. This is a 6 m length of 150 mm diameter eartherware gravity main.       Tollape: WWTP improvements at treatment plant including darifier to protect methods regiment protects and network.     Complete installation of lametly direct of the reling of the rel	Marton: WWTP Anaerobic pond desludging	Upgrade for nitrogen removal;			
use new inite vorks as separage disposal       initial vorks as vorks vo		needs investigation; potentially			
disposit       disposit         Darkane improvements to recloudation, particularly sever main renewals in Unnet Street and Paradise Terrace (\$3044)       Design inderwoy, 21-38 Linnet St Sever and 30 sever and st Sever how been assessed as being in Conditions (Very Poor) and requires ather earling or spot requires. This is a 98 m length of 150 mm diameter carbenvare grivity main. 12:35 Paradise Tec Sever have been assessed as being in Conditions 5 (Very Poor) and requires ather earling or spot repairs. This is a 48 m length of 150 mm diameter earlies ather realing or spot requires ather realing or spot repairs. This is a 46 m length of 150 mm diameter earlies ather realing or spot repairs. This is a 46 m length of 150 mm diameter earlies ather realing or spot repairs. This is a 46 m length of 150 mm diameter earlies ather realing or spot repairs. This is a 46 m length of 150 mm diameter earlies ather realing or spot repairs. This is a 46 m length of 150 mm diameter earlies ather realing or spot repairs. This is a 46 m length of 150 mm diameter earlies ather realing or spot repairs. This is a 46 m length of 150 mm diameter earlies ather realing or spot repairs. This is a 46 m length of 150 mm diameter earlies ather real more and of 160 mm diameter earlies ather real more and parte dather tert ammonia and DPR To be investigated. Operations to long regard with to be investigated. Operations to long regard with consert application (subject to consultation) (\$110k) to repair on options.       Other major programmes of work cartied out during 2016/10 Consert repairs.       Under construction       Complete: Works eccels and repair on options.         Other major programmes of work cartied out during 2016/10 consert application (\$3024)       Design Scoring Works eccels and repairs of maledge dispth ecces 50 x 50 m maledge dispth ecces 50 x 50 m malega dispth ecces 50 x 50 m m		use new inlet works as septage			
Taihape: Improvements to reficulation, particularly sever main cenevals in Linnet Street and Paradise Terrace (\$3044)       Stewer and 74 Linnet Steet have been assessed as being in Condition 5 (Very Paor) and requires either re-lining or spot rearist. This is 40 m length of 150 mm diameter arthenware gravity main. Li-15 Paradiae Tere Sover and 30 Paradise Tere Sover and 30 Paradise Tere Sover and 50 Paradise Tere Sovere and 50 Paradise Tere Sover and 50 Paradise Tere		disposal			
Lunnet Street and Paradise Terrate (\$304) Lunnet Street and Paradise Terrate (\$304) Have been assessed as being in Condition 5 (Very Poor) and reguitzes after re-lining or spot reguitzes	Taihape: Improvements to reticulation, particularly sewer main renewals in	Design underway. 21-33 Linnet			
have been assessed as being in Condition 5 (Key Poor) and requires either re-lining or spoe repairs. This is 98 m length of 150 mm diameter earthenware gravity main. 2: 15 Pandite Tee Sower and 30 Paradite Tee Sower have been assessed as being in Condition 5 (Key Poor) and requires either re-lining or spot repairs. This is 40 m length of 150 mm diameter earthenware gravity main.         Taihape- WWIP improvements at treatment plant including durifier to protect membrane filters (\$3014)       Complete installation of tamelap plate durifier. Joint 87 of the ment earthenware gravity main.         Taihape- WWIP improvements at treatment plant including durifier to protect membrane filters (\$3014)       Complete installation of tamelap plate durifier. Joint 87 offect with WTP Confiner.         Taihape- WWIP improvements at treatment plant and reticulation (\$1.9M)       Additional treatment processes needed to treat amonia and DBP. To be installated. Operations to investigate: and report on guitoms.         Kolistat: Ubgraded reticulation (subject to consultation) (\$1.9M)       Operations/assets completing investigation works         Kolistat: Ubgraded reticulation (subject to consultation) (\$1.9M)       Design / Southy         Marcin WWTP - essential renewals prior to full assessment and drofting of consent application (\$3024)       Design / Southy         Marcin Quarks (\$2000)       Under construction successful treatment of leachage and duce from Advisory Group) to proper to be installed before Christmas.       Under construction (Complete - successful treatment of leachage and duce from Advisory Group) to proper to be installed before Christmas.       Under construction	Linnet Street and Paradise Terrace (\$304k)	St Sewer and 7-8 Linnet St Sewer			
Condition 5 (Very Pool) and requires either re-inition 5 pool requires either re-inition 5 pool requires either re-inition 5 pool requires either re-inition 5 pool requires either re-inition 5 pool server have been aversed as being in Condition 5 (Very Pool) and requires either re-inition for soot repairs. This is a 46 m length of 35 our depairs.		have been assessed as being in			
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Hunterville WWTP - desludging (\$80k)     Based on 0.5 m sludge depth across 50 x 50 m area, 20% w/v		successful free Advisory Crown			
Image: Compare for consent renewal     in 2018. Sucker truck dump site       in 2018. Sucker truck dump site     required, to be installed before       Christmas.     Christmas.       Hunterville WWTP - desludging (\$80k)     Based on 0.5 m sludge depth       across 50 x 50 m area, 20% w/v     Christmas.		and advice from Advisory Group)			
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Hunterville WWTP - desludging (\$80k)   Based on 0.5 m sludge depth across 50 x 50 m area, 20% w/v		Christmas.			
across 50 x 50 m area, 20% w/v	Hunterville WWTP - desludging (\$80k)	Based on 0.5 m sludge depth			
		across 50 x 50 m area $20\% w/v$			
and \$775/tDS		and \$775/tDS			

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### STORMWATER GROUP OF ACTIVITIES 2016/17

Performance measures in LTP/Annual Plan						
What are they:	Targets Progress for this reporting period			ting period		Pro
Discharge compliance Compliance with the Council's resource consents for discharge from its stormwater system measured by the number of (a) abatement notices (b) infringement notices (c) enforcement orders, and (d) convictions received by the Council in relation to those resource consents	Council currently has no resource consents for stormwater discharges     Achieved       Horizons Regional Council has indicated that resource consents may be     required in the future, but the timeline for this has yet to be confirmed.       When this occurs the anticipated benchmark will be no abatement or     infringement notices, no enforcement orders and no convictions.		Achieved	:hieved		Act
System adequacy a) The number of flooding events that occurred in the District b) For each flooding event, the number of habitable floors affected (expressed per 1,000 properties connected to the Council's stormwater system) Note: This is a District-wide assessment The rules for the mandatory measures define a 'flooding event' as an overflow from a territorial authority's stormwater system that enters a habitable floor	Less than 1/1000 There are 4,122 properties in the Distr	ict which pay the stormwater rate.	(a) 0/1000, (b) 0/1000	-		(a)
Customer satisfaction The number of complaints received by the Council about the performance of its stormwater system, expressed per 1,000 properties connected to the Council's stormwater system.	Less than 15/1000 The request for service system does not show all complaints for any one incident, so there is potential under-reporting.		0.5/1000			3.1,
Response time: The median response time to attend a flooding event, measured from the time that the Council receives notification to the time that service personnel reach the site.	1 hour There are very few such events, so the target set is identical with the benchmark.		As previously noted, the actual times taken, so is a Council staff developed a determined, and this form nine-month Statement of again at the end of the ye twelve months.	request for service system unable to provide a media formula which allows the nula was applied to provic Service Performance. Th ear to provide updated me	does not calculate the n time. In April 2016, median times to be le median times for the e formula will be applied dian times for the full	As p actu Cou dete nine aga twe
Requests for Service						
What are they:	Responded in time	Completed in time*	Responded late	Completed late*	Response overdue	Co
Stormwater blocked drain (non urgent)	1	1				
Stormwater blocked drain (urgent)		1				
Stormwater road surface flooding (non urgent)		3				
Stormwater road surface flooding (urgent)	1	4		1		

\* figures are for month prior

	Aug-16
ogress to date	
nieved	
0/1000, (b) 0/1000	
/1000	
previously noted, the requal times taken, so is una uncil staff developed a for ermined, and this formul e-month Statement of Se in at the end of the year live months.	uest for service system does not calculate the ble to provide a median time. In April 2016, rmula which allows the median times to be la was applied to provide median times for the ervice Performance. The formula will be applied to provide updated median times for the full

mpleted overdue*	Response current	Uncompleted current*
1		

## STORMWATER GROUP OF ACTIVITIES 2016/17

Major programmes of work outlined in the LTP/Annual Plan 2016/17			
Projects	Design/ Scoping	Tender/Contract docs	Under construction
Marton: Hammond Street Stormwater Renewal	Historic flooding at rugby grounds etc.; design work	Contract awarded to Blackley	Works programmed to
	carried over to 2014-2015. Stage 1 of construction,	Construction 30/4/16	May. Construction Wo
	from the Tutaenui Stream to Hair St, was		Outlet to Tutaenui Stre
	programmed for 2015-2016. Stage 2 follows, from		pending "dry" conditio
	Hair St to the roundabout at the intersection with		with resource consent
	Broadway. Work must be completed ASAP in 2016-		
	2017 so that Roading can hotmix in the vicinity of the		
	roundabout. Refer to existing brief for further details		
	Retic network under investigation and design. (est		
	\$225k)		
Marton: Pukepapa Road Stormwater renewal	(road culvert from 68 to rail line on Russell) - 20m		
	450mm CON Gravity Main		
Marton: Harris Street Stormwater renewal	( 50 & 53, thru private) - 54m 300mm CON Gravity		
	Main		
Marton: Wanganui Road Stormwater renewal	(29, culvert under road) - 13m 450mm CON Gravity		
	Main. Renewal and potential upgrade; concurrent		
	with Roading; possibly up to 200 m (not all shown on		
	IntraMaps); include collapsed section at 20-24.		
Upgraded culverts, drains and inlet protection - Taihape, Mangaweka,	18 Wilson St: 11 m of 450 mm concrete gravity		
Hunterville and Bulls	main crossing road; needs investigation		
Upgrades to mitigate future flooding in Marton and Bulls	Hot spots investigation and design mitigation		
	underway.		
Taihape: Paradise Terrace Stormwater renewal	Operations/assets to investigate.		
Other major programmes of work carried out during 2016/17			and the second
Projects	Design/ Scoping	Tender/Contract docs	Under construction

Aug-16
Complete
Outlet design complete. Discharge consent granted from Horizons. Stg1 works completed.
Complete

CONTRIVIONITI AND LEISURE	ASSETS GROUP OF ACTIV	11163 2010/1/		
Major programmes of work outlined in the LTP/A	nnual Plan 2016/17			
Parks and Open Spaces	Design/ Scoping	Tender/Contract docs	Under construction	Complete
Turf Regeneration in Parks				Centennial P
				turf renovat
Tree Management in Parks				Tree manage
				Queens Park
				Park, along F
Establish Wasp Control Programme				
Parks Upgrade Partnership	\$26,403.22 available. An application is			\$17,586.79 v
	attached as a separate item on the Order			Saracens Cri
	Paper. \$6,000 is tagged for a gas BBQ at Sir			renovation a
	James Wilson Park, Marton.			
Community Buildings	Design/ Scoping	Tender/Contract docs	Under construction	Complete
Complete Multi-purpose Facility in Bulls - dispose of sur	rplus Draft preliminary estimate has been			
sites and re-develop Library site	received for the new multi-purpose facility			
	in Bulls. Public meeting held 8 August, with			
	an opportunity to provide feedback in the			
	following week. The present Bulls			
	Information Centre site is the only property			
	that has no constraints affecting disposal of			
	the site. Legal advice is being sought on			
	other properties identified for disposal in			
	Bulls.			
Re-Roof Marton Plunket Rooms				
Renovations at Mangaweka, Ohingaiti and Wainui Halls	Work programmes identified; Specification			
	finalised for painting at Wainui.			
Re-paint Marton Memorial Hall	Specification to be finalised			
Demolish Conference Hall in Taihape				
Construct new Amenity Block on Taihape Memorial Par	ſĸ			
Re-paint Jubilee Pavilion at Marton Park	Preliminary work underway - estimate			
	obtained, specification to be finalised			
Re-paint Hunterville Grandstand	Preliminary work underway - estimate			
	obtained, specification to be finalised			
Replace Ablution Block Roof at Dudding Lake	Order has been issued for this work.			
Swimming Pools	Design/ Scoping	Tender/Contract docs	Under construction	Complete
Fit Solar-Heating at Marton Swim Centre	Under investigation			a na na manana di Salam da na Salam da na Salam da Salam Na salam da S
Chemical Shed at Marton Swim Centre	Order has been issued for this work.			

## Aug-16

Park irrigation installation, and tion was carried out in August.

gement was carried out in k, Hunterville, and at Marton Follett Street.

was allocated to Marton icket Club for irrigation/outfield at Centennial Park, Marton.


			·····	
Filtration & Heating at Taihape Swim Centre	Estimated costs are in the vicinity of			
	\$446,000 for the following works: a			
	required upgrade to the main power			
	switchboard, upgrading of lighting to meet			
	the Code, new heat pumps for all pools, a			
	new plant room, separate chlorine systems			
	for all pools, upgrading the DE backwash			
	system, and upgrading treatment and			
	filtration for the toddlers, and learners			
	pools. This cost does not include any			
	building code requirements that may arise			
	as a result of a building consent being			
	applied for, or for upgrading the filtration to			
	the main pool. The filtration for the main			
	pool is considered adequate, although it			
	does not meet NZS 4441, which is not a			
	mandatory standard.			
	A meeting will be held with TCDT on 12			
	September to discuss funding options.			
Install Space-Heating at Taihape Swim Centre				
Community Housing	Design/ Sconing	Tender/Contract docs	Under construction	Complete
Community Housing Management and Upgrades	Dwell Housing Trust will be presenting to			
	the Committee as a separate item.			
Property	Design/ Scoping	Tender/Contract docs	Under construction	Complete
Purchase Cobbler/Davenport/Abraham & Williams				Purchase of t
Properties as site for Council's Administration and Library				
Services, and undertake initial Heritage and Development				
Concept				
Other major programmes of work carried out during	2016/17			I
Projects	Design/ Scoping	Tender/Contract docs	Under construction	Complete
Contribute to Multi-Purpose Turf Facility in Marton				
Mangaweka Camp Ground Ablution Block	Concept plans have been received from the			
	architect.			
Painting of Marton Library	Order has been issued for this work.		Due to be completed by 23	
			September.	
Hunterville Cemetery Roadway	Stage I of the upgrade will be completed			
	during summer of 2016/17.			



