



**Far North  
District Council**



**Te Kaunihera o Tai Tokerau ki te Raki**

# **AGENDA**

## **Hokianga Spraying Committee Meeting**

**Wednesday, 2 March 2022**

**Time: 2:30pm**

**Location: Virtually via Microsoft TEAMS**

### **Membership:**

Member Mike Edmonds  
Member Emma Davis  
Member Louis Toorenborg  
Member John Vujcich  
Member Alan Hessel  
Member Gail Aiken – Community Representative  
Member John Aiken – Community Representative  
Member Peter Reid – Community Representative  
Member Lorene Royal – Community Representative



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**Far North District Council**  
**Hokianga Spraying Committee Meeting**  
**will be held in the Virtually via Microsoft TEAMS on:**  
**Wednesday 2 March 2022 at 2:30pm**

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**Te Paeroa Mahi / Order of Business**

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<b>2</b>	<b>Nga Whakapāha Me Ngā Pānga Mema / Apologies and Declarations of Interest.....</b>	<b>5</b>
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**1 KARAKIA TIMATANGA – OPENING PRAYER****2 NGA WHAKAPĀHA ME NGĀ PĀNGA MEMA / APOLOGIES AND DECLARATIONS OF INTEREST**

Members need to stand aside from decision-making when a conflict arises between their role as a Member of the Committee and any private or other external interest they might have. This note is provided as a reminder to Members to review the matters on the agenda and assess and identify where they may have a pecuniary or other conflict of interest, or where there may be a perception of a conflict of interest.

If a Member feels they do have a conflict of interest, they should publicly declare that at the start of the meeting or of the relevant item of business and refrain from participating in the discussion or voting on that item. If a Member thinks they may have a conflict of interest, they can seek advice from the Chief Executive Officer or the Team Leader Democracy Support (preferably before the meeting).

It is noted that while members can seek advice the final decision as to whether a conflict exists rests with the member.

**3 NGA KAIKORERO / SPEAKERS**

## **4 CONFIRMATION OF PREVIOUS MINUTES**

### **4.1 CONFIRMATION OF PREVIOUS MINUTES**

**File Number:** A3558175

**Author:** Marlema Baker, Meetings Administrator

**Authoriser:** Aisha Huriwai, Team Leader Democracy Services

#### **PURPOSE OF THE REPORT**

The minutes are attached to allow the Hokianga Spraying Committee to confirm that the minutes are a true and correct record of the previous meeting.

#### **RECOMMENDATION**

**That the Hokianga Spraying Committee confirms the minutes of their meeting held 8 December 2022 as a true and correct record.**

#### **1) BACKGROUND**

Local Government Act 2002 Schedule 7 clause 28 states that a local authority must keep minutes of its proceedings. The minutes of these proceedings duly entered and authenticated as prescribed by a local authority are prima facie evidence of those meetings.

#### **2) DISCUSSION AND OPTIONS**

The unconfirmed minutes of the meeting are attached.

The Kaikohe-Hokianga Community Board Standing Orders Section 3.17.3 states that “no discussion may arise on the substance of the minutes at any succeeding meeting, except as to their correctness”.

#### **Reason for the recommendation**

The reason for the recommendation is to confirm the minutes as a true and correct record of the previous meeting.

#### **3) FINANCIAL IMPLICATIONS AND BUDGETARY PROVISION**

There are no financial implications or the need for budgetary provision.

#### **ATTACHMENTS**

- 1. 2021-12-08 Hokianga Spraying Committee meeting minutes - A3510894**  

**MINUTES OF FAR NORTH DISTRICT COUNCIL  
HOKIANGA SPRAYING COMMITTEE MEETING  
HELD AT THE COUNCIL CHAMBERS , MEMORIAL AVENUE , KAIKOHE  
ON WEDNESDAY, 8 DECEMBER 2021 AT 2:26 PM**

**PRESENT:** CB Member Mike Edmonds, CB Member Louis Toorenborg, CB Member John Vujcich, CB Member Alan Hessell

**IN ATTENDANCE:** Community Members Gail Aikin, John Aikin, Peter Reid

**STAFF PRESENT:** Laurel Belworthy (Community Development Advisor), Marlema Baker (Democracy Advisor)

**1 KARAKIA TIMATANGA / OPENING PRAYER**

Chairman Mike Edmonds commenced the meeting and member Alan Hessell opened with a karakia.

**2 NGĀ WHAKAPĀHA ME NGĀ PĀNGA MEMA / APOLOGIES AND DECLARATIONS OF INTEREST**

Apologies received from Member Emma Davis and Lorene Royal and a leave of absence granted.