## COMMUNITY AND LEISURE GROUP OF ACTIVITIES 2016/17

Performance measures in LTP/Annual Plan		
What are they:	Targets	Progress to
Provide a "good enough" range of community and leisure assets at an	Progressive improvement in provision and maintenance of the Library service: A greater proportion	
appropriate proximity to centres of population	(benchmark = 15%) of the sample believe that Council's service is getting better	
	Progressive improvement in provision and maintenance of the swimming pools: A greater proportion	
	(benchmark = 17%) of the sample believe that Council's service is getting better	
	Progressive improvement in provision and maintenance of the sports fields and parks: A greater	
	proportion (benchmark = 5%) of the sample believe that Council's service is getting better	
	Progressive improvement in provision and maintenance of public toilets: A greater proportion	
	(benchmark = 19%) of the sample believe that Council's service is getting better	
	Progressive improvement in provision and maintenance of community buildings: A greater proportion	
	(benchmark = 4%) of the sample believe that Council's service is getting better	
	Progressive improvement in provision and maintenance of community housing: A greater proportion	
	(benchmark = 0%) of the sample believe that Council's service is getting better	
Number of users of libraries	An increase in use compared with the benchmark:	Bulls 1559
	During 2013/14, 124,801 people entered the libraries	Marton 5407
	Bulls: 20,373	
	Marton: 49,967	
	Taihape: 56,461	
	Count adjusted to compensate for non-recording periods	
Number of users of pools	An increase in use compared with the benchmark	
	For the 2014/15 season:	
	19,445 in Marton	
	10,099 in Taihape	
Requests for Service		
What are they:	Completed on time Completed late	Overdue
Cemeteries		
Cemetery maintenance		
Council Housing/Property		
Maintenance (Council housing/property)	12 7	
Graffiti/Vandalism		
Graffiti/Vandalism		
Halls	1	
Maintenance (halls)		
Street Cleaning		
Street litter bins/maintenance		
Parks and Reserves		
Maintenance (parks and reserves)		
Waterleaks - Parks only		
Public Toilets		
Cleaning (public toilets)		
Maintenance (public toilets)	11 1	

Aug-16
date
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## RUBBISH AND RECYCLING GROUP OF ACTIVITIES 2016/17

RODDISH AND RECICEING ONC	OF OF ACTIVITIES 2010/17		
Performance measures in LTP/Annual Plan			
What are they:	Targets	Progress to date	Progress for the period
Waste to landfill	4,250 tonnes to landfill	795.41 Tonnes for year starting 1st July equating to 18.7% of target volume	399 Tonnes to landfill - A
Waste diverted from landfill (tonnage and (percentage of to waste)	al Percentage of waste diverted from landfill 14%	Rate for year July - August - 16.4% diversion	20.4% diversion - August
Requests for Service			
What are they:	Completed on time	Completed late	Overdue
None for Solid waste	N/a	None	None







Aug-16 August : (Greenwaste spike)

RUBBISH AND RECYCLING GROUP OF ACTIVITIES 2016/17			Aug-	
Major programmes of work outlined in	the LTP/Annual Plan			
What are they:	Targets	Progress to date	Work planned for next three months	
Waste management	Bulls Waste Transfer Station - trial recycle shop	Container purchased	Fit out container -Erect safety fencing at Bulls WTS	
	Marton Waste Transfer Station - trial recycle shop	Container purchased	Fit out container	
Waste minimisation Waste Education NZ vie Horizons Enviroschools	Waste Education NZ visits.	Bulls School received Zero Waste Education module	Not yet known. Acceptance of programme by schools is voluntary.	
	Horizons Enviroschools programme.	No reported visits for August	Visit all schools who have embraced the Enviroschools programme.(12 month plan)	
Other projects				
What they are:	Targets:	Progress to Date	Work planned for next three months	
Scope of review of the Waste Management and Minimisation Plan	Review of WMMP	No progress to date	No work planned for the next three months, review due in 20	
Review of options for the continuing operation of the Marton Waste Transfer Station	Investigate the land value of site	No progress to date	Parks and Property Department to investigate this further.	



## Attachment 3

# Rangitikei

### REPORT

SUBJECT:	Bridge Management Professional Services	
TO:	Assets/Infrastructure Committee	
FROM:	Jim Mestyanek	
DATE:	7 September 2016	
FILE:	6-RT-1-0 Contract C1035	

#### 1 Purpose of the Report

1.1 To report on the results of the tender assessment for the combined RDC MDC Bridge Management Professional Services Contract and to seek Council's approval to award the contract.

#### 2 Executive Summary

2.1 Following a Price Quality tender process, the preferred Tenderer for the above professional services contract is MWH New Zealand Ltd. Their Tender price is \$511,979.51 excluding GST, which is 8% under the Engineer's Estimate.

#### 3 Background

- 3.1 The Manawatu and Rangitikei District Councils have recently tendered a contract for the full suite of professional services for Bridges. This includes not only bridge inspections (as in the past) but also importantly the development of a robust and comprehensive forward works programme for renewals & component replacements. This programme will generate an optimal budget profile over time. This is required for improved asset management purposes.
- 3.2 The Contract also includes the engineering design and supervision required to complete such projects reliably, within the proposed spend profile. The Contract period is proposed to be two years. This will align with the end of the current NZTA funding cycle. The Contract then allows for the possibility of one three-year extension at Council's discretion, based on the Consultant's performance in the first two years.

#### 4 Discussion and Options considered

4.1 **Price Quality Tender**: The Engineer's Estimate was \$560,000. For this amount, Councils' procurement policy requires an open competitive process. We chose a

Price-Quality Simple Tender Method and advertised it to an open market via Tenderlink.

Five Tenders were recieved. Names of all Tenderers (alphabetical order):

- Bloxam Burnett & Olliver Ltd
- Calibre Consulting Ltd
- GHD Ltd
- MWH New Zealand Ltd
- Opus International Consultants Ltd

Tendered Prices in Ascending Order (without reference to Tenderer):

- \$511,979.51
- \$579,778.21
- \$608,363.00
- \$690,612.65
- \$829,100.00
- 4.2 **Tender Evaluation:** The Tender Evaluation Team (TET) consisted of John Jones (chair), Reuben Pokiha, and Jim Mestyanek. The TET evaluated the submissions in accordance with the Price-Quality Tender Method, as set out in the New Zealand Transport Agency Procurement Manual. The preferred Tenderer is MWH, whose Tender price is \$511,979.51. The preferred Tender price is 8% under the Engineer's Estimate and is therefore considered acceptable.

#### 5 Operational Implications

5.1 The separable portion which applies to the RDC will be \$252,699.80 for the first two year period, i.e. \$126,349.90 per annum. The professional services can be accommodated within the existing budget and will attract a 63% subsidy from the Transport Agency.

#### 6 Recommendation

6.1 That the Assets/Infrastructure Committee recommends that Council approves the award of Contract C1035 Bridge Management Professional Services to MWH New Zealand Ltd for a value of *Two Hundred and Fifty-Two Thousand, Six Hundred and Ninety-Nine Dollars and Eighty Cents excluding GST. (\$252,699.80 excl GST)*.

Jim Mestyanek Senior Project Engineer - Roading

## Attachment 4


## Memorandum

То:	Assets/Infrastructure Committee	
From:	Athol Sanson	
Date:	2 September 2016	
Subject:	Glyphosate use on Council parks and reserves	
File:	6-RF-1-1	

This memorandum outlines the current methodology for the application of glyphosate and amounts used during the first 12 months of in-house management of Council's parks and reserves. There has been renewed public interest in this topic following the release last month by the Environmental Protection Agency (EPA) of a report by Wayne Temple (a toxicologist and former Director of the New Zealand National Poisons Centre). This report is attached as <u>Appendix 1</u>. The EPA considers that glyphosate products approved in New Zealand are safe to use when following the instructions on the label. However, EPA continues to actively monitor its status

From the outset, the Parks team has aimed to gradually reduce our dependence of all agrichemicals in our Parks and Reserves and reduce the toxicity of products being used.

This involved changing attitudes in the team toward the use of these products and setting clear guidelines on what was expected from the team on our parks.

#### **Current Guidelines**

- All personnel applying agrichemicals are to be growsafe certified. Currently we also have two approved handlers.
- Signage is erected at park entrances when spraying is being undertaken.
- Our use of all herbicides/pesticides with the parks and reserves in the District is publicly notified in our local new papers. This public notification is for a period of six months and is renewed two weeks before the notification expires.
- All spraying is done by knapsack which reduces any chance of chemical trespass or spray drift.
- The team works to the guideline that emerging weeds are to be sprayed when they appear. We want to break the weed cycle in the Parks which long term will reduce our dependency of agrichemicals.
- No weeds are to be sprayed over 100mm were possible. By spraying weeds when they appear reduces the amount of glyphosate by 60-70% in many areas.

- The team are advised of any publicly around glyphosate use which is regularly mentioned in our tool box meetings. The letter from the EPA has been printed and posted on our King Street depot noticeboard.
- Our current agrichemical storage at King Street is stored as per current Work Safe requirements. MDS sheets are updated regularly.

Product	Date purchased	Amount purchased
Glyphosate 360	12/08/2015	20Lts
Glyphosate 360	16/10/2016	20Lts
Lion 360	19/01/2016	20Lts
Lion	27/04/2016	20Lts
Glyphosate 490 (In stock)	27/07/2016	20Lts

#### Glyphosate purchases 2015/16

The above chart shows that we are tracking at between 80Lts-85Lts of concentrate for our first year of operation. I am confident that as we progress the time between purchases will continue to get longer.

The team is required to record all chemical usage. Attached (as <u>Appendix 2</u>) are copies of the team's chemical usage sheets. These give a clear picture of where and how we apply agrichemicals and are a requirement under the NZS 8409 code of practice. Completed spray record sheets are held in the Parks Office.

It is my intention going forward to start to reduce our dependency on agrichemicals though better work practices. We will be commencing in spring top-dressing of historically sprayed out lawn edges. We have also commenced mulching of gardens and reserves which, although small-scale, helps towards the goal of a reduced impact in our environment. The sports grounds are another area that I am targeting for a reduction in chemicals, we can do this by applying correct fertiliser programmes and proper turf management.

#### Recommendation

That the memorandum 'Glyphosate use on Council parks and reserves' be received.

Athol Sanson Parks & Reserves Team Leader

# Appendix 1



# Review of the Evidence Relating to Glyphosate and Carcinogenicity

Prepared for the Environmental Protection Authority by Dr Wayne Temple BSc (Hons), PhD, FNZIC, CChem, FRSC, MAACT

Published August 2016

### Introduction

Glyphosate (N-phosphonomethyl glycine; CAS registry #1071-83-6) is the primary active ingredient in many generic herbicides. Glyphosate is formulated primarily as an isopropylamine, ammonium, or sodium salt in water soluble concentrates and water soluble granules. The relevant impurities in glyphosate technical concentrates are formaldehyde, N-nitrosoglyphosate and N-nitroso-N-phosphonomethylglycine. Surfactants and sulfuric and phosphoric acids may be added to formulations of glyphosate, with type and concentration differing by formulation. The United States (US) Environmental Protection Agency (EPA) and other regulatory agencies around the world have registered this chemical as a broad-spectrum herbicide for use on multiple food and non-food use crops. Glyphosate-based herbicides, which have been sold in the US since 1974, are now registered in over 130 countries.

Glyphosate is widely considered by regulatory authorities and scientific bodies to have no carcinogenic potential. The US EPA (1993) has classified glyphosate as a Group E carcinogen, which is defined as having "evidence of non-carcinogenicity for humans". This classification was based on "a lack of convincing evidence of carcinogenicity in adequate studies with two animal species, rat and mouse". Negative results were observed in genotoxicity studies that were conducted under good laboratory practice conditions and compliant with contemporary regulatory test guidelines.

However since that time, results of further studies have come to light, and the International Agency for Research on Cancer (IARC) Monograph 112 on glyphosate (released on 29 July 2015) came to the conclusion that glyphosate should now be classified as a carcinogenic substance in Group 2A (probably carcinogenic to humans). This classification was based on "limited evidence" from human data (regarding non-Hodgkin lymphoma (NHL)) but "sufficient evidence" in animal-experiments. The rationale identifies that the IARC working group (IWG) also notes mechanistic and other relevant data in support of the conclusion; in particular the IWG cites "strong evidence" that glyphosate can operate by two key characteristics of known human carcinogens, namely genotoxicity and oxidative stress.

This classification was initially published in a short report by Blair et al, (2015) in the "Lancet Oncology" on 20 March 2015.

This report discusses the relevant data on glyphosate, especially the more recent studies, and reviews the basis on which the IWG classified it as a probable human carcinogen (Group 2A). This involves review of the quality of evidence for carcinogenicity in humans and experimental animals and the mechanistic arguments.

#### **Cancer in humans**

The IWG found there was limited evidence in humans for the carcinogenicity of glyphosate. Some case-control studies of occupational exposure in the USA, Canada, and Sweden reported increased risks for NHL that persisted after adjustment for other pesticide exposures. However the Agricultural Health Study (AHS) cohort did not show a significantly increased risk of NHL. These studies are discussed below.

#### **Case-control studies in the Midwest USA**

Three case-control studies were conducted by the U.S National Cancer Institute in Iowa and Minnesota in the1980s using the same control series, but each investigating a different lymphohaematopoietic cancer. Brown et al, (1990) found a near null association between

glyphosate exposure and leukaemia among white males residing in the area (OR = 0.9; 95% Cl 0.5-1.6). Among lowa farmers reporting ever handling glyphosate, there was a slight non-statistically significant odds ratio for multiple myeloma (OR = 1.7; 95% Cl 0.8-3.6) (Brown et al, 1993). Cantor et al, (1992) found an approximately null association between glyphosate exposure and NHL among males (OR 1.1; 95% Cl 0.7-1.9).

The IWG reviewed a later study by De Roos et al, (2003) who used pooled data from three case-control studies of NHL conducted in the 1980s in Nebraska (Zahm et al, 1990), Iowa and Minnesota (Cantor et al, 1992), and Kansas (Hoar et al, 1986). Reported use of glyphosate as well as several other individual pesticides was associated with an increased risk of NHL. A total of 650 cases and 1,933 controls were included for the analysis of 47 pesticides. Reporting glyphosate exposure were 36 cases and 61 controls. After adjusting for other pesticide use, age, and study area, by two regression techniques, odds ratios of 2.1 (1.1–4.0) using logistic regression and 1.6 (0.9–2.8) using hierarchical regression were found.

In that regard, a later study by De Roos et al, (2005) where they reviewed the AHS cohort data is significant. They found no association between glyphosate and NHL. The authors noted that the aforementioned Midwest USA case control studies were retrospective in design and therefore potentially susceptible to recall bias as regards exposure reporting.

#### The cross-Canada case – control study

The IWG reviewed a report by McDuffie et al, (2001) who studied the association between NHL and exposure to specific pesticides in a multicentre population-based study with 517 cases and 1,506 controls among men of six Canadian provinces. The authors reported a slight, non-statistically significant increased risk for NHL from claimed glyphosate exposure, the OR being 1.26 (95% CI 0.87–1.80) for analysis adjusted for age and province, and 1.20 (95% CI 0.83–1.74) for analysis adjusted for age, province and high-risk exposures. The study also assessed the significance of different exposure durations. When stratified by greater than or less than two days of glyphosate exposure/year (< 2d/year), the values were 2.12 (95% CI 1.20–3.73) for >2d/year relative to those with < 2d/year (assigned OR of 1.0). The authors commented that although there was not a statistically significant finding for exposure to glyphosate per se, there was a dose-response relationship.

#### **Case-control studies in Sweden**

The IWG reviewed a study by Eriksson et al, (2008) who reported the results of a populationbased case-control study of exposure to pesticides as a risk factor for NHL. Men and women aged 18–74 years living in Sweden were included from 1 December 1999 to 30 April 2002. In total, 910 (91%) cases and 1,016 (92%) controls participated. The authors found NHL associations with exposure to glyphosate. This exposure was reported by 29 cases and 18 controls, giving a reported odds ratio of 2.02 (95% CI 1.10–3.71) in a multivariate analysis. When restricted to a >10 year latency period the OR became 2.26 (95% CI 1.16–4.40). Odds ratios were also reported for lymphoma subtypes. For only two of the eight subtypes were odds ratios statistically significant; likely related to the small numbers. The IWG considered that this was a large study; that there was possible confounding from the use of other pesticides including MCPA, but this was controlled for in the analysis. Given the number of cases studied for glyphosate (29 cases and 18 controls) this study could hardly be considered as large. Twelve subjects were in a less than 10 days exposure group and 17 in a more than 10 days group. Therefore this study had limited power to detect an effect.

#### **Other findings**

In 2014 Schinasi and Leon reported their study of the association between NHL and occupational exposure to various agricultural pesticide chemical groups. Some findings on glyphosate were presented; for example the results from the studies by McDuffie et al, (2001), De Roos et al, (2005) and Eriksson et al, (2008) were given. This review included a series of meta-analyses, which they asserted showed consistent evidence of positive associations between NHL and carbamate insecticides, organophosphorus insecticides, lindane, and MCPA. As regards glyphosate (an "organophosphorus herbicide"), "in a handful of papers", associations between pesticides and NHL subtypes were reported; B cell lymphoma was positively associated with phenoxy herbicides and glyphosate.

#### The Agricultural Health Study (AHS) cohort studies

These studies in Ohio and North Carolina involve a large cohort of private and commercial pesticide applicators (57,311 as at 2004–5). Several studies have been conducted using this cohort.

Alavanja et al, (2003) evaluated associations between specific pesticides and prostate cancer in the AHS. Glyphosate was listed as one of the pesticides with sufficient exposure data for analysis, but the findings for it were not listed, so that it has been assumed that no significant positive association was found with prostate cancer.

Flower et al, (2004) evaluated associations between pesticide application by parents and cancer among children born to Iowa participants in the AHS. There was no positive association between either maternal or paternal use of glyphosate and risk of childhood cancer.

De Roos et al, (2005) evaluated associations between glyphosate exposure and "all cancers" or any cancer site using the AHS cohort. This study did not show a significantly increased risk of NHL. In the group reportedly exposed to glyphosate, small, non-statistically significant relative risks of 1.2 (95% CI 0.7–1.9) adjusted for age (only) and 1.1 (95% CI 0.7–1.9) adjusted for age, demographic and lifestyle factors and other pesticide exposure were found for NHL, (De Roos 2005). There was no dose (exposure) response relationship.

De Roos et al, (2005) also found a non-statistically significant association between glyphosate exposure and multiple myeloma, with rate ratios (RR values) of 1.1 (95% Cl 0.5–2.4) adjusted for age only, and 2.6 (95% Cl 0.7–9.4) adjusted for age, demographic and lifestyle factors and other pesticides exposures. Such a finding had not previously been reported.

Comparisons were made between ever-exposed versus never-exposed groups, and between three equal sized groups (tertiles), formed by subdivision either on the basis of total days of exposure or intensity-weighted exposure days. In the intensity-weighted analysis of glyphosate and lung cancer, the relative risk for the highest tertile was only 0.6 (95% CI 0.3– 1.0), for pancreatic cancer the RR for the highest tertile was 0.5, while for multiple myeloma the RR was 2.1, but the confidence interval was wide (0.6–7.0). None of these findings reached statistical significance at 95%. Regarding the whole group (ie ever used glyphosate), the RR for multiple myeloma was 1.1 (95% CI 0.5–2.4) adjusted for age only, and 2.6 (95% CI 0.7–9.4) adjusted for age, demographic and lifestyle factors and other pesticide exposures. Unremarkable, non-statistically significant results were found for the other cancer sites assessed.

Thus as regards this study, there was no evidence of a statistically significant positive association for any of the cancers for which data were reported (Mink et al, 2012). Furthermore De Roos et al, (2005) acknowledged in their paper that over 13,000 subjects were excluded from multivariate analyses because of missing data. In analyses of "ever" versus "never" exposed to glyphosate, the age-adjusted relative risk of multiple myeloma was 1.1. Lash (2007) assessed the study design and concluded that adjustment for confounders, which resulted in limiting the data set by 25% because of missing data on the adjustment variables, likely introduced selection bias, which was likely to have been in the direction away from the null (ie exaggerating any possible risk).

It is also known that multiple myeloma is often preceded by monoclonal gammopathy of undetermined significance (MGUS), a pre-malignant plasma cell disorder (Morgan et al, 2002). It is of interest to note that a decreased risk (albeit not statistically significant) of MGUS was observed in glyphosate applicators in the AHS.

Engel et al, (2005) evaluated breast cancer risk among wives of farmers in the AHS. No statistically significant association was found.

In an analysis of colorectal cancer and pesticide use, Lee et al, (2007) found no statistically significant association between glyphosate use and cancer of the colon or rectum.

Andreotti et al, (2009) reported no significant association of "ever" use (versus "never use") of glyphosate with pancreatic cancer among the combined group of AHS applicators and spouses (OR 1.1; 95% CI 0.6–1.07), nor was there evidence for a dose-response relationship.

Dennis et al, (2010) evaluated associations of 50 pesticides with cutaneous melanoma in the AHS cohort. Glyphosate was listed as one of the 22 pesticides on the enrolment questionnaire. The authors commented that none of these 22 pesticides was associated with melanoma.

None of the AHS cohort study analyses reported statistically significant positive findings for glyphosate exposure and total cancer or any site-specific cancer, in adults or children. In particular, the prospective AHS studies did not corroborate the positive association with NHL reported by the Swedish case-control studies. Analyses of increasing category of glyphosate exposure days and incidence of NHL produced rate ratios that were below the null value of 1.0 (De Roos et al, 2005 and Mink et al, 2012).

#### Discussion of review of epidemiological findings

In a review of glyphosate in 2006, the WHO observed that:

"widely used pesticides, like glyphosate, have recently become a focus of epidemiological research. In the past few years several epidemiological studies have been published that reported weak associations of glyphosate with lymphopoietic cancers, self-reported adverse reproductive outcomes and self-reported attention deficit hyperactivity disorder in children. However, the results of these studies do not meet generally accepted criteria from the epidemiology literature for determining causal relationships. Generally, the associations were rather weak and rarely statistically significant. Controlling for potential confounding factors, including other pesticides exposure, was not possible owing to limited available information and small numbers of subjects".

Whether or not there was any internal exposure or the extent of such exposure was not measured and, accordingly, a possible dose–response relationship could not be evaluated.

This seems a fair assessment of several of the studies regarding glyphosate and its formulations. De Roos et al, (2005) noted that the Midwest USA case control studies were retrospective in design and therefore potentially susceptible to recall bias as regards exposure reporting. Certainly a large prospective cohort study (such as that by De Roos et al, 2005) is much preferable to smaller case-control studies, the latter of which have much less statistical power to identify causal associations and are subject to more biases, including those regarding exposure assessment. Therefore much more weight should be given to the De Roos et al, (2005) cohort study than the much smaller De Roos et al, (2003) case-control study. In that regard, it is important to note that the cohort study found no association between glyphosate and NHL. There was, however, a small (non-statistically significant) increased risk of multiple myeloma in the 2005 study, but the point estimates of this risk may have been exaggerated. (Lash 2007.)

A re-analysis of some data from the De Roos et al, (2005) study has recently been undertaken, with a focus on multiple myeloma (Sorahan, 2015). Assessing the same data, Sorahan found no significant trends of multiple myeloma risk with reported cumulative days of glyphosate use, and unexceptional point estimates of risk for ever-use of glyphosate. This was irrespective of whether the analysis had made adjustment for a few basic variables (age and gender) or made adjustment for many other lifestyle factors or pesticide exposures; as long as data on all available pesticide applicators was used.

Sorahan (2015) argued that the elevated rate ratios (or relative risks) for multiple myeloma reported previously by Roos et al, (2005) arose from use of restricted data sets that, probably by chance, turned out to be unrepresentative. These restrictions were considered to be unnecessary and undesirable, as potentially informative data on the exposure or outcome under investigation were discarded. For example, it was asserted that there were a number of lost cases of multiple myeloma in the group of applicators who had never used glyphosate, because they were excluded by Roos et al, (2005) due to their not having data on for example use of alcohol, or smoking. These lost cases in the baseline category gave a false impression of elevated rates in ever-users. As a result Sorahan gave more weight to the point estimate of 1.1 as the RR (adjusted for age only) as opposed to the estimate of 2.6 as the RR for ever-use of glyphosate (adjusted for age, demographic and lifestyle factors, and other pesticides).

Mink et al, (2012) reviewed the epidemiological literature (and relevant methodological and biomonitoring studies) to evaluate whether exposure to glyphosate is associated causally with cancer risk in humans. Seven cohort studies and fourteen case-control studies examining a potential association between glyphosate and one or more cancer outcomes were subjected to a qualitative analysis.

The cohort studies were all based on analyses of participants or family members of the AHS cohort. Mink et al (2012), observed that none of the AHS cohort study analyses reported statistically significant positive findings for glyphosate exposure and total cancer or any site-specific cancer in adults or children. They found no consistent pattern of positive associations to suggest a causal relationship between human exposure to glyphosate and any cancer.

Overall, this 2012 review found no consistent pattern of positive associations between total cancer (in adults or children) or any site-specific cancer, and exposure to glyphosate. They suggested a cautious interpretation of the few positive associations reported, and concluded that the epidemiological data, when considered together, did not support a causal association between glyphosate exposure and cancer.

Similarly, the latest report of BfR (2015) to the European Food Safety Authority (EFSA)<sup>1</sup> based on the evaluation of over 30 epidemiological studies came to the overall assessment that there is no validated or significant relationship between exposure to glyphosate and an increased risk of NHL or other types of cancer.

A recent peer review by EFSA<sup>2</sup> (2015) essentially confirmed the conclusions in their reevaluation of glyphosate. They noted that 10 cohort studies (which included the AHS, the largest series of prospective studies to date), found that glyphosate did not cause different types of cancer and did not increase risk of all cancers combined. (As noted earlier, the findings for NHL were negative in the AHS cohort.) Similarly nine case-control studies did not indicate an increased risk of carcinogenicity, or did not have sufficient power to assess this. With regard to NHL, the case-control studies exhibited poor consistency in their results and small numbers of cases limiting the statistical significance of findings in some studies. As noted above, case-control studies have less power, are more subject to various biases, and are less effective at assessing actual exposure levels than are cohort studies. EFSA concluded that there is very limited evidence for an association between glyphosate exposure and the occurrence of NHL.

#### Cancer in experimental animals

#### **Mice studies**

Glyphosate was tested in female and male mice by dietary administration in two studies. A skin application in one initiation-promotion study was conducted with male mice.

The IWG found that in male CD-1 mice, glyphosate induced a positive trend in the incidence of a rare tumour, renal tubule carcinoma. A second study reported a positive trend for hemangiosarcoma in male mice. A glyphosate formulation promoted skin tumours in an initiation-promotion study in mice.

The IWG noted there was a positive trend in the incidence of renal tubule carcinoma and of renal tubule adenoma or carcinoma (combined) in male CD-1 mice in a glyphosate feeding study (0, 1,000, 5,000, or 30,000 ppm glyphosate *ad libitum* for 24 months). (This study was conducted prior to the institution of GLP.) The study was submitted to the US EPA which requested that a pathology working group (PWG) be convened to evaluate the renal tumours. In this second evaluation, the PWG found that the incidence of adenoma was not statistically significant but the incidence of carcinoma and the incidence of adenoma and carcinoma (combined) were significant. The IWG considered that this second evaluation indicated a significant increase in the incidence of rare tumours, with a dose-related trend, which could be attributed to glyphosate.

However, this finding is at variance with the US EPA (1993) which reported in their glyphosate review that the occurrence of these adenomas was spontaneous rather than compound-induced because the incidence of renal tubular adenomas in males was not statistically significantly different when compared with the concurrent controls. An independent group of pathologists and biometricians also conducted extensive evaluations of these adenomas and reached the same conclusion. The US EPA concluded glyphosate was not considered to be carcinogenic in this study.

<sup>&</sup>lt;sup>1</sup> The BfR (2015) report addressing the carcinogenicity of glyphosate is a report of Germany specifically, as Germany was the lead member state for the EFSA review of glyphosate.

<sup>&</sup>lt;sup>2</sup> EFSA accepted the conclusion relating to glyphosate and cancer (including NHL), with one dissenting member state.