**3 NGĀ KAIKŌRERO / SPEAKERS**

Nil

**4 CONFIRMATION OF PREVIOUS MINUTES**

**4.1 CONFIRMATION OF PREVIOUS MINUTES**

Agenda item 4.1 document number A3368243, pages 6 - 6 refers

**RESOLUTION 2021/4**

Moved: Member Mike Edmonds

Seconded: Member Louis Toorenborg

**That the Hokianga Spraying Committee confirms the minutes of their meeting held 7 July 2021 as a true and correct record.**

**CARRIED**

**5 REPORTS**

**5.1 APPOINTMENT OF PETER REID AND LORENE ROYAL TO HOKIANGA SPRAYING COMMITTEE**

Agenda item 5.1 document number A3448180, pages 10 - 12 refers

**RESOLUTION 2021/5**

Moved: Member Mike Edmonds

Seconded: Member Alan Hessell

**That the Hokianga Spraying Committee accepts the appointment of Peter Reid and Lorene Royal as community representatives to the Committee.**

**CARRIED****5.2 MAJOR ITEM NOT ON THE AGENDA – ‘NO SPRAYING’ PROPOSAL FROM THE RAWENE COMMUNITY.****RESOLUTION 2021/6**

Moved: Chairperson Mike Edmonds

Seconded: Member Louis Toorenburg

**That the Hokianga Spraying Committee:**

- a) resolves to consider the item not on the agenda ‘No Spraying’ Proposal from the Community.
- b) notes the item was not on the agenda because the original request was not forwarded to Democracy Services for inclusion in the agenda.
- c) the report cannot be delayed because this is a matter of importance to this community.

**CARRIED****5.3 ‘NO SPRAYING’ PROPOSAL FROM THE RAWENE COMMUNITY****RESOLUTION 2021/7**

Moved: Chairperson Mike Edmonds

Seconded: Member Louis Toorenburg

**That the Hokianga Spraying Committee resolves to ask the Chief Executive “it appears the Contractor has stopped spraying, we like that”. What is the contractor’s current practice regarding roadside maintenance in Rawene****CARRIED****5.4 RESEARCH PROPOSAL ON NON TOXIC ALTERNATIVES TO TOXIC SPRAYING IN RAWENE.****RESOLUTION 2021/8**

Moved: CB Member Mike Edmonds

Seconded: CB Member John Vujcich

**That the Hokianga Spraying Committee thinks that a formal research project to evaluate options to the current spray regime near Rawene is a good idea and will pursue it.****CARRIED****6 KARAKIA WHAKAMUTUNGA / CLOSING PRAYER**

Member Alan Hessel closed the meeting with a karakia.

**7 TE KAPINGA HUI / MEETING CLOSE****The meeting closed at 3:49pm.**



**The minutes of this meeting were confirmed at the Hokianga Spraying Committee Meeting held on .**

.....  
**CHAIRPERSON**

## 5 REPORTS

### 5.1 HOKIANGA SPRAYING COMMITTEE ACTION SHEET UPDATE MARCH 2022

**File Number:** A3601015

**Author:** Marlema Baker, Meetings Administrator

**Authoriser:** Aisha Huriwai, Team Leader Democracy Services

#### TAKE PŪRONGO / PURPOSE OF THE REPORT

To provide the Kaikohe-Hokianga Community Board with an overview of outstanding decisions from 1 January 2020.

#### WHAKARĀPOOTO MATUA / EXECUTIVE SUMMARY

- Council staff have reintroduced action sheets as a mechanism to communicate progress against decisions/resolutions and confirm when decisions have been implemented.
- Action sheets are also in place for Council, Committees and Community Boards.

#### TŪTOHUNGA / RECOMMENDATION

**That the Hokianga Spraying Committee receive the report Hokianga Spraying Committee Action Sheet Update March 2022.**

#### TĀHUHU KŌRERO / BACKGROUND

The Democracy Services Team have been working on a solution to ensure that elected members can receive regular updates on progress against decisions made at meetings, in alignment with a Chief Executive Officer key performance indicator.

Action sheets have been designed as a way to close the loop and communicate with elected members on the decisions made by way of resolution at formal meetings.

Action sheets are not intended to be public information but will provide updates to elected members, who, when appropriate can report back to their communities and constituents.

#### MATAPAKI ME NGĀ KŌWHIRINGA / DISCUSSION AND NEXT STEPS








The outstanding tasks are multi-facet projects that take longer to fully complete.

The Democracy Services staff are working with staff to ensure that the project completion times are updated so that action sheets provided to members differentiate between work outstanding and work in progress.

#### PĀNGA PŪTEA ME NGĀ WĀHANGA TAHUA / FINANCIAL IMPLICATIONS AND BUDGETARY PROVISION

There are no financial implications or need for budgetary provision in receiving this report.

#### ĀPITIHINGA / ATTACHMENTS

1. Hokianga Spraying Committee Action Sheet March 2022 - A3600986 [↓](#) 
2. Email - Herbicide Trials Report from RSL - A3600995 [↓](#) 
3. Email - Rawene Cemetery - Use of Glyphosate - A3600996 [↓](#) 
4. Fatty Acid Trial Report - A3600998 [↓](#) 
5. AUT Herbicide Trial Report - A3600999 [↓](#) 
6. Green Man Biohazard Label - A3601001 [↓](#) 
7. Green Man GKC Info Sheet - A3601004 [↓](#) 