The IWG reviewed a second feeding study reported to the FAO/WHO Joint Meeting on Pesticide Residues (JMPR), and found there was a significant positive trend in the incidence of hemangiosarcoma in male CD-1 mice. Groups of 50 female and male mice were fed diets containing glyphosate at a concentration that was adjusted weekly for the first 13 weeks and every four weeks thereafter to give doses of 0, 100, 300, or 1,000 mg/kg body weight, *ad libitum* for 104 weeks.

In contrast JMPR (WHO 2006) found that owing to the lack of a dose-response relationship, the lack of statistical significance and the fact that the incidences recorded in this study fell within the historical ranges for controls, these changes were not considered to be caused by administration of glyphosate. They concluded administration of glyphosate to CD-1 mice for 104 weeks produced no signs of carcinogenic potential at any dose.

#### Initiation-promotion

The IWG found that in a study involving 20 male Swiss mice which had a glyphosate based formulation applied to their skin, it appeared to be a tumour promoter, but they concluded that this was an inadequate study because its design was poor, with short duration of treatment, no solvent controls, small numbers of animals, and a lack of histopathological examination.

However the BfR (2015) considered that generally testing of formulations should not be used for the toxicological evaluation of active substances because co-formulants may extensively alter the outcome. The BfR deemed that this IWG finding was not considered by the institutions in the EU to be evidence for the carcinogenic properties of glyphosate per se.

#### Review articles – mice studies

The IWG noted that Griem et al, (2015) had published a review article which included discussion of five long-term glyphosate feeding studies in mice. Two of the studies were discussed in the IARC monograph. The working group summarised the other three studies but claimed that it was unable to fully evaluate the other three studies because of the limited experimental data provided in the review article and supplemental information.

Griem et al, (2015) noted that the five mouse studies that they reviewed were submitted to support glyphosate renewal in the EU. They considered that all but the oldest study were reliable without restriction and were performed under conditions of GLP and OECD protocols.

During the EFSA peer-review process for the renewal of the approval of glyphosate, EFSA also received a complementary mandate from the EU to consider the findings by IARC regarding the potential carcinogenicity of glyphosate (EFSA 2015).

The EFSA peer review (2015) also evaluated the five mice studies. Only one of these suggested a potential carcinogenic effect, as evidenced by a statistically significant increased evidence of malignant lymphomas at the top dose level of 1,460 mg/kg/day. However the validity of the study was questioned, due to the occurrence of viral infection which could have influenced survival rates and the incidence of lymphomas. No carcinogenic effects were observed at the highest dose levels in any of the other studies. The IWG evaluated two of these studies and asserted positive trends in males for renal tubular carcinomas in one study and for hemangiosarcoma in the other. However EFSA took a weight-of-evidence approach; with considerations including the statistical significance being only found in trend analysis but not in pairwise comparison, lack of consistency in multiple

animal studies, the fact that the slightly increased incidences only occurred at doses higher than those recommended for the oral route in carcinogenicity studies, incidences in test animals generally being within the historical range for control groups, and the lack of preneoplastic lesions.

#### **Rat studies**

Five feeding studies in rats and two drinking water studies with glyphosate were reviewed by the IWG.

#### Drinking water

One study in Sprague-Dawley rats was considered by the IWG to be inadequate for evaluation because of its short exposure duration.

A glyphosate containing drinking water study with Wistar rats did not show any significant increase in tumour incidence.

#### Dietary administration

Two studies in Sprague-Dawley rats showed a significant increase in the incidence of pancreatic islet cell adenoma in male rats. One of these studies also showed a significant positive trend in the incidence of hepatocellular adenoma in males and of the thyroid C-cell adenoma in females. However two studies (one in Sprague-Dawley and one in Wistar rats) found no significant increase in tumour incidence at any site.

The IWG reviewed a chronic feeding study (provided by the US EPA) in which groups of 60 female and male Sprague Dawley rats were given diets containing glyphosate at a concentration of 0, 2,000, 8,000 or 20,000 ppm *ad libitum* for 24 months. In males at the lowest dose, there was a statistically significant increase in the incidence of pancreatic islet cell adenoma compared with controls. Additional analyses by the US EPA revealed a statistically significant higher incidence of pancreatic islet cell carcinoma in males at the lowest and highest doses compared with controls: lowest dose, 8/45 (18%); intermediate dose, 5/49 (10%); highest dose, 7/48 (15%) versus controls, 1/43 (2%). The range for historical controls for pancreatic cancer islet cell carcinoma reported in males at this laboratory was 1.8–8.5%. The IWG concluded that this study demonstrated a significant increase in the incidence of pancreatic islet cell adenoma in male rats.

#### However the US EPA (1993) had concluded that:

"these adenomas were not treatment-related and glyphosate was not considered to be carcinogenic in this study. With respect to pancreatic islet cells adenomas, there was no statistically significant positive dose-related trend in their occurrence; there was no progression to carcinomas; and the incidence of pancreatic hyperplasia (non-neoplastic lesion) was not dose-related. With respect to hepatocellular adenomas, the increased incidence of these neoplasms was not statistically significant in comparison with the controls; the incidence was within the historical control range; there was no progression to carcinomas; and the incidence of hyperplasia was not compound-related. With respect to thyroid C-cell adenomas, there was no statistically significant dose-related trend in their occurrence; the increased incidence was not statistically significant; there was no progression to carcinomas; and there was no significant dose-related increase in severity or incidence of hyperplasia in either sex". Also, in the JMPR (WHO 2006) review of this study they reported:

"The historical-control range for this tumour at the testing laboratory was 1.8–8.5%, but a partial review of studies reported recently in the literature revealed a prevalence of 0–17% in control males with several values being  $\geq$  8%. More importantly, the incidences of islet cell adenomas clearly did not follow a dose-related trend in the treated groups of males. There was no evidence of dose-related pancreatic damage or pre-neoplastic lesions. The only pancreatic islet cell carcinoma found in this study occurred in a male in the control group, thus indicating a lack of treatment-induced neoplastic progression. Taken together, the data support the conclusion that the occurrence of pancreatic islet cell adenomas in male rats was spontaneous in origin and unrelated to administration of glyphosate".

#### Review articles – rat studies

The IWG noted that Griem et al, (2015) had published a review article containing assessments of nine long-term glyphosate feeding studies in rats. Five of these studies were reviewed by the IWG. The remaining four studies were not evaluated by the IWG which stated that there was limited experimental data provided in the review article. These four studies had been submitted to various organisations for registration purposes. There was no evidence of a carcinogenic effect related to glyphosate treatment.

Its long-term toxicity and carcinogenicity was assessed in nine rat studies. The EFSA peer review concluded that no significant increase in tumour incidence was apparent. Three of these studies were not evaluated by the IARC panel. In two studies, increased incidences of pancreatic islet cell adenomas were found but were not dose-related. EFSA also noted that the significance of these findings depended on the statistical analysis: using a pairwise comparison (as planned for in the study protocol) no significant effect is observed, whereas a trend analysis performed by the IWG identified significant changes. EFSA noted that deviations from the statistical analysis used by the study authors should be limited and properly justified.

#### Other relevant data

The IWG group noted that soil microbes degrade glyphosate to aminomethylphosphonic acid (AMPA). Blood AMPA detection after glyphosate poisoning incidents suggests intestinal microbial metabolism in humans.

Glyphosate has been detected in the blood and urine of agricultural workers, indicating absorption. Neimann et al, (2015) published a critical review and comparison of data obtained in a total of seven studies from Europe and the US. They concluded that no health concern was revealed because the resulting exposure estimates were several magnitudes lower than the acceptable daily intake (ADI) or the acceptable operator exposure level (AOEL).

The measured internal exposure was clearly below the worst-case predictions made in the evaluation of glyphosate as performed for the renewal of its approval within the European Union.

This is consistent with the risk-based approach that regulatory agencies use when considering realistic dosages and real-life conditions. Those studies show that farmers and farm families are exposed to significantly lower doses of the herbicide than some model estimates would suggest.

It is also in keeping with an earlier review (Williams et al, 2000) of the animal data, in which dose levels from animal toxicity tests were compared to conservative, upper-limit estimates

of human exposure to glyphosate, to give a margin of exposure (MOE) value. MOE analyses compare the lowest NOAELs determined from animal studies to worst-case levels of human exposure; with MOEs of greater than 100 indicating confidence that no adverse health effects would occur. These authors found in their review that the MOEs for worst-case chronic exposure to glyphosate ranged from 3,370 to 5,420, and concluded that "under present and expected conditions of use, Roundup herbicide does not pose a health risk to humans".

#### Genotoxicity

The IWG claimed that there is strong evidence that glyphosate is genotoxic. They tabulated numerous reports of tests relating to the genotoxicity of glyphosate and its formulations, with some showing a positive association, and some a negative association.

The evaluation of the large volume of genotoxicity data available requires consideration of assay system validation, test system species used, relevance of the endpoint to heritable mutation, reproducibility and consistency of effects and dose-response, and relationship of effects to toxicity. The guidelines for genetic toxicology tests developed for the OECD are a pre-eminent source of internationally agreed guidelines.

There were often inconsistent results reported (both positive and negative) from the same test systems in different laboratories. The relevance of many of the assays in test system species (fish, oysters, insects, snails, worms and caimans) which have never been validated for the assessment of genotoxicity in humans for regulatory purposes, is questionable. Additionally the *intraperitoneal* route of exposure for many of the mammalian *in vivo* studies is not appropriate since it does not reflect normal human exposure, with doses exceeding occupational exposure by orders of magnitude.

Kier and Kirkland (2013) published a review of the genotoxicity of glyphosate and glyphosate-based formulations. This review concluded that there was a strong weight of evidence that glyphosate and its formulations are predominantly negative in well-conducted, core bacterial reversion and *in vivo* mammalian micronucleus and chromosomal aberration assays. Although some positive results for glyphosate and glyphosate-based formulations were reported in DNA damage assays, and for the micronucleus endpoint for formulations in non-mammalian studies, the positive results were associated with high dose levels and/or overt toxic effects. The preponderance of negative results in core assays supports the conclusion that reports of DNA damage or non-mammalian micronucleus effects are likely to be secondary to cytotoxicity rather than indicative of DNA-reactive mechanisms.

The IWG found that glyphosate and glyphosate formulations induced DNA and chromosomal damage in mammals, and in human and animal cells *in vitro*. They referred to one study (Bolognesi, 2009) reporting increases in blood markers of chromosomal damage (micronuclei) in residents of several communities after spraying of glyphosate formulations, to support this contention of genotoxicity.

However, the authors of the Bolognesi (2009) study concluded that overall, data suggesting that genotoxic damage (as evidenced by the micronuclei test) associated with glyphosate spraying for control of illicit crops is slim, and any such effect appears to be transient. Evidence indicates that the genotoxic risk potentially associated with exposure to glyphosate in the areas where the herbicide is applied for coca and poppy eradication is low. The attribution of a genotoxic effect due to glyphosate exposure rather than a multitude of other demographic and environmental causes seems rather tenuous given the uncertainty of actual exposure.

In a recent communication, EFSA summarised their appraisal of the genotoxicity studies. *In vitro* tests of mutagenicity gave consistently negative results. *In vitro* tests of mammalian chromosome aberration (all of those which had been performed under GLP conditions) were also negative. Positive results were found in some published *in vitro* studies of chromosomal aberrations, but these were not confirmed by *in vivo* studies addressing the appropriate endpoints, such as the micronucleus test.

As regards *in vivo* tests, all studies conducted according to internationally validated guidelines for good laboratory practice (GLP) and some non-GLP published studies gave negative results. Two non-GLP studies were positive in mice treated intraperitoneally, but at levels close to or above the  $LD_{50}^{3}$  (possibly suggestive that this is a secondary effect), and one study had major flaws. No genotoxic effects on germ cells have been detected in rats or mice treated orally at dose levels up to 2,000 mg/kg/day (the maximum dose level recommended for such studies). EFSA concluded that, considering the weight of evidence, glyphosate is unlikely to be genotoxic *in vivo*.

As regards glyphosate-based commercial formulations, a number of formulations with unknown composition have given positive results when tested *in vitro* and *in vivo*. However some of the test systems are not validated and/or interpretation is difficult due to possible confounding, such as cytotoxicity, specific organ toxicity or unclear relevance to humans (such as tests in fish, amphibians, or invertebrates). Some of the co-formulants (such as polyethoxylated tallow amine (often abbreviated to POEA)) may be more systemically toxic than glyphosate. However EFSA concluded that the genotoxic potential of such complete formulations should be further assessed.

Kier (2015) reviewed genotoxicity biomonitoring studies of glyphosate-based formulations. He found that most of the human biomonitoring studies were not informative because there was either a very low frequency of exposure to glyphosate formulations or exposure to a large number of pesticides in addition to glyphosate without analysis of specific pesticide effects. One pesticide sprayer biomonitoring study indicated there was no statistically significant relationship between frequency of exposure to glyphosate formulations reported for the last spraying season and oxidative DNA damage. There were three studies of human populations in regions of glyphosate formulation aerial spraying. One study found increases for the cytokinesis-block micronucleus endpoint but these increases did not show statistically significant associations with self-reported spray exposure and were not consistent with application rates. A second study found increases for the blood cell comet endpoint at high exposures causing toxicity. However, a follow-up to this study two years after spraying did not indicate chromosomal effects.

#### **Oxidative stress**

The IWG found that glyphosate, glyphosate formulations, and AMPA induced oxidative stress in rodents and *in vitro*.

Oxidative stress was only found in one study in rats administered intraperitoneal glyphosate active ingredient (Astiz et al, 2009), and in numerous studies using *intraperitoneal* administration or *in vitro* methods with glyphosate-based formulations. However, these studies used doses that exceeded normal occupational exposures by orders of magnitude and the *intraperitoneal* route of exposure is not appropriate for evaluating human exposure. Glyphosate has low gastrointestinal absorption and poor dermal absorption. It therefore

 $<sup>^{3}</sup>$  LD<sub>50</sub> is the dose of the substance required (usually expressed in relation to body weight) that is estimated to kill 50% of the test population.

seems unlikely that human exposure would produce the sort of tissue levels used in the oxidative stress tests. There was also some inconsistency in results.

Most effects were seen when whole glyphosate formulations were tested. EFSA considered that generally testing of formulations should not be used for the toxicological evaluation of active substances because co-formulants may extensively alter the outcome. Thus any effects found cannot then be attributed to the glyphosate active ingredient present.

#### Discussion

The IARC WG (IWG) classified glyphosate as "probably carcinogenic to humans (Group 2A)" as the overall evaluation.

As set out in their evaluation section, this was based on:

- "limited evidence" in humans for the carcinogenicity of glyphosate, and
- "sufficient evidence" in experimental animals for carcinogenicity of glyphosate.

The rationale identifies that the IWG also notes mechanistic and other relevant data in support of the conclusion; in particular the IWG cites "strong evidence" that glyphosate can operate by two key characteristics of known human carcinogens, namely genotoxicity and oxidative stress.

This discussion section of the report will consider each of these sources of evidence in turn as contributing factors to the IWG's overall evaluation.

#### Human epidemiological evidence

The key cited studies in support of the "limited evidence" in humans for carcinogenicity of glyphosate consisted of three case-control investigations. The odds ratios (OR) for cases of NHL and glyphosate exposures are summarised in the following table.

Study area	OR <sup>1</sup> and 95% Cl <sup>2</sup>	Study reference
Midwest, USA	2.1 (1.1–4.0) [logistic regression]	De Roos et al, 2003
	1.6 (0.9–2.8) [hierarchical regression]	
Canada	1.26 (0.87–1.8)	McDuffie et al, 2001
	1.20 (0.83–1.74) [adjusted for medical variables]	
Sweden	2.02 (1.1–3.71) [univariate]	Erikson et al, 2008
	1.51 (0.77–2.94) [multivariate]	

Odds ratios (OR) for cases of NHL and glyphosate expose
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1. OR is the odds ratio of outcome of interest between the relevant case group and the reference or control group.

2. The 95% CI are the confidence intervals round the OR representing the limits within which there is 95% confidence that the true value falls.

The first important observation is that depending on the statistical tests used only two studies (Midwest USA and Sweden) show OR values indicating statistical significance at the 95% level. In the Midwest USA, however, this is only true using logistic regression, while in the Swedish study only the univariate analysis showed statistical significance.

Some case control studies assessed data using dose (exposure)/response or intensity/response to determine whether or not there is a trend to a higher incidence of tumours in persons categorised as having higher exposures to glyphosate. While these approaches are desirable, the criteria of exposure seem low. For one case-control study, the criterion for high or lower glyphosate use was greater than or less than two days of glyphosate use/year (McDuffie et al, 2001), whereas in another the criterion was greater than or less than 10 days of glyphosate use/year (Eriksson et al, 2008). While the distribution of use category was not given in either study, 2–10 days of use per year seems a low benchmark for exposure comparisons. The direct glyphosate exposure findings with respect to NHL was not significant in the McDuffie et al, 2001 study, but they reported a dose response based on this dose comparison and quoted the OR for exposure >2 day/year as 2.12 (95% CI 1.20–3.73).

The direct glyphosate exposure findings with respect to NHL were significant in the Swedish study using univariate evaluation, and the effect of dose-response in the Swedish study appears to only be statistically significant using this approach (considering the data presented in the IARC Monograph in Table 2.2, p23) which reported a higher OR for "heavy" users (>10 days/year) of 2.36 (95% CI 1.04–5.37). It is noteworthy that the paper reports the highest OR, 2.81 (95% CI 1.27–6.22), for the association between exposure to MCPA and NHL. This may be the explanation for the difference between the results using univariate and multivariate evaluation. When considering the latency period, >10 years exposure to glyphosate had an OR of 2.26 (95% CI 1.16–4.4) in comparison to  $\leq$  10 years with an OR of 1.11 (95% CI 0.24–5.08), but these findings may be confounded by exposure to MCPA or other phenoxy herbicide exposures. There could be residual confounding from MCPA exposure if the participants under-reported earlier MCPA exposure. The apparent increased risk with latency for glyphosate exposure could be because participants who had sprayed pesticides for longer were more likely to have used the phenoxy herbicides (including MCPA) earlier in their working lives.

The AHS cohort study (De Roos, et al, 2005) had a more detailed assessment at different exposure intensities as they used cumulative lifetime days of use and an intensity measure (years of use x days/year x estimated exposure level). The data (presented in Table 2.1 of the IARC Monograph on p12) for this cohort study showed no statistically significant difference for the trend to increased exposure with exposure bands at 0–20, 21–56 and 57–2,678 cumulative days of exposure, despite the higher exposure levels in comparison to the case-control studies.

It is important in these circumstances to consider the overall data set. Rather than only highlighting the three case-control studies which identified a marginally statistically significant association between reported glyphosate use and NHL, the overall assessment needs to take into account other studies which did not demonstrate such an association. Also, it is particularly important to note the lack of significant finding in a large cohort study (the AHS) where the potential for recall bias is greatly reduced and should therefore be given greater weight than the case control studies. Cohort studies are generally considered more reliable than case-control studies, because the population is defined and the exposure parameters and the potential confounding exposures and lifestyle factors are established prior to the adverse outcome of interest so that the potential for recall bias is less likely.

Given the lack of confirmation of the small number of positive findings from case-control studies in the more powerful cohort study, the epidemiological support for the conclusion "limited evidence" in humans is not convincing.

#### Experimental animal studies

The key cited studies in support of the "sufficient evidence" in experimental animals for carcinogenicity of glyphosate consisted of three studies in mice. These comprised one oral study demonstrating a positive trend for increased incidence of renal tubule carcinoma, one oral study in mice demonstrating a positive trend for increased incidence of hemangiosarcoma; and a supporting skin study demonstrating tumour promotion using a glyphosate formulation. In addition, one rat study demonstrated an increased incidence of pancreatic islet cell adenomas.

In assessing these data, the IWG used different statistical tests to those in the original analysis (trend analysis rather than a pairwise comparison against controls). The original studies were designed with the intention to assess statistical significance by means of a pairwise comparison between the test and control groups, so use of the trend assessment by IARC to assess these data requires justification. IARC's use of the trend assessment gave a positive response, but in none of the studies are the positive effects statistically significant using the original statistical approaches. Also, the IWG did not take into account the generally accepted assessment of the same data by international panels of experts, which took into account additional historical incidence data for hepatocellular adenomas in the rats and the presence of a viral infection in the mouse study which could have influence survival rates and the incidence of lymphomas.

The promotion study using a glyphosate-based formulation should not be used as support for the carcinogenicity of glyphosate per se, since the test substance contains other components which might influence the outcome.

The IWG did not evaluate some other studies which have been used by other regulators. These did not support the view that exposure to glyphosate in long-term feeding studies was associated with an increase in tumours at any sites. While the IWG approach is consistent with the IARC pre-amble and policy on the selection of study data, in the current circumstances this attributes inappropriate weight to the three studies which IWG considered and for which their analysis found an increase in tumours. Firstly because other studies which other reputable bodies found to be negative were not considered, and secondly because the reasons why the above findings were not relied upon by other assessments were not taken into account by the IWG. In particular a lack of consistency (dose-response) in multiple studies, slight increases in incidence at the maximum tested dose only, or incidences within the historical control range.

Taking into account that the positive findings cited by the IWG were not assessed as evidence of a carcinogenic effect in the view of other reputable bodies, and that the total data set of long-term carcinogenicity bioassays were consistently negative, it is concluded that the overall weight of evidence does not indicate that glyphosate is carcinogenic.

#### Mechanism of action

The IWG cites what is described as "strong evidence" that glyphosate can operate by two key characteristics of known human carcinogens – genotoxicity and oxidative stress. The studies used in support of this conclusion were primarily *in vitro* mammalian cell studies. In such studies the mammalian cells are directly exposed to the test substance (glyphosate or a glyphosate-based formulation) at high concentrations which would not be reasonably achieved in an *in vivo* exposure whether in animals or humans. All studies done according to internationally validated guidelines gave negative results, while studies using unvalidated

test method/species, or with glyphosate-containing formulations or using high *intraperitoneal* doses are inappropriate for assessment of genotoxicity to humans.

Other supporting evidence for this conclusion included DNA damage and micronuclei in various populations allegedly exposed to glyphosate from sprays. Attributing the effects found to the exposure to glyphosate is questionable when the exposure, if any, was to glyphosate-based formulations and unidentified demographic, geographical or lifestyle factors that could be responsible for the DNA damage.

In relation to oxidative stress this was only found in one study in rats administered *intraperitoneal* glyphosate active ingredient (Astiz et al, 2009), and in numerous studies using *intraperitoneal* administration or *in vitro* methods with glyphosate-based formulations. The *intraperitoneal* route of administration is not considered relevant to human exposures. Glyphosate has low gastrointestinal absorption and poor dermal absorption. There was also some inconsistency in results. So the evidence for glyphosate causing oxidative stress is considered weak.

#### Conclusion

The overall conclusion is that – based on a weight of evidence approach, taking into account the quality and reliability of the available data – glyphosate is unlikely to be genotoxic or carcinogenic to humans and does not require classification under HSNO as a carcinogen or mutagen.

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#### Acknowledgement

Dr Michael Beasley MBChB, DComH, MSc, DIH, FFOM (I) for valuable assistance with the preparation of this review.

# Appendix 2

## Rangitikei District Council Spray Diary Record Sheet - Name:

	Applicatio	n Information Hand sp	rayer = H; Weed v	vand = W; Knapsa	ck = K; Quad b	oike = <b>Q</b> ; Boon	n spraying = B; Tank s	pray =T; / N	lethod Spot s	spray = <mark>Si</mark> Blan	ket spray = B; F	Paste = P
Date	Location	Job Name	Application / Method	Approved Handlier /Growsafe	Product (Trade Name)	What is Target	Mix rate: Chem/Water	Total Qty Chem	Tracking req Yes/No	Signs out / notify	Sensitive areas	Weather Comment (Wind & direction, humidity & Temp)
06/08/15	Marton Park	Boundary Spraying	к / s	Athol	Round-up	Weeds	10mls/Lt	150mls	No	Y	School & stream	Light north-east wind, dry and 17d C
2914 116	Achilles	Cieneral	K JS	Looley	Roundlup	Weeds	7ml/ ct	105ml	No	<u> </u>	Animalo	Overcast 1860
2 15 116	Margaweka Thredehold	11 *	KIS	Leoler"	Acendup	Weeds	7ml1 Lt	105ml	No	No	Public	Fine 22°C
31514	Bulls/Turati	н " д	KIS	Kisley	Aoundup	Weeds	TorkI Lt	IDSAL	NO	No	Pablic	Fine 150
615116	Tpe Foundarde	5 4 <sup>1</sup>	1415	Keoliy	Asundug	Weedo	2nl/Lt	105ml	No	No	Public	Overcast 22°
615116	Thalkways	¢ ç - ¢	KIS	Leoley	Roundup	Weedo	7ml1Lt	210 ml	No	No	Pyblic	<i>L</i> ( <sup>1</sup>
818116	Beflis	li, m	KIS	healey	Roumelup	Needo	Zml Lt	IUSAL	No	Yes	Animalo	Fine Nowood 79
815116	Matug	~ 4	K/S	Leoley	Haunterf	Wardes	7ml Lt	55 ml	No	Yes	Annal	Fine 23°C
17 15 1 16	Berns	î (	KIS	Lesley	Roundif	Weeds	TALLA	315m/	No	Na	Public	Unercast 15° Wind
1815116	Bernes	<i>ار</i> (د.	KIS	Lealey	houndap	Weeds.	Inlict	105ml	No	No	Public	
23/5/16	Cemetry	11 h	1-15	Lesley	Rainelup	Weeds	7ml/Lt	160ml	No	Yes	Public	Overcast 8°C Coa
216116	Tomaple Town Corder	s	K15	Lesley	Roundup	Wuels	TmA At	IIDAL	No	No	Public	Fine 12° Nout
216/16	Walkways		ITIS	Lesley	Roundup	Weedo	Toll 11	330n/	No	No	Public	Fine 12°C Nolu
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to be filled out	when weed	balling, cutting an	d stumping. kr	nen misned u napsack spravi	ng, boom si	praving and	d tank spraving	Jare				
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Rangitikei District Council Spray Diary Record Sheet - Name:													
Application Information Hand sprayer = H: Weed wand = W: Knapsack = K; Quad bike = Q; Boom spraying = B; Tank spray = T; / Method Spot spray = Si Blanket spray = B; Paste = P													
Date	Location	Job Name	Application / Method	Approved Handlier /Growsafe	Product (Trade Name)	What is Target	Mix rate: Chem/Water	Total Qty Chem	Tracking req Yes/No	Signs out / notify	Sensitive areas	Weath (Winc humi	her Comment I & direction, dity & Temp)
06/08/15	Marton Park	Boundary Spraying	K / S	Athol	Round-up	Weeds	10mls/Lt	150mls	No	Y	School & stream	Light no dry	orth-east wind, and 17d C
1817116	Margane	lea CBD Berms	KIS	Andrew	Un 490	as regiment	7m1116r.	42mls		on site		Fire/l	landy Sth Breez
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1817116	ORmage	ett Cemetry	KIS	A.	16	4CM	1. 16	28mls	61	47		U.	k is tr
2117116	Bulls	Funds Ros / to br	deKIS	A.	h	Ioltrs	1e   1e	Tomb	1.	11		Sunny	calm
2117116	B. Wa	Her Park 1	KIS	A.	1.	3Ctrs	1. 1 1.	21 mls	1.	11		16	l r
2117116	B. Wal	e Tower	KIS	A	łı.	2Ltrs	11 / 1-	14 mls	1.	-tr		1.	/r
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211716	B. Joh	nson St	KIS	A	17	3 Urs	<u> </u>	21mlj	1.	4		"	"
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## Rangitikei District Council Spray Diary Record Sheet - Name: Ben Wooldton