OUTSTANDING ACTIONS REPORT			
Division: Committee: Officer:		Hokianga Spraying Committee	
		Printed: Monday, 21 February 2022 3:41:10 pm Date From: 1/01/2021 Date To: 21/02/2022	
Meeting	Title	Resolution	Notes
Hokianga Spraying Committee 8/12/2021	No Spraying - Proposal from the Community	<b>RESOLUTION 2021/7</b>  Moved: Chairperson Mike Edmonds Seconded: Member Louis Toorenburg  <b>That the Hokianga Spraying Committee resolves to ask the Chief Executive "it appears the Contractor has stopped spraying, we like that". What is the contractor's current practice regarding roadside maintenance in Rawene</b>  <b>CARRIED</b>	<b>10 Feb 2022 10:38am Baker, Marlema - Reallocation</b> Action reassigned to Wood, Melissa by Baker, Marlema - Reallocating to you for an update.  <b>16 Feb 2022 4:35pm Wood, Melissa - Target Date Revision</b> Target date changed by Wood, Melissa from 22 December 2021 to 28 February 2022 - Emailed Glenn & Jeff requesting response.
Hokianga Spraying Committee 8/12/2021	Research Proposal on Non Toxic alternatives to Toxic Spraying in Rawene.	<b>RESOLUTION 2021/8</b>  Moved: CB Member Mike Edmonds Seconded: CB Member John Vujcich  <b>That the Hokianga Spraying Committee thinks that a formal research project to evaluate options to the current spray regime near Rawene is a good idea and will pursue it.</b>  <b>CARRIED</b>	<b>10 Feb 2022 10:29am Baker, Marlema - Reallocation</b> Action reassigned to Wood, Melissa by Baker, Marlema - Reallocating this item so that an update can be added. Thank you.  <b>16 Feb 2022 4:36pm Wood, Melissa - Target Date Revision</b> Target date changed by Wood, Melissa from 22 December 2021 to 28 February 2022 - Emailed Glenn & Jeff requesting response.

**From:** [Mike Edmonds](#)  
**To:** [Marlema Baker](#); [Alan Hessel](#); [Louis Toorenburg](#); [Emma Davis](#)  
**Subject:** Fw: Herbicide Trial Reports from RSL  
**Date:** Thursday, 20 January 2022 3:53:38 pm  
**Attachments:** [220112 AUT Herbicide Trial Report.pdf](#)  
[image004.png](#)  
[160315dm-Fatty Acid Trial Report.docx](#)  
[image003.png](#)

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The council (using RSL) will shortly spray the Rawene Cemetery with RoundUp. I asked Nina whether RSL (not the ones doing the roads) would be open to an alternative. They provided us with this report, and an analysis (which I will send in the next email)

The cemetery is sprayed every month or two and, even if we don't get back to her in time for this month, we have an opportunity to influence it from here on.

On the committee proceedings: the CE's office has not replied to our question (as yet) and there is no business for Feb. Would you like to delay the meeting till March and continue two monthly from there?

Marlema, can you please forward this to the community members of the committee. I don't have their email addresses on the council system. Thanks.

**Mike Edmonds****Chairperson**

Kaikohe-Hokianga Community Board, Kaikohe Subdivision  
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**From:** Nina Gobie <[Nina.Gobie@fndc.govt.nz](mailto:Nina.Gobie@fndc.govt.nz)>  
**Sent:** 18 January 2022 16:38  
**To:** Mike Edmonds <[Mike.Edmonds@fndc.govt.nz](mailto:Mike.Edmonds@fndc.govt.nz)>  
**Cc:** Marlema Baker <[Marlema.Baker@fndc.govt.nz](mailto:Marlema.Baker@fndc.govt.nz)>  
**Subject:** Herbicide Trial Reports from RSL

Hi Mike

As discussed, please find attached the reports provided by RSL - some very useful information. Please note this information was provided by RSL and approved me giving you a copy.

Mauri ora  
Nina

**Nina Gobie**

Team Leader - Facilities Operations



Infrastructure & Asset Management, Far North District Council | **24-hour Contact Centre** 0800 920 029

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Memorial Avenue, Private Bag 752, Kaikohe 0440, New Zealand

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**From:** [Mike Edmonds](#)  
**To:** [Alan Hessel](#); [Louis Toorenburg](#); [Emma Davis](#); [Marlema Baker](#)  
**Subject:** Fw: Rawene Cemetery - use of glyphosate  
**Date:** Thursday, 20 January 2022 3:54:20 pm  
**Attachments:** [image002.png](#)  
[image003.png](#)  
[Green Man GKC info sheet.pdf](#)  
[Green Man BioHerbicide label.JPG](#)

As referred to in the previous email. Marlema, can you forward this, too?

Thanks



**Mike Edmonds**

**Chairperson**

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**From:** Nina Gobie <[Nina.Gobie@fndc.govt.nz](mailto:Nina.Gobie@fndc.govt.nz)>  
**Sent:** 14 January 2022 16:16  
**To:** Mike Edmonds <[Mike.Edmonds@fndc.govt.nz](mailto:Mike.Edmonds@fndc.govt.nz)>  
**Subject:** Rawene Cemetery - use of glyphosate

Kia ora Mike

RSL are contracted to spray in and around Rawene (excluding the Roding areas) and if moving away from glyphosate and using one of the many bio spray products it is expected an increase will be needed to the spraying frequency which would at a minimum, double what is currently specified in the contract. As such, any changes will as you can imagine result in increased costs esp. to product, labour and travel.

I have attached some reading material sent from RSL on the proposed alternative RSL would consider using, i.e.: Green Man Bio-herbicide.