Rangitikei District Council Spray Diary Record Sheet - Name: Ben Hoolston												
Application Information Hand sprayer = H; Weed wand = W; Knapsack = K; Quad bike = Q; Boom spraying = B; Tank spray = T; / Method Spot spray = Si Blanket spray = B; Paste = P												
Date	Location	Job Name	Application / Method	Approved Handlier /Growsafe	Product (Trade Name)	What is Target	Mix rate: Chem/Water	Total Qty Chem	Tracking req Yes/No	Signs out / notify	Sensitive areas	Weather Comment (Wind & direction, humidity & Temp)
06/08/15	Marton Park	Boundary Spraying	K / S	Athol	Round-up	Weeds	10mls/Lt `	150mls	No	Y	Scho <b>o</b> l & stream	Light north-east wind, dry and 17d C
01/07/16	Bulls	Sect Springing	K15	Ben	alisophyte	weeds	7~1/1+	105ml	no	no	Public	Cloudy, HA! NW ISKIL
01/07/16	Marten	Bedding plant disease Drantral	K15	Ben	Taritck	Diseases	150- 300m1/1001+	40m1	Yes	Yes	kindy, stream	· Cloudy, 40, NW ISKeh
/ `` /	41	~~~~~	K/S	Ben	Seaso	beding	30m1/91+	Som	NO	Yes	kindpistreng	, cloudy, 49 NW 16 Eth
01/07/16	Bully	Beddig plant	K15	Ben	Enpris	Descases	10m1/14	80m1	no	Yes	Public	cloudy, 4°, NW ISKeh
/ <u>```/</u>	··· ·,	L,	K/S	Ben	Seasol	balding Olaris	30mV9H	25ml	no	Ves	Public	claudy, 14. NW Miskoh
01/07/16	Build	Spot spraig	1<15	Ben	Lion Alysohate	Werds	7m1/1+	105ml	no	ks	Public	Cloudy, 14°, NWBKOL
12/07/16	Marton	Bedding plant	1615	Ben	Paratek	Diseases	2m1/1+	BOMI	Yes	Yes	kindy, stream, public	SUNARY Her W 12Kph
12/07/16	1	×	k1s	Ben	Seasol	Plats	30m1/914	100 ml	NO	Yes	'''	N.
13/07/16	Bulls	Beddig plant	K/S	R.	Torrat-K Sf	Diseases	2m1/14	st6ml	Ves	Yes	Public	overeast, 13°, Alerh
/ /			16/5	Ben	Segsol	Plats	30m1/9H	25m1	No	Yes	Public	11
13/07/16	Mothered	Bedling Plant	K/S	Ba	Torotek	Diseases	2~1/1+	Ami	Yes	Ma No	Public	over ust, Be, 14kph
13/07/16	.,	N 1	14/5	Ben	Seaso	Plants	30m1/91+	7.1	RO	no	Public	L.
18/07/16	Clifton	Sped spraging	KS	Ben	Lion	Weeds	7~1/1+	21ml	no	no	watersteinen	suny, 10°, 12kgh W
18/07/16	King Sta	1	14.15	Ben	20.5	- X1	7~1/14	84.ml	~	no		Sunny, 15°, 15kph W
12/08/16	Marton	Bedding plant	KIS	Ben	Tarwhak	Disenses	2m1/H	30ml	Yes	Yes	stream, but	Overcent, 13°, 16 Kph
12/08/16	X N	N N	K1S	Sen	Seasol	Plants	30m1/914	50ml	10	Yes	<i>``\</i>	11
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to be filled out	when <b>w</b> e <mark>ed</mark>	Iballing, cutting and	d stumping, kn	apsack sprayii	n <mark>g, boo</mark> m sj	oraying an	d tank spraying					

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# Attachment 5



## Report

Subject:	Parks Upgrade Partnership Application - Mt Stewart Reserve
То:	Assets/Infrastructure Committee
From:	Athol Sanson, Parks & Reserves Team Leader Gaylene Prince, Community & Leisure Services Team Leader
Date:	7 September 2016
File:	6-RF-1-1

#### 1 Friends of Mt Stewart Application – Mt Stewart Reserve

- 1.1 An application received from the Friends of Mt Stewart (FoMS) is attached (<u>Appendix</u> <u>1</u>).
- 1.2 FoMS have requested funding from the Parks Upgrade Partnership Application for replacing the Lookout Platform on Mt Stewart Reserve.
- 1.3 This is a joint project with Taihape Rotary. The present tower was built as a community service project (supported by Taihape Rotary) in 1991. It was damaged in 2013, and Rotary undertook to again provide a project to install a replacement.
- 1.4 The Taihape Community Board supplied funding to Taihape Rotary from their small projects fund, and this funding was spent on engaging David Smart Consulting Ltd to provide the required engineer drawings and specifications for the new tower. This income/expense is not included as part of this application.
- 1.5 The total cost of this project is \$42,679.40, and the group have requested \$14,226.00.
- 1.6 There is \$26,403.22 available in the Parks Upgrade Partnership fund. Allocations have been made to Marton Saracens Cricket Club, Centennial Park, Marton – 2 x projects totalling \$17,596.79; and Anne George, Sir James Wilson Park, Marton - \$6,000.

#### 2 Staff Comment

- 2.1 Mt Stewart Reserve is a unique attraction for Taihape and the region. It is popular with locals, and the entrance point to this reserve off Gumboot Park on State Highway One makes it an ideal short walk for travellers requiring a break.
- 2.2 The reserve is a mix of newly planted vegetation and mature mixed Podocarpus forest. The trees within this reserve are made up of a number of outstanding majestic species; many of which are over 300 years old.

- 2.3 The understory plants consist of many divaricating shrub species and ferns all of which are flourishing in the reserve. The newly planted trees and shrubs on the Northern side of the reserve that was damaged by fire are establishing well and will complement the naturally occurring vegetation.
- 2.4 Being able to walk into a bush remnant that is this age and within a few minutes' walk from SH1 makes this reserve a must see in Taihape. The viewing platform rebuild will greatly enhance the visitor experience in this reserve. The view over the bush and surrounding land is a highlight.
- 2.5 As stated in the FoMS application, the group is very limited in how they can contribute in-lieu of cash to this project; while they have volunteers who would be prepared to be a part of the build, supply materials, etc, the nature of this project does not support this.
- 2.6 However considerable volunteer time has been invested on Mt Stewart over the years. One member of FoMS has kept a record of his hours of volunteering and these hours alone total 3015 over the past nine years, providing a dollar value in excess of \$65,000.
- 2.7 FoMS intend to raise the additional funding through grants and donations.
- 2.8 Both team leaders are supportive of this application.

#### 3 Recommendation

- 3.1 That the 'Parks Upgrade Partnership Application Mt Stewart Reserve' be received.
- 3.2 That funding of \$14,226.00 from the Parks Upgrade Partnership Fund be allocated to the provision of a new Lookout Platform at Mt Stewart Reserve, Taihape, as outlined in the Expression of Interest received from the Friends of Mt Stewart and subject to successfully securing an additional \$28,453.40 from the community or other non-Council sources.

Gaylene Prince Community & Leisure Services Team Leader

Athol Sanson Parks & Reserves Team Leader





# Appendix 1

## **Friends Of Mt Stewart**

C/o Matthew Thomas P. O. Box 181 TAIHAPE 4742

5th September 2016

Asset / Infrastructure Committee, Rangitikei District Council, Private Bag 1102, MARTON 4741.

Dear Committee Members,

#### Parks Upgrades Partnership Fund Expression of Interest

We enclose an application for \$14,226.00 towards the cost of replacing the Lookout Platform on Mt Stewart Reserve in Taihape.

The Viewing Platform on Mt Stewart Reserve was built in 1981 as a community service project supported by Rotary Taihape. The Platform is used by locals and visitors to Taihape. The reserve is well known for its very scenic views and educational walk through the native bush. Trees are estimated to be 500 - 800 years old.

In April 2013, a fire swept up the Northern face of the reserve, burning the majority of the native bush. Since then, Friends of Mt Stewart raised funds from RDC, Horizons and private donations to plant over 6000 native plant species to regenerate what was lost. Members of the society and community have provided their time and resources to plant and fence the reserve from stock.

For the past 9 years, Les Thurston has been recording his volunteered time, and amount and type of weeds he has been eradicating. As you can see Les has made a significant impact on the emergence of weed species growing in the reserve (please see attached). This is an ongoing project.

#### Why we need to replace the current viewing platform:

- The current platform was affected by the fire that burnt up to half of Mt Stewarts land area;
- Council have condemned the current platform due to structural weaknesses since the fire;
- Council have erected signs preventing public from using the Lookout Platform. However, unknown members of the public have been removing the signs;
- Currently people are using the lookout without the knowledge of its condemned state;
- This facility is putting public at risk on Council owned land.

#### What Friends of Mt Stewart has achieved with this project:

- With the help of RDC and Rotary. The Society has had plans of a Viewing Platform drawn up by David Smart Consulting Limited (please see attached);
- Member Don Tantrum has built a scale model of the new Viewing Platform as designed;
- Approached Brent Hamilton of Hautapu Pine to present a quote of the costs to build the Lookout Platform;
- Approached Acrow Ltd for a scaffolding quote;
- The Society is in the process of fundraising for the necessary funds.

The project is being organised in conjunction with Taihape Rotary. Volunteers and members are whiling to provide their time and donated materials to help build the new platform. Don and Viv Tantrum are well regarded timber millers, and are prepared to donate the wood materials for the project.

However, under health & safety regulation, the builder is not permitted to have unqualified persons present on the site. Nor is the builder permitted to use materials not qualified and measured to regulation. The Tantrum's kind donation of wood would need to appropriately meet G8 stress qualifications before it is treated to specification. Therefore, there is little the members of the Society can contribute. Hence, we are applying to RDC for fair consideration towards the costs of a Community Asset.

Please see the pictures attached of:

- The current Lookout Platform (without the condemned signs);
- The panoramic views from the Lookout Platform point;
- The location and educational scenic walking route to the Lookout Platform.

Ultimately, Friends of Mt Stewart, see the Reserve as a possible commercial wild life breeding facility for Kiwi and the like on State Highway 1. This would require a substantial injection of funds to predator fence the boundary and build a breeding facility where the public can experience first-hand New Zealand's protected and vulnerable wild life. We hope DOC, BNZ and any other interested parties would see Mt Stewart as a commercially viable project in the future.

If you require any further information or explanations please do not hesitate to contact me.

Thank you for your time and consideration. We look forward to your reply in due course.

Yours faithfully,

MATTHEW THOMAS Chartered Accountant FUNDRAISING ORGANISER

#### PARK UPGRADE PARTNERSHIP FUND

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2. YOUR PROJEC	Г						
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#### PARK UPGRADE PARTNERSHIP FUND

#### 3. HOW MUCH WILL YOUR PROJECT COST? Please provide all costs and all sources of income for the

#### project you are planning.

Attach additional sheets if necessary

Item		Amount
Renoval of Current Platform	(estimate)	\$ 200.00
Build new Platform	(Quote)	\$ 33 465.00
Scaffolding costs	(Quote)	\$ 8 114.40
Signage	(estimate)	\$ 400.00
Bark and Planting	(estimate)	\$ 500,00
5		\$
		\$ 
		\$
:		\$ 
Total Cost (GST inclusive /-a	eksterne)-	\$ 42 679.40

FRIENDS OF MT STEWART ARE NOT REGISTERED FOR GST 4. WHAT IS YOUR FUNDRAISING PLAN? Please provide a realistic estimate of how much funding (in cash and in kind) you will be able to contribute to this project.

The total amount of your fundraising plan must be at least two thirds of the total cost of the project. Council staff can help you to identify sources of funding for your project.

Item	Amount
Donated material	\$
Not fermitted to donate labour or materials	\$
unless they are able to be passed & certifical	\$
	\$
- This is still a possibility	\$
Cash in hand towards project	\$ 1 453.40
	\$
	\$
	\$
	\$
Other sponsorship/grants (please specify source/s below)	\$
Powerco ? il i i i i formale for	\$ 22 000 00
Pub Charity) an application	\$ 
Donations (Taihape Rotary)	\$ 4 000.00
	\$
	\$ 
	\$ 
Total funds available (GST inclusive Aexelucine Please deleterone)	\$

Amount of funding you are requesting from Rangitikei District Council:

\$ 14 226.00
#### Friends of Mt Stewart

#### Weed Control Program - Les Thurston's Statistics

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Hours carrying out weed contro	321	412	361	414	321	304	307	292	283
Weeds Sprayed & Pulled									
Old Man's Beard	10,072	6,846	2,510	1,614	669	691	795	642	511
Plum	4,595	5,409	1,509	1,224	347	274	768	579	320
Sycamore	2,251	4,681	1,725	1,223	547	405	806	428	165
Cotoniaster	126	196	149	153	80	62	76	67	53
Barberry	233	375	107	169	61	222	196	106	47
Honey Suckle	30	60	52						
Elderberry	389	412	107	105	45	46	46	38	19
lvy	277	272	168	136	290	246	194	111	54
Other Weed Species Controlled									

#### Other Weed Species Controlled

Woody Nightshade Burdock Hemlock Lilly Thistles Spindleberry Velvet Nightshade Holly Black Berry Poroporo Red Creeper Tutsan

Note: Other volunteers donate their time controlling weeds each year. There are no statistics recorded for this information.

There is also possum control undertaken. There are no statistics recorded for this information.



## Hautapu Rural Supplies Ltd

123 Hautapu Street Taihape 4720

Phone : 0-6-388 9136 Fax : 0-6-388 9230 Email : info@hautapurural.co.nz

	Quote # : 1102
Taihape Rotary Club Mt Stewart Lookout	Date : 23/06/2015 Order No : Account : 510 Reference : Sales Rep : Les Grattan Quote Expires 23/07/2015 Page No. : 1 Job Number :

Thank you for the opportunity to present the following quote. This quotation is subject to our normal Terms of Trade and is valid until the 23/07/2015

Code	Description	Quantity (e:	Rate <cl gst)="" th="" total<=""></cl>
MISC YARD	Concrete	1.00 80	0.00 800.00
MISC YARD	Concent	1.00 100	0.00 1000.00
MISC YARD	Hole Boring	1.00 30	0.00 300.00
MISC YARD	Materals	1.00 1300	0.00 13000.00
MISC YARD	Labour	1.00 1200	0.00 12000.00
MISC YARD	Bos	1.00 200	0.00 2000.00

Freight	0.00
GST Exclusive	29100.00
GST	4365.00
Rounding	0.00
GST Inclusive	33465.00

Quote



13<sup>th</sup> July 2016

Quote No.2469

**Rotary Club of Taihape** Attention: Michael Andrews Phone: 06 3880374 Email: michael@tcwhareora.org.nz

#### Re: Mt Stewart Lookout Tower

We are pleased to submit this quotation for exterior scaffold plus roof edge protection.

Price allows to erect a scaffold plus roof edge protection to the complete perimeter of the proposed new lookout tower on Mt Stewart in Taihape. Scaffold is to have a top platform roughly 150mm - 200mm below the roof line with hand rails to extend 1m above the roof line for roof edge protection also the scaffold is to have a platform at the base of the viewing platform. Price is based on all scaffold equipment being lifted up to the lookout by Helicopter.

Erection, dismantling & cartage of scaffolding		\$ 3956.00
Weekly Hire (minimum 1 week)		\$ 120.00
Weekly scaffold certification checks (per check)		\$ 80.00
Estimated Helicopter Costs (\$1450.00 per hour)		\$ 2900.00
		7056.00
	GST	1058.40
NOTE:	Intal	E 8114.40
PPICO OVOIDAIOS I UN I		Assessed and a second s

Please be advised that no job will be accepted by Acrow Ltd without the completion of the "Quotation acceptance" form attached to this quote. This quotation is valid for sixty days and is subject to the "Acrow Limited Scaffold Terms and Conditions."