Below is also a table highlighting the differences and costs associated with glyphosate vs. bio spray product (mainly focused on the Rawene Cemetery):

GLYPHOSATE	BIO SPRAY PRODUCTS	MANUAL LABOUR
Can be sprayed on wet grass, before a light shower and on dull days etc	Must be sprayed on dry grass and be exposed to several hours of sunlight with the recommended spraying time being between 10am and 3pm	Not spraying, it is estimated it would take an extra man 2 days per month with a weed eater (and vehicle) at a cost of \$800 per month. This could still result in an

		unsatisfactory result to areas such as the gravel carparks and the top of graves particularly older ones with cracked concrete caps etc.
Currently sprayed every 12 weeks	<p>Recommend at a minimum using every 6 weeks to try and replicate the die back that is currently achieved using glyphosate</p> <p>Also recommend documenting results to ensure it is satisfactory before committing to an alternative product e.g.: photograph area each week after spraying to monitor progress, time frame and results.</p>	
Rawene Cemetery requires approximately 150ltr of mixed spray which contains 1.125ltr of glyphosate	150 litres of mixed spray (bio spray and connector) requires 6 litres of product cost approx. \$210	
To do all of Rawene as per the RSL contract including the Rawene Cemetery, currently using approx. 500ltr of mixed product which contains 3.75ltr of glyphosate (cost less than \$50) - 20 litre spray cost is approx. \$230	Cost to make 500ltr of mixed spray \$700 20 litre spray cost is \$700 + freight	
Usage rate 0.0075% Connector penetrant – not required in most conditions	Usage rate is between 2% and 4% RSL recommend 4% Requires a 'connector penetrant'	
Assumption: No changes to	Assumptions: No changes to product	Assumptions: RSL have staff and

product price and product easily accessible	prices and product easily accessible No additional weed eating required	machinery available to do this work
Consequences: Local opposition Concerns about the impact to the environment PPE required	Consequences: Increased spraying frequency required Increased costs as product and connector required PPE recommendations when handling and using product exceed that of Glyphosate – burns skin on contact either direct or spray drift Increased wear on machinery – very hard on seals in pumps and knapsacks.	Consequences: Not as effective as weed eating. Cannot take the place of spraying in many areas such as on top of graves (particularly the old broken concrete caps etc) and also gravel driveways etc. Risk damage to private headstones, ornaments and floral arrangements. This has to be costed out as another option.
Additional comments: Existing knowledge of the product and cost involved. The location and use of the cemetery means it potentially has very little impact of the environment.	Additional comments: Christchurch - switched from Glyphosate to a Bio product and doubled the number of operators out spraying from 4 to 8 people. Council were not happy with the results so the team was expanded to a total of 12 staff spraying. Still not happy with the results mainly in part to the weeds often do not die / shrivel up and dry out as is seen when using Glyphosate. When using other products, requires higher dosages and frequency - it is still unknown what the long term impact may be to the environment	Additional comments:
TOTAL MONTHLY COST APPROX.  Covered under	TOTAL MONTHLY COST APPROX.  Cost an additional \$660	TOTAL MONTHLY COST APPROX.  Unsuitable as a total



current contracted price	min to cover extra machinery, staff and chemical to switch all of Rawene.  Or an additional \$300 per month approx. for the Rawene Cemetery.	replacement for Glyphosate
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If glyphosate is to be discontinued at Rawene Cemetery other options to consider may also include:

- Do nothing – this is not an option for an active cemetery and is also not acceptable as there is a Veterans section that must be kept to a particular standard.
- Establish a Cemetery Committee where the committee are responsible for the cemetery operations e.g.: administration and burials as well as maintenance e.g.: grounds care and graves etc.

Another point is that glyphosate is also used at the Kohukohu Cemetery – alternative options would also need to be considered here.

I am also aware RSL has done quite a bit of research in this space (glyphosate vs. bio-spray alternatives). Findings to date highlight the ineffective use of bio-sprays and if used, would result in the need to increase the frequency of service require a change to specifications / levels of service e.g.: some hardy weeds would need to be acceptable, some may not be able to be controlled, edging and hand weeding may be required – all requiring extra funding being approved.

Please let me know if you require any further information.

Mauri ora  
Nina



**Nina Gobie**

**Team Leader - Facilities Operations**

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## Fatty Acid Trial - Final Results

Tauranga City Council

March 2016



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## 1. Introduction

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A weed is categorised as any plant [useful or not] growing in the wrong place.

In order to keep our walkway surfaces weed free we need to remove these unwanted plants.

Some methods are:-

- Hand weeding
- Steam
- Chemical control

Hand weeding of walkways would be impractical and incredibly expensive.

Steam has advantages and disadvantages which could be further investigated.

This leaves chemical control which this trial will address.



## 2. Methodology

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Four tracks have been chosen for this trial.

Two are in the Judea network and one of these will be sprayed with a product called Organic weed free made up of pine oil and fatty acid. The other track will act as a control and will be sprayed with Glyphosate 360 as per our usual regime.

The same trial will be carried out at Topaz in Papamoa with the waterway acting as a buffer between the control and the trial areas.





Each track will be photographed and observations recorded before and after each application.

### Tracks

- Judea trial track, from the bottom of the Kingswood Road steps to the pedestrian bridge
- Judea control track, from the bottom of Novella, around Waikareao Estuary, to the beginning of long boardwalk
- Papamoa trial track, west side of Topaz stormwater drainage
- Papamoa control track, east side of Topaz storm water drainage



### 3. Table of applications

JUDEA	
ORGANIC WEED FREE	GLYPHOSATE 360
<p><b>Sprayed 9/10/15</b> - 10am cloudy 15deg. 1-15 mix = 30 litres water. 2 Litres concentrate</p>  <p><b>Inspection 12/10/15</b> Very little burn off. Some partial burning on clover.</p> 	<p><b>Sprayed 9/10/15</b> 10am cloudy 15deg. 1-100 mix = 30 litres water. 300ml concentrate</p> <p><b>Inspection 17/10/15</b> 70 % burn off after 1 week</p> 
<p><b>Sprayed 15/10/15</b> - 7.30 am fine 15deg. 1-10 mix = 50 litres water 5 Litres concentrate</p> <p><b>Inspection 17/10/15</b> - 80 % burn off</p> 	
<p><b>Sprayed 2/11/15</b> - 7.30am sunny 15deg. 1-10 mix = 40 litres water. 4 litres concentrate</p>	



<p><b>Inspection 4/11/15</b> Still not 100% burn off. Only partial clover burning.</p> 	<p><b>Inspection 4/11/15</b> Small amount of new growth. No clover burn off.</p> 
<p><b>Sprayed 16/11/15</b> 3.5 litres concentrate. Big weeds growing back</p> 	<p><b>Inspection 16/11/15</b> Some regrowth after 6 weeks. No clover killed.</p> 
<p><b>Sprayed 30/11/15</b> 40 litres water. 4 litres concentrate.</p> 	<p><b>Inspection 2/12/15</b> Needs re-spray. 8 weeks since last spray.</p> 



**Inspection 2/12/15**

Very patchy burn, some re-growth

**Sprayed 9/12/15**

40 litres water. 4 litres concentrate

**Inspection 11/12/15**

Burn off but not the whole plant has died. Re-growth starting to slowly show

**Sprayed 20/1/16**

40 litres water. 4 litres concentrate

**Inspection 22/1/16**

Burn off but not the whole plant has died. Re-growth starting to show

**Sprayed 10/2/16**

40 litres water. 4 litres concentrate

**Sprayed 9/12/15**

30 litres water to 300ml Glyphosate + 30ml Versatill for Clover removal

**Inspection 10/1/16**

Good kill on all weeds but encroachment starting to be seen with current weather and grass growth

**Sprayed 20/1/16**

30 litres water to 300 ml Glyphosate

**Inspection 25/2/16**

Good kill on all weeds





**Inspection 12/2/16**

Again just burn off with green tinge still apparent.  
Edges are encroaching and taking over edge of track

**Sprayed 23/2/16**

40 litres water. 4 litres concentrate

**Inspection 25/2/16**

Edge encroachment now very noticeable and  
aggregate edge of track has been lost







Total number of sprays for Judea = 9

Total Litres Organic Weed free concentrate used =  
29












Total number of Glyphosate sprays for Judea =3

Total Litres of Glyphosate concentrate used =  
900mls







PAPAMOA	
ORGANIC WEED FREE	GLYPHOSATE 360
<p><b>Sprayed</b> 9/10/15 11.45am fine 17deg. 1-15 mix = 30 litres water 2 litres concentrate</p>  <p><b>Inspection</b> 12/10/15 Not much burn off. Needs another application</p> 	<p><b>Sprayed</b> 2/11/15 10am sunny 17 deg. 1-100 mix = 20 litres water. 200ml concentrate</p> 
<p><b>Sprayed</b> 15/10/15 9 am fine 17 deg. 1-10 mix = 30 litres water. 3 litres concentrate</p> <p><b>Inspection</b> 17/10/15</p>  <p>80% burn off.</p>	




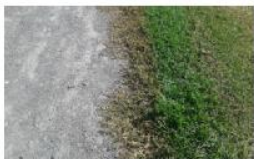


<p><b>Sprayed 2/11/15</b> 9.15 am sunny 17deg. 1-10 mix =30 litres water. 3 litres concentrate</p>  <p><b>Inspection 5/11/15</b></p>   <p>80% burn off. Some new growth showing.</p>	<p><b>Inspection 16/11/15</b> All weeds dying except clover</p>  
<p><b>Sprayed 16/11/15</b> 30 litres water. 3 litres concentrate</p>   <p><b>Inspection 23/11/15</b> Good initial burn but green tinge still there</p> 	
<p><b>Sprayed 30/11/15</b> 30 litres water. 3 litres concentrate</p>  	<p><b>Inspection 12/12/15</b> Nearly ready for re-spray after 6 weeks</p> 



<p><b>Inspection 2/12/15</b> Good initial burn but signs of re-growth</p> 	
<p><b>Sprayed 9/12/15</b> 30 litres water. 3 litres concentrate</p> 	<p><b>Sprayed 18/12/15</b> 20 litres water. 200ml Glyphosate and 20ml Versatill</p> 
<p><b>Inspection 11/12/15</b> Burn off again but lots of green tinge under lying the plant</p> 	<p><b>Inspection 3/1/16</b> Good kill on all weeds including Clover</p> 
<p><b>Sprayed 20/1/16</b> 30 litres water. 3 litres concentrate</p> 	<p><b>Sprayed 20/1/16</b> 20 litres water. 200ml Glyphosate No photos for this</p> <p><b>Sprayed 23/2/16</b> 20 litres water. 200ml Glyphosate</p> 
<p><b>Inspection 22/1/16</b> A good burn off seen but once again not the whole plant has died. Encroachment now on the edges of track</p> 	<p><b>Inspection 6/3/16</b> Good kill on encroaching weeds</p> 