Thank you for the opportunity to quote for this work. We trust this meets your requirements.

Yours faithfully

Jason Taiaroa ACROW LIMITED

> Yard and Office 23 Mihaere Drive, Palmerston North Phone 06 357 5991, Fax 06 354 7527 P O Box 7020, Palmerston North 4443















#### **GENERAL NOTES:**

1 All dimensions in mm unless noted otherwise 2. Read in conjunction with architects drawings 3. Confirm all dimensions on site before commencing fabrication. If in doubt please ask designer

#### **ABBREVIATIONS:**

MAX

MIN

Maximum

Minimum

AF	Alternate face	MS	Mild Steel
ALT	Alternate	NA	Not applicable
APPROX	Approximate	NB	Nominal bore
BTM	Bottom	NDT	Non Destructive testing
CVR	Cover	NF	Near face
CAR	Cover all round	NTS	Not to scale
C/C	Centre to centre	O/A	Overall
CHS	Circular hollow section	OD	Outside diameter
CJ	Construction Joint	PC	Precast concrete
CL. 4.	Centreline	PFC	Parallel flanged channel
COS	Check on Site	PL	Plate
CP	Centrally placed	R	Round
CRS	Centres	RC	Reinforced concrete
D	Deformed bar Grade 300	REBAR	Reinforcement
DIA	Deformed bar Grade 500	RB	Reid bar
DOS	Determine on site	RHS	Rectangular hollow section
DP	Down pipe	RL	Reduced level
DPC	Damp proof course	RSA	Rolled steel engle
EA	Equal angle	RSC	Rolled steel channel
EF	Each face	SHS	Square hollow section
EW	Each way	SJ	Saw cut joint
FF	Far face	SQ	Square
FFL	Finished floor level	S/S	Stainless steel
FL	Flat	TFB	Taper flange beam
FRR	Fire resistance rating	TFC	Taper flange channel
FW	Fillet weld	UA	Unequal angle
FWAR	Fillet weld all round	UB	Universal beam
GL	Ground level	UC	Universal column
H.D.BOLT	Holding down bolt	UNO	Unless noted otherwise
HD	Deformed bar Grade 500	VERT	Vertical
H.D.GALV	Hot dipped galvanised	WB	Welded beam
HR	Round bar Grade 500	WC	Welded column
HOR	Horizontal		
ID	Inside diameter		
IL.	Invert level		

#### PRECAST CONCRETE WORK NOTES:

- 1. Design conforms to NZS 3101 and NZS 1170
- 2. All concrete work to be carried out in accordance with NZS 3109 Specification for Concrete Construction (min strength 40MPa)

RevNo

Revision note

- 3. Reinforcing bars shall comply with AS/NZS 4671. Abbreviations where used are:
  - R = round Grade 300E steel - HR = round Grade 500F steel
- HD = deformed Grade 500F steel 4. Provide shop drawings showing but not limited to: - size and spacing of reinforcement - position and layout of lifting eyes - position and layout of weldplates and Reid Bar anchors - details of panel edges - layout of form tie holes where exposed to view - form surfaces for each finish specified
- concrete compressive strength at time of lifting 5. Provide a producer statement from a suitably qualified person for: - lifting eye layout and any additional reinforcement for
- construction and erection loading - concrete compressive strength at time of lifting 6. Typically all 150mm panels reinforced with HD12 vertically & horizontally unless noted
- otherwise. Refer drawings for spacing
- 7. Place HD16 trimmer bars around all openings in panels and around perimeter with 50 cover
- 8. All faces of precast panels cast against insitu concrete need to be scabbled

#### STRUCTURAL STEELWORK NOTES:

- 1. Design conforms to NZS 3404
- 2. Fabrication and erection in accordance
- with NZS 3404 Chapters 14 and 15 3. Material unless noted otherwise to be:
- Grade 300 UB, UC, PFC, angles and plates - Grade C350/C250 RHS, CHS complying with AS 1163 4. All bolts galvanised and complying with AS 1252.
- Category 8.8/S except bolted MEP Grade 8.8/TB
- 5. Welding to be carried out in accordance with AS 1554 All welds to be SP unless noted otherwise. Welds to be at least 5mm in size unless noted otherwise
- 6. All external steelwork to be cleaned thoroughly and coated with 150um of Zinc Arc Spray and sealed in accordance with TSZ150S AS/NZS 2312: 2002 or hot dipped galvanized. Refer to Architectural drawings for any top coats required.
- Refer to Fire Report for intumescent coatings (Refer to Architectural Specification for system).
- 7. All permanently exposed internal steelwork to be cleaned thoroughly and coated with Resene one line specification 22i 2 1 Refer to Architectural drawings for top coat colours.
- 8. All enclosed steelwork to be cleaned thoroughly and coated with 50um Resene Rust Arrest.
- 9. All welding to be carried out in accordance with AS1554.1

#### **TIMBER NOTES:**

**Read these notes in conjunction with drawings & specifications** 

- Poles H5 medium density
- 2. Framing SG8 H3 unless noted other wise.
- 3. All facteners & washers to be Grade 316 Stainless steel U.N.O.

#### **CONCRETE WORK NOTES:** 1. Design conforms to NZS 3101 2. All concrete work to be carried out in accordance with NZS 3109 Specification for Concrete Construction 3. Concrete strength at 28 days to be: - Piled foundations 30MPa - All other foundations 25MPa - Floor slabs & first floor topping slab 25MPa 4. Reinforcing bars shall comply with AS/NZS 4671. Abbreviations where used are: - R = round Grade 300F steel - D = deformed Grade 300E steel - HR = round Grade 500E steel - HD = deformed Grade 500E steel 5. Surface finishes to comply with NZS 3114 or as denoted on Architectural drawings 6. Lap lengths as follows: Diameter Grade 300 deformed Grade 500 deformed 400mm 650mm 10mm 12mm 500mm 750mm 16mm 650mm 1000mm

Checked

Signature

Date

2011111	ouunin	123011111	
25mm	1000mm	1600mm	
32mm	1200mm	2000mm	

1000----

7. Seismic Grade 500E Reinforcing Mesh ends & Japping on sides 250mm

#### **BENDING OF REINFORCEMENT:**

Bends for all bars except stirrups and ties

000----



Standard 180Ø hook Standard Hook

Steel Grade	Bar Diameter	Minimum Bend Diameter
Grade 300 / 500	6 to 20	5 Bar diameters
Glade 3007 300	25 to 40	6 Bar diameters

Bends for stirrups and ties 2

> Bend bar diameter equals that of the enclosed har but not less than the values in the table below

01-10-1	Der Dienster	Minimum Bend Diameter		
Steel Grade Bar Diamet	Bar Diameter	Plain Bars	Deformed Bars	
Grade 300 / 500	6 to 20	2 Bar Diameters	4 Bar Diameters	
Grade 300 / 500	25 to 32	3 Bar Diameters	6 Bar Diameters	

Bars partially embedded in concrete shall not be site bent unless shown on the drawings or specifically approved by the designer

2 Cover to reinforcement unless noted otherwise on drawings to be: - side cover typically 50mm cast against formwork and 75mm

- cast against earth
  - top cover typically 50mm to main reinforcment, 35mm to mesh
  - reinforcement for 100mm slabs and 40mm for 125mm slabs
- bottom cover 75mm cast against earth

						A3 Origin	al Drawings
DAVID SMART	Level 1,28 Amesbury Street   Palmerston North phone: 06 3545182   mobile: 021 854182   email: david@smartconsuting.co.nz	Structural Drawings	Mt Stewart Lookout	Designed by DLS Drawn by	Filename / Job No TLO 121214	Status Consent	Date 14.05.15
CONSULTING Civil, Fire & Structural Engineers	© Simust Consulting Ltill copyright: This drawing and its contents are owned by Simust Consulting Lta. Any reproduction in part or full is forbidden unless prior permission is given in writing	General Notes	Taihape	RAW Approved by DLS	Scale N.T.S	Revision R0	Sheet G1

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Date

## Mt Stewart Lookout Taihape

Client:

Project:

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## Taihape Rotary Club

## **Mt Stewart Lookout**

#### General

#### Sheet G1 General Notes

Sheet S1 Lookout Tower Plan Sheet S2 Elevation A Sheet S3 Elevation B Sheet S4 Elevation C Sheet S5 Details & Sections Sheet S6 Details & Sections

> Sheet S7 Details & Sections Sheet S8 Details & Sections

Structural

0 10 mm



1.

DAVID SMART

ivil, Firo & Structural Engineer

CONSULTING

Level 1,28 Amesbury Street | Palmerston North phone: 06 3545182 | mobile: 021 854182 | email: david@smartconsu ting.co nz

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A3 Original Drawing

















# Attachment 6

# Rensitikel Exposition

## REPORT

SUBJECT:	Consent Compliance – August 2016
TO:	Assets/Infrastructure Committee
FROM:	Joanna Saywell - Utilities Asset Manager
DATE:	6 September 2016
FILE:	5-EX-3

#### 1 Introduction

- 1.1 This report is a summary of Rangitikei District Council's compliance with resource consent conditions from Horizons Regional Council, for the August 2016 period. Information on compliance has been derived from our Water Outlook system, and where applicable, communications with compliance monitoring officers at Horizons.
- 1.2 Note that in 2016 compliance reports have been forwarded to Greg Bevin, Horizons Regulatory Manager, to keep Horizons informed of progress towards full compliance. Greg Bevin has requested specific progress reporting on agreed compliance actions for Hunterville and Taihape Wastewater Treatment Plants. The specific detail requested is included as an appendix to this consent compliance report.

### 2 Water Supply

2.1 Table 1 shows the compliance of each water supply scheme against consent conditions. Only those schemes for which Rangitikei District Council is the consent holder have been shown.

Scheme	Compliance August 2016	Comments	Actions
Marton	Water abstraction consents.	-	
	Compliant		

#### Table 1: Consent Compliance – Water Supply

Scheme	Compliance August 2016	Comments	Actions
	WTP discharge consent. Consent Renewal Application lodged	The volume of the combined filter backwash & alum sludge discharge to the settling ponds is used as a surrogate measure for flow discharged from the ponds as actual outflow cannot be measured. This surrogate measure has typically been higher than the consent outflow limit and this is addressed in the renewal application.	The consent to discharge from the WTP expires in November 2016. A consent renewal application was lodged on 12 August 2016. Consultant feedback indicates that the renewal application will be seeking an optimisation of the activity authorised by the existing consent, rather than a change in activity, as this has been identified as being appropriate to address environmental effects.
Taihape	Compliant	-	Horizons have accepted proposal to discharge excess water take back to Hautapu River. This currently bypasses 17- 18 L/s back into the river when required so that flow extraction limits are not exceeded.
Bulls	Compliant	-	
Mangaweka	Non-compliant	Breach of consent limit for abstraction occurred intermittently between 19 -26 August. Due to a loss of communications between the treatment plant and the intake. As a result the intake pumps did not shut down and continued to run until the operator switched the main power off. Issues have been resolved as quickly as possible.	Operations staff met with Alf Downs staff on several occasions and the issues have now been temporarily resolved. The plant has been in compliance again since 26 August. Pricing is currently taking place in order to achieve a permanent fix. Horizons were alerted to the issue and kept up to date.
Ratana	Not assessed	Abstraction rate monitoring not in place at existing bore. Consent to use new bore for production has been acquired.	Design and construction of treatment plant underway.
Erewhon Rural	Compliant	-	
Hunterville Rural	Compliant	-	

Scheme	Compliance August 2016	Comments	Actions
Omatane Rural	Non-compliant	There were issues with the equipment until 23 August 2016. As such no data was received into Water Outlook until that date.	Operations staff contacted Horizons and ensured that it was not an issue from their end. They then contacted Alf Downs. Data was restored on 23 August.

### 3 Wastewater

3.1 Compliance against consents is shown per wastewater treatment plant (WWTP) in the table below.

Scheme	Compliance August 2016	Comments	Actions
Marton	Compliant	-	
Taihape	Non- compliant	Non-compliant with respect to flow volume and rate throughout the first half of August 2016. Non-compliant with respect to DRP level in the downstream sample.	Compliance with respect to flow has been achieved from 17 August 2016 for the remainder of the month. A compliance pathway for this treatment plant has been agreed with Horizons Regulatory Manager
			Reporting requirements from this agreement are included as appendix to this report.
Bulls	Not Assessed	A consent renewal application has been lodged with Horizons, and responses have been supplied to all Horizons requests for further information	RDC is awaiting a response from Horizons on their intended approach and timeframes for processing this consent. The annual report was received from HRC and the plant was fully compliant with respect to all water quality conditions. Issues relating to flow and waveband maintenance will be addressed under the new consent, and this has been communicated to HRC.

#### Table 2: Consent Compliance – Wastewater Treatment Plants

Scheme	Compliance August 2016	Comments	Actions
Mangaweka	Compliant	-	
Hunterville	Non- compliant	Regular exceedances of the maximum daily discharge volume have been recorded in August 2016. However despite the above, ongoing RDC ecological monitoring upstream and downstream of the Wastewater treatment Plant continues to demonstrate no adverse effects.	The consent includes the provision for Horizons to approve a reduction in ecological sampling frequency when no adverse effects are identified over a 2 year period. RDC have received approval from Horizons to exercise this provision.
Ratana	Compliant	Compliant for August 2016 based on final quarterly sample taken in June 2016. End of period statistics show that numerical standards that apply to five RDC effluent sampling parameters have been achieved.	In April 2016 Horizons staff informally advised that recent monitoring of Lake Waipu showed it to be in a poor state. Accordingly, they advised they will be looking for RDC to remove the Ratana discharge from the lake when Council applies to renew the current consent which expires in 2018. No formal correspondence has been received from Horizons on this matter. The Operations Team are in the process of arranging meetings with Horizon's Consents Monitoring Officer to discuss the water quality at the outfall to the lake.

Scheme	Compliance August 2016	Comments	Actions
Koitiata	Not Assessed	No irrigation field in place.	Koitiata Wastewater Reference Group has been formed and meetings held with ultimate aim of deciding on a sustainable wastewater solution for the community. Few issues raised by residents with respect to their septic tank systems.
			A decision on the future direction of wastewater disposal will be informed by the shallow bore water tests. The testing regime is continuing as scheduled.

### 4 Recommendation

4.1 That the report 'Consent compliance – August 2016' to the Assets/Infrastructure Committee meeting on 15 September 2016 be received.