<p><b>Sprayed 10/2/16</b> 30 litres water. 3 litres concentrate</p>  <p><b>Inspection 12/2/16</b> Partial burn only, a lot of encroachment into track surface now being seen</p>  <p><b>Sprayed 23/2/16</b></p>  <p><b>Inspection 25/2/16</b> Partial burn only, kikuyu runners are spreading 2 foot into track</p>  <p>Total number of sprays for Topaz = 9 Total Litres Organic Weed free concentrate used = 23 litres</p>	<p>Total number of sprays for Topaz = 4 Total Litres Glyphosate concentrate used = 800ml</p>
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#### Total concentrates used up to 23/2/16:

- 52 Litres Organic Weed free
- 1.7 Litres Glyphosate 360



#### 4. Costs

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\$30 per litre of Organic weed free x 52 Litres used for trial      = \$1,560 + gst

\$5 per litre of Glyphosate x 1.7 Litres used for trial      = \$8.50 + gst

The following costs are guesstimated to include the whole tracks and walkways contract network

The full area of track network to spray was based on 65,000 lineal metres (65 kilometres)  
Following figures are based off needing 2.9 L organic weed free to spray one km of track. Glyphosate is 240ml per km of track sprayed

Based on cost of Organic weed free product per Litre, to apply to 65km of track network it would cost \$5,655 + gst per application for 188.5 Litres required.

Glyphosate in comparison would cost \$97.50 + gst for 15.6 Litres of product to spray the whole track network once.

If we were to work off 12 applications of Organic weed free (guesstimate) being required over a year to meet track specifications it would cost \$39,585 + gst for the product compared to 5 applications of Glyphosate being required over a year (guesstimate) costing \$487.50 + gst. This would be an extra \$39,097.50 + gst to spend on product annually.

Cost to apply Organic weed free (not including product cost) would be based off the Judea and Topaz trial areas costing \$150.00 per application to do which includes all labour and vehicle costs. This area was 1 km of track so to do 65 km to cover the whole network would cost \$9,750 + gst.

With 8 extra applications required compared to Glyphosate annually this would mean an extra \$78,000 + gst would be spent over a year to carry out the extra sprays required to keep the tracks in specification.

\$78,000 for 8 extra spray applications + \$39,585 + gst for Organic weed free product would cost Council an extra \$117,585 + gst per year to use Organic weed free instead of Glyphosate on the tracks network.





## 5. Conclusion and Recommendation

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Organic weed free is a desiccant which means it only burns the foliage it has direct contact with. From start to finish of this trial this is exactly what RS has seen and observed from this product with a burnt look showing up within days after spraying but then also an under lying green tinge in mature plants to show the plant has not died. This is why the label recommendation is to spray twice within a week to try and burn plants enough that they will be burnt to the roots and die. What RS found was that despite the two applications in a week we still only had about an 80% kill with mature plants tending to slowly recover. Summer grasses like kikuyu also had more chance of surviving due to their strong root zones and as we went further through the summer this became more evident particularly at Topaz reserve.

Comparing this with Glyphosate, RS had a pretty much total kill after only one application with weed control being seen for 5 to 6 weeks plus through this period. The only weeds not being completely removed were Clover and Creeping Mallow. Versatill was applied once during this period to remove the Clover, the Creeping Mallow was only checked by the Glyphosate so was hand weeded as and where needed.

With the weather and in particular the temperature being quite a big factor in the Organic weed free products performance it was interesting that even through January and February RS didn't get a total kill with it despite hot temperatures. This made us think that the product more than likely would have no effect at all through the winter with cooler temperatures.

The other problem RS could see was that it was already hard enough for the team to get around the 65 km of track network spraying in a timely manner (normally takes 3 to 4 weeks depending on wind and rain during that time), but to then have to do a second application within a week of the first application with the Organic weed free product would create a real problem in trying to keep the tracks in specification. This would be particularly hard during Spring and Autumn when weed and grass growth was so active.

Based on our findings we would recommend not using Organic weed free as a replacement to Glyphosate unless extra funding of around \$117,585 + gst was made available to purchase and apply the product, and that there was a change in specification so that weeds in tracks were more acceptable. This would have to include an understanding that some hardy weeds and mature plants may not be able to be controlled at all which could create a problem in the future if they were to spread through the tracks network. Edging and hand weeding would become quite a large requirement which would be a further cost.

Enquires also need to be made regarding the active ingredients for this product as the supplier told RS they were not going to continue to sell the Organic weed free with Pine Oil going forward, it would just be made up of Fatty acid. No reason was given or known when asked but there has been some talk around the extraction of Pine oil for products like this not being very environmentally friendly.



### Completion photos and work to bring tracks back to specification Topaz reserve:



The above photos show the work carried out at Topaz Reserve to bring the track back to specification through March. This is predominantly Kikuyu grass growth around the track that has caused the problem. With its ability through the Summer to grow sideways and encroach into areas it has won the battle over the Organic weed free applications and encroached over the aggregate edge by 600mm each side in some spots. A Glyphosphate application followed up with mechanical edging and hand mowing once the grass and weed cover was killed was carried out.



In contrast, the above photo is the most recent photo of the Glyphosate controlled track at Topaz reserve which is showing little encroachment and no weeds on the track.





# AUT HERBICIDES TRIAL

JANUARY 2022

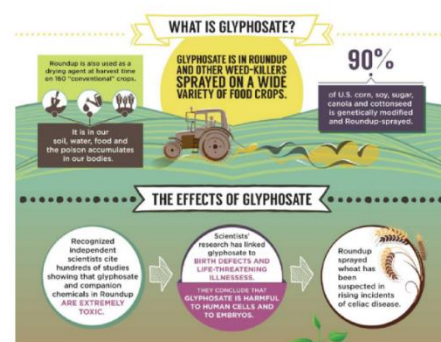


## TRIAL OVERVIEW

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### CONTEXT

Glyphosate is the most widely used agrichemical in New Zealand and the rest of the world. There is currently a lot of discussion around the ethics of its use from both an environmental and health standpoint. Being in the business of green space management, we believe it is our responsibility to be driving sustainable innovation in the weed management space for the health of our ecosystems, our communities, and our staff.



### TRIAL OBJECTIVE

In Christchurch, the council have decided that glyphosate use in public spaces has will be replaced by pine oil derived fatty acids. There have been a few learnings from this transition that we want to factor in as we look to offer our clients other alternatives to glyphosate. Our objective is to observe the effect of various weed control techniques by addressing soil health and efficacy. By doing so we can equip ourselves with the right information and evidence on:

- **SOIL HEALTH:** this is a big one for us as a company. Soil is one the earth's most important natural resources. There is often the perception that switching from synthetic to natural alternatives is better for the health of our communities, our ecosystems, and our staff. We want to be certain that the solutions we advocate for are not harming our soils and the micro-organisms within it.
- **EFFICACY:** weeds can stunt the growth of neighboring plants and in NZ, we are seeing exotic weeds threatening our native species. Without effective control, can cause an array of problems in green spaces, therefore we need our weed management techniques to be highly effective.
- **PUBLIC PERCEPTION AND EDUCATION:** switching from glyphosate means there will be some changes in the aesthetic of our green spaces – having our facts straight and being confident to deliver the right messaging to engage our communities will be crucial during this transition.



## TRIAL OVERVIEW

3

### DESCRIPTION

#### Trial Location & Plot

The trial will be held at a low-profile area at AUT's north campus. This area is a steep bank that is populated by various weed species. This trial plot will be divided into 12-15 replicate plots along the bank which will be marked by builders pegs.

We identified 3 plots (plots A, B and C) that were suitable for the trial. We divided each plot up into 6 equally sized cells (1-6). One cell for each formulation, therefore a total of 18 cells across the 3 plots.

#### Soil Samples

Our agronomist, Blair will be organising soil microbiology tests. Soil samples will be taken before and after the trial to observe any changes in soil activity from each weed control technique. These will cost ~\$100 each so approx. \$500-600.

A baseline soil sample was organised by Blair from SSDM.

#### Applications & Observations

Applications will be made on the same day. Spray signs have been made to inform any students of what is being applied. Jonathan will be doing the applications (equipped with all necessary training & PPE) and will use iAuditor to record weed ID weather, humidity, temperature, time of day and other factors that may effect the outcome of the trial. Observations will be made weekly, photos will be taken and uploaded via iAuditor and any necessary commentary will be made.

### WEED CONTROL FORMULATIONS:

1. **GLYPHOSATE + WATER:** this will be used as our benchmark for efficacy and impact on soil health.
2. **WEEDX + WATER:** bio-herbicide that uses a combination of acetic acid and citric acid. Non-systemic and non-selective. This product prevents normal photosynthesis of the target plant by removing the protective layer of the leaf which is essential in retaining water. Without water the plant cannot obtain nutrients or continue its life cycle.
3. **WEEDX + MANUKA HYDROSOL:** Manuka possesses a herbicidal active ingredient called  $\beta$ -triketones. Manuka hydrosol is a waste product from the distillation of Manuka oil that possesses these  $\beta$ -triketones in small quantities therefore. These  $\beta$ -triketones can break down the chlorophyll in plants which inhibits them from absorbing sunlight. For this to happen, it needs to be able to penetrate the leaf's waxy layer and into the stems. Our thinking being, if we combine WeedX which works by breaking down the waxy layer in the plant then we may see the synergy needed for it to be effective.
4. **LOCAL SAFE WEED TERMINATOR + WATER:** The active ingredient is the naturally occurring compound nonanoic acid found in many plants including geraniums and pelargonium oil. Also contains limonene (10-30%) a naturally occurring oil derived from citrus fruit peel. Local Safe works very much the same as WeedX in which it breaks down the waxy layer and dehydrates the plant as it cannot retain water.
5. **LOCAL SAFE + MANUKA HYDROSOL**
6. **NO SPRAY CONTROL**



## PROGRESS TO DATE

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**Update:** The trial started mid-July, weekly observations and photos have been taken. The last observation before being interrupted by the lockdown, was on the 11<sup>th</sup> of August. It is clear even from these early stages that none of the products are systemic upon their first application, therefore interval timing and re-application are important considerations.