Joanna Saywell Utilities Asset Manager

# Appendix 1

### Appendix – Hunterville and Taihape WWTP Agreed Compliance Pathway Progress Reporting

#### Purpose

This appendix reports RDC's progress against the compliance pathway agreed with Horizons Regional Council for Hunterville and Taihape Wastewater Treatment Plants, and as set out in the letter delivered by Ross McNeil to Michael McCartney at the Horizons Environment Committee Meeting of 11 May 2016.

It has been agreed that monthly progress reports will continue to be provided to Greg Bevin, Horizons Regulatory Manager.

#### Progress for Reporting Period 1 August 2016 to 1 September 2016

Progress for the reporting period is set out in Table 3.

Horizons Requested Progress Reporting Categories	Hunterville Wastewater Treatment Plant	Taihape Wastewater Treatment Plant	
Actions completed in reporting period	Operation of the clarifier continues. Ongoing monitoring and collection of data.	Clarifier has been fabricated in Auckland and is being prepared for shipping.	
Planned Actions for the next reporting period Ongoing monitoring and collection of data to continue as planned.		It was reported in May that the foundations were to be constructed early/mid June. As of 1 September 2016, the contract for the foundations has been awarded and foundations will be poured by the end of next week (10 September). In order for concrete to reach adequate strength, the clarifier is not expected to be in place for another month and will not be operational until end of October.	
lssues confronted/identified	No issues to report at the present time.	The agreement with Horizons was for the clarifier to be operating June to allow intensive environmental monitoring to occur until January 2017. An assessment of the overall impact on the programme will be determined, and reported to Horizons, once the clarifier is operational.	
Timeframes for resolving issues confronted/identified	No issues to report at the present time.	A meeting has been arranged with Greg Bevin on 9 September to discuss matters.	

#### Table 3: Progress for Reporting Period 1 August 2016 to 1 September 2016

# Attachment 7

## REPORT



SUBJECT:	Marton Wastewater Treatment Plant as at 8 September 2016
TO:	Assets/Infrastructure Committee
FROM:	Joanna Saywell, Utility Asset Manager
DATE:	8 September 2016
FILE:	6-WW-1-4

#### 1 Current Status

#### 1.1 Consent Compliance

Compliance of the WWTP is still on track this past two months with ammonia levels downstream dropping well below consent limits. This is the third month since December with reasonable stream flows.

#### 1.2 Bonny Glen – Progress with Pre-treatment

Midwest Disposals Ltd (Midwest) have almost completed the duplication of their original "Geobag" system. The new system will discharge to a sealed tank before being tankered to Marton WWTP. This will avoid any recontamination with soil.

The Leachate Management Plan is being implemented. (See <u>Appendix 1</u>). This has been developed and agreed with Midwest.

Midwest report that they had a successful visit to Finland and Brussels where they met with the designers of a few treatment plants. Unfortunately there is no commercially running plant that can demonstrate the efficiency of their preferred option of treatment, but they were able to view a single cell trial plant at one landfill. They are meeting with their Board next week to decide on their preferred treatment option.

#### 1.3 Marton WWTP

In July the access track into the site and around the anaerobic pond to the inlet was re-graded. Midwest have installed three 30m<sup>3</sup> tanks on site for leachate disposal and are in the process of connecting them up to the inlet via a pump and flow meter. As at 8 September all the pipework and electrical items were installed but the electrician still needed to confirm everything was working correctly before tankers start delivering to site.

Once all connections are working Midwest will be able to dispose of leachate directly into the plant under the control of the plant operators. This will enable a small, almost continuous flow, to be discharged, removing the risks associated with shock loading.

The sucker truck drop off beside the inlet is still under design with minor improvements to the site entrance and turning area near the inlet screen.

1.4 Metal Testing

The final in stream metal testing report was sent to Horizons and they have confirmed that they accept the conclusions of the report i.e. that there are no adverse effects of heavy metals on the Tutaenui Stream resulting from the MWWTP discharge.

#### 2 Programme

The current programme is:

Proposed works	Responsibility (Cost)	Budget	Current Indicative Completion date
Work at Bonny Glen Landfill			
Pre-treatment to remove colour and suspended solids	Midwest	N/A	Completed
Duplicate "Geobag" installation with discharge to sealed tanks to avoid re-contamination with soil.	Midwest	N/A	Mid-September
Pre-treatment to reduce nitrogen to Trade Waste limits	Midwest	N/A	Midwest are now suggesting end 2017
Instigate management plan covering the operational arrangements for the ongoing acceptance of pre- treated leachate at the Marton WWTP <sup>1</sup>	Midwest /RDC	N/A	Agreed with Midwest/RDC and issued to Horizons.
Work at Marton WWTP			
Tanker disposal and turning facility	RDC	\$160,000	November 2016
Midwest to provide and pay for storage tanks for leachate	Midwest		Mid-September 2016 (Tanks and pipework installed – awaiting

<sup>&</sup>lt;sup>1</sup> As resolved and agreed at Council meeting 30 June 2016

			final confirmation of compliance by electrical contractors)
Installation of onsite tanks for septic waste	RDC	\$60,000	
Improved aeration	RDC	\$100,000	October 2016
Inlet works	RDC	\$100,000	November 2016
De-sludging of the existing anaerobic pond	RDC	\$300,000	Preferably after all landfill treatment in place or after landfill no longer discharges to plant
Up-grade existing or addition of another anaerobic pond - Design - Specification, contract - Construction	RDC	\$1,000,000	Subject to successful pre-treatment of Bonny Glen leachate (or its removal) and
Flow monitoring and control systems to tie in with new works	RDC	\$150,000	after application for consent renewal.
Final filtration systems	RDC	\$1,500,000	Final works subject to new consent application
Application for a new consent lodged	RDC	\$200,000	July 2018 (Current consent expires 31 March 2019)
Consent hearing etc.	RDC	\$300,000	September 2018

### 3 Recommendations

3.1 That the report 'Marton Wastewater Treatment Plant as at 8 September 2016' to the Assets/Infrastructure Committee meeting on 15 September 2016 be received.

Joanna S**a**ywell Utilities Asset Manager

## Appendix 1

#### Preamble

This Leachate Management Plan is for the continued acceptance of pre-treated leachate from Bonnie Glen landfill at Marton wastewater treatment plant by Rangitikei District Council

A Heads of Agreement has been drawn up between Rangitikei District Council and Midwest Disposals Ltd ("Midwest").

The object of the heads of agreement is to facilitate RDC's ongoing management and operation of the Marton Wastewater Treatment Plant ("MWWTP") in accordance with the resource consents issued by Horizons Regional Council ("Horizons"), whilst continuing to accept suitably pre-treated Bonny Glen landfill leachate at the MWWTP.

Beginning in November 2015 Midwest initiated a number of steps to reduce the impact of leachate disposal to the MWWTP:

- Over the period; December 2015 to May 2016, Midwest has reduced the amount of leachate disposed of to the MWWTP by 70%. It had previously been identified that the summer months were the most challenging period for the MWWTP to maintain compliance due to low or nonexistent in-stream flows.
- During this same period Midwest made further investment at Bonny Glen to install leachate pretreatment facilities on site. This flocculent dosing process, using Geobags, has reduced suspended solids by 90%, significantly reduced colour and odour, reduced ammonia by 15 – 30%, and COD by 20 – 30%.

Midwest have also built a pond to contain treated leachate prior to transportation to MWWTP. Midwest have also changed their method of operating so that the treated leachate is transported to Marton at a regular daily rate rather than at random times to suit landfill operations. Over January 2016, Midwest were able to cease leachate transportation altogether with the result that the Marton plant was compliant for most of the time when there was little flow in the Tutaenui Stream.

#### Programme of Works

This Management Plan sets out the work needed to achieve full removal of the leachate from the Marton wastewater treatment plant and the processes to be put in place to optimise the treatment processes at the MWWTP so that the effect of the leachate on plant compliance with the resource consent is minimised.

- 1. Work to be completed in July/August 2016:
  - 1.1. Grading of access track from the entrance to the plant around the anaerobic pond to the inlet chamber and screen area.
  - 1.2. Clearance of soil beside fence to create a base for tanks to be installed.
  - 1.3. Installation of three 30m<sup>3</sup> tanks for leachate storage with necessary pipework, valves, flow meter and pumping equipment to enable a controlled discharge to the top of the inlet chamber.

Note: The three tanks and all associated pipework and pumping equipment will be supplied and installed by Midwest Disposals Ltd and removed by them when they no longer need to dispose of leachate at the MWWTP. Any fuel for pumps will be supplied and topped up by Mid-West Disposals Ltd when delivering pre-treated leachate to the plant.

- 2. Work at MWWTP to the end of December 2016:
  - 2.1. Design and installation of a drop off point for septic tank waste with associated grit trap and flow meter.
  - 2.2. Minor improvements to road entrance to accommodate the increase in truck movements for delivery of leachate and septic waste.
  - 2.3. Widening of access road and relocation of fence as necessary.
- 3. Midwest Disposals Ltd to end December 2016:
  - 3.1. Research and inspection of alternative treatment processes including a visit to Europe by four representatives (August 2016)
  - 3.2. Confirmation of chosen treatment and commissioning of design (October 2016)
  - 3.3. Duplication of Polymer / Geobag treatment system or installation of suitable alternative pre-treatment system to maintain pre-treatment of leachate as outlined in Heads of Agreement (including replacement of Geobags and polymer as necessary) to ensure total quality of ammonia and COD sent to the plant in any day does not exceed the limits below.
  - 3.4. Installation of two new tanks at the discharge of the Geobag system so that only pretreated leachate is tankered to the MWWTP.
  - 3.5. Continue to manage landfill operations in accordance with new consent to minimise leachate production.
- 4. Midwest Disposals Ltd to end September 2017:
  - 4.1. Proceed with construction and installation of full leachate treatment facility
  - 4.2. Maintain pre-treatment system for all leachate that leaves the landfill
- 5. Midwest Disposals Ltd to end December 2017:
  - 5.1. Complete commissioning of full leachate treatment facility
  - 5.2. Obtain resource consents as necessary to enable disposal of treated leachate to stormwater or land
  - 5.3. Cease transportation of leachate to MWWTP.
  - 5.4. Remove leachate tanks and pump from MWWTP.

#### Daily Volume of Treated Leachate

The leachate produced by the landfill varies with the infiltration of rainfall, and as such a greater proportion is generated over winter. In total it is estimated, based on previous years' experience, that there will be approximately 12,500 m3 of leachate produced by the landfill annually.

The average daily volume of leachate produced by the landfill is therefore estimated to be 35m<sup>3</sup> over the full year

The daily volume of treated leachate accepted at the MWWTP shall not exceed 42m<sup>3</sup>/day ( 3 tanker loads) when there is no-flow in the Tutaenui Stream and the total rainfall in the previous 40 days is less than 30mm.

The daily volume of treated leachate accepted at the MWWTP shall not exceed 70m<sup>3</sup> (5 tanker loads) except after a period of heavy rain (see below).

The daily volume of treated leachate accepted at the MWWTP shall not exceed 110 m<sup>3</sup> (three times average and equal to 8 tanker loads) in times of heavy rain (more than 100mm over the preceding 30 days).

#### Pre-treated Leachate Quality

The total weight of ammoniacal nitrogen deposited at the MWWTP shall not exceed 150kg/day (volume of flow times concentration).

The total weight of COD deposited at the MWWTP shall not exceed 550kg/day (volume of flow times concentration).

#### Monitoring and Information Sharing

A flow meter shall be installed on the outlet from the tanks. Flow data shall be compared with certified weighbridge readings provided by Midwest on a monthly basis.

The quality of pre-treated effluent shall be checked weekly by Midwest for Ammoniacal nitrogen, suspended solids and COD. These results shall be supplied to RDC on a monthly basis. RDC may take random samples of the pre-treated leachate for verification.

- 1. RDC will:
  - 1.1. Monitor stream flows and advise Midwest Disposals Ltd when there is no flow in the stream.
  - 1.2. Manage daily leachate flow into plant as necessary to suit plant performance and stream flows.
  - 1.3. Advise Midwest of any issues, particularly low stream levels in summer or high colour or high ammonia readings in winter
  - 1.4. Take samples of plant influent to inform design of possible plant improvements required to meet future consent conditions and optimise plant settings (previously the influent was highly variable as it was influenced by the timing of leachate loading). Note that flows from the leachate tanks may be temporarily paused to allow the taking of samples of influent.
- 2. Midwest Disposals Ltd will:
  - 2.1. Retain leachate at the landfill during long dry spells.
  - 2.2. Store leachate on site over January (if it is a low rainfall month) so that there is minimal flow to MWWTP when there is low flow in the stream.
  - 2.3. Gradually increase treated leachate daily flows to MWWTP in February and subsequent months.
  - 2.4. If advised of high colour in the treated leachate by RDC, increase polymer dosing and/or replace Geobag or use alternative method of colour removal
  - 2.5. If advised of high ammonia in the treated leachate, or in the discharge from the MWWTP, by RDC, initiate or increase aeration of treated leachate prior to transportation, or use alternative method of ammonia removal.

#### Disposal of Pre-Treated Leachate at MWWTP

Disposal of pre-treated leachate at the MWWTP shall be via the three 30m<sup>3</sup> tanks located near the inlet screen (once installed). A key to the gates shall be provided to the tanker driver following a site safety induction. Any new drivers will need to complete a site induction when attending site for the first time.

Drivers will be responsible for maintaining any pumps and level floats within the tanks. Bunds shall be in place so that there is no risk that spills from fuel containers can seep into the surrounding soils or treatment ponds.

If the tanks become completely full at time of a disposal visit the tanker driver shall either wait until there is sufficient volume discharged from the tanks to enable him to empty his tanker or shall leave site and not return with a full tank for a minimum of two hours. <u>Note</u> that if the tanks are completely full and there is no problem with the pump, it is an indication that more than 110m<sup>3</sup> has been deposited at the plant and therefore there should be no more deliveries until the following day.

#### Hours of Operation

Drivers shall be responsible for site security if they attend site outside normal operating hours.

Drivers on site are to be aware of the constricted nature of the access road and the proximity of the anaerobic pond. It should be noted that there is minimal lighting at the inlet screens and therefore deliveries are limited to daylight hours.

Similarly, there is a house located near the access road and therefore there shall be no deliveries before 7.00 am Monday to Friday, or before 7.30 am on weekends, or after 7.30 pm on any day. (RDC reserve the right to limit these hours further if necessary).