1. Glyphosate & Water: Slow moving effects, no visible effects after 1 week, completely knocked-down by week 2. Still completely knocked-down by week 4.
2. WeedX + Water: Potent vinegar smell that may upset some people in public spaces. Requires a very high concentration (1:2 for grass and general weeds) and retails at \$90 + shipping for a 20L containers making it an expensive option. Very fast moving results with obvious knock down within 24 hours. Kikuyu had noticeable re-growth at the 3 week mark but the other weeds stayed knocked-down up to the 4 week mark.
3. WeedX + Manuka Hydrosol: Hydrosol got rid of the potent vinegar smell. Hydrosol is a waste product and if we were purchasing in bulk than we could get it for very cheap but it is still more expensive than water – price to be confirmed. Very similar results to the WeedX + Water solution on kikuyu but prolonged re-growth on the other weeds.
4. Local Safe Weed Terminator + Water: No offensive smell. Requires a concentration of 5:100 with the 5L container costing \$155 making it 33% cheaper per diluted L than WeedX. Very fast knock-down (visible within 24 hours) the kikuyu stayed knock down at the 3 week mark but visible re-growth was coming through at week 4, all other weeds were mostly knocked-down at the 4 week mark.
5. Local Safe Weed Terminator + Manuka Hydrosol: The kikuyu had visibly less regrowth at the 4 week mark compared to the water dilution.





PLOT A - KAIKUYU

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PLOT B – MIXED WEEDS



LOCKDOWN



PLOT C – MIXED WEEDS

LOCKDOWN

Pre Application		Day 1		Day 5		Day 20		Day 27		Day 100	
Glyph	WeedX	Glyph	WeedX	Glyph	WeedX	Glyph	WeedX	Glyph	WeedX	Glyph	WeedX
WeedX + Hydrosol	Local Safe	WeedX + Hydrosol	Local Safe	WeedX + Hydrosol	Local Safe	WeedX + Hydrosol	Local Safe	WeedX + Hydrosol	Local Safe	WeedX + Hydrosol	Local Safe
Local Safe + Hydrosol	No Spray	Local Safe + Hydrosol	No Spray	Local Safe + Hydrosol	No Spray	Local Safe + Hydrosol	No Spray	Local Safe + Hydrosol	No Spray	Local Safe + Hydrosol	No Spray

## APPLICATION – WEATHER CONDITIONS

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Conditions at time of application – no obvious impacts to the trial. There was also no rain following the application.





0800 35 35 85

**GREEN KIWI CLEAN**

greenkiwiclean.co.nz

# **Green Man BioHerbicide**

## **Natural Concentrated Weedkiller**

**Green Man BioHerbicide is a Canola oil based non-selective herbicide which contains fatty acids for a superior long term knockdown of a broad range of weeds such as dock, ragwort and other established grasses. Green Man is highly concentrated (2L makes up to 100L of spray), low hazard, biodegradable and non DG - so safer and better value than most other similar products.**

Directions: Dilute Green Man at 20ml to 40ml per litre (2% to 4%). Spray liberally onto leaf surfaces during the heat of the day. Avoid applying before rain or onto wet foliage. and do not use with alkaline materials. A water pH of <7 is best. Test on a small area first, & always wear PPE.

Warning: CORROSIVE! Keep Away From Children, Read SDS Before Using  
Eye & Skin Irritant - Avoid Eye or Skin Contact, Flush Freely With Water  
Harmful If Swallowed - May Cause Nausea, Vomiting or Diarrhea  
SEEK MEDICAL HELP IMMEDIATELY IN CASE OF ACCIDENT OR IF YOU FEEL ILL

**\* Buy Local \*****Please Recycle**

**Product Details:**

GreenMan™ is a non-selective green bio-herbicide for amenity and general knockdown herbicide use. GreenMan™ is Canola based, low hazard, bio-degradable and a non-dangerous good. Compared to earlier “green” herbicides, GreenMan is proving to be a more effective herbicide, with longer kills, a wider weed control spectrum, much lower application rates and a number of other in-use advantages, such as low odour and more safety around desirable plants and trees, as used at a much lower rate.


**Application Details:**

Greenman™ is best used at 2-4% dilution rate; 2L of spray makes up to 100L of effective spray.

- Add 2% Vicchem Connector penetrant for best results.
- Spray thoroughly to run off on leaf surfaces.
- Do not use with alkaline materials.
- pH value of dilution water should neutral or  $\leq$ pH7.
- For best results apply spray between 10:00 a.m. and 3:00 p.m. and allow maximum subsequent exposure to sunlight.
- Avoid application before rain and spraying wet foliage.
- Suitable for spraying near watercourses, prevent spray drift into water.





NEW ZEALAND MADE  
**0800 35 35 85**  
greenkiwiclean.co.nz





# GreenMan BioHerbicide

GreenMan's natural formulation contains 650g/L Fatty Acids from Canola as an emulsifiable concentrate. For superior knock-down effects on a broad range of weeds.



**Ragwort:** Sprayed with 2% GreenMan formulation...  
 July 7th, 2017      July 10th, 2017

**Established grasses:**  
 4% GreenMan; 2% Connector; 0.2% Organosilicone  
 October 23rd, 2017...      October 29th, 2017

**Dock:**  
 4% GreenMan and 2% Connector  
 October 23rd, 2017..      October 29th, 2017


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**6 KARAKIA WHAKAMUTUNGA – CLOSING PRAYER**

**7 TE KAPINGA HUI / MEETING CLOSE**