Donald Creek Restoration Plan

Plan compiled by Zoe Studd (MTSW) on behalf of the students of St Teresa's School. Updated 19 March 2019.

Others involved in this plan (to date): SWDC, GWRC, MTSW, DOC, Enviroschools, Siv Fjaerestad (local Artist), Fab Feathy, Featherston Men's Shed.

Donald Creek Restoration Site (-41.132254, 175.293045)

The Donald Creek restoration site is a 400m long stretch of stream between SH2 and SH51 on the east side of Featherston. It is fed by streams that run out of the Remutaka ranges, and then flows through pasture via the Featherston oxidation ponds before joining the Otauria Stream and into the north west end of Lake Wairarapa Moana.

The stream at the site has been redirected and channeled to follow its current pathway and passes under the road at each end. The stream sits on South Wairarapa District Council Land and has private land adjacent. The area is also managed by the flood protection team at Greater Wellington Regional Council.

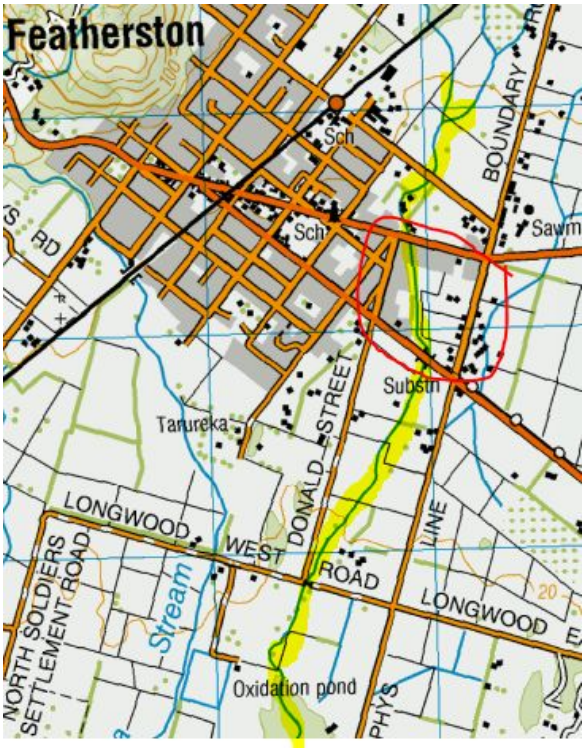


Figure 1. Donald Creek restoration site. Featherston.

Figure 2. St Teresa's students at Donald Creek (stream at left)

Background.

St Teresa students and other schools in Featherston began looking at Donald Creek in 2017 following freshwater programmes with Mountains to Sea Wellingtons' *Whitebait Connection* programme and engagement from Enviroschools.

A restoration planting plan was created by Esther Dijkstra in 2017 and is attached in Appendix 1. Following a number of planning meetings, and agreement from SWDC and the GWRC flood management team, planting with several schools took place in the winter of 2017. As far as is known, schools were unable to keep up with the site visits after this time.

St Teresa's school re-visited the site in late 2018 and in February 2019 and a planting site check in February revealed that most of the plants from 2017 have either died or been

mown during weed/grass clearing. The planting plans however remains current, and this work provides an excellent point to continue from, with some valuable lessons learnt.

Current state.
St Teresa's field trip to the stream in February 2019 identified a number of things to consider for their new restoration plans.

Fish traps left overnight found an inanga, 4 long fin elvers and 7 common bullies which was a positive sign for fish passage and the potential for improving fish numbers.

The students also found that conductivity readings were good indicating low nutrients in the stream. There were low flows due to the dry weather and a moderate level of deposited sediment.

Kick test sampling revealed a mix of macro-invertebrate species common in mid quality streams.

The students also identified the key issues for the stream as poor shading (no trees/shrubs) and a lack of habitat for creatures in the stream. There was also a lot of rubbish found.

This plan has been created by the students with their goals for the stream in mind and what they feel they can influence and make progress on over time.

STUDENTS RESTORATION GOALS – THE FUTURE OF DONALD CREEK.

St Teresa's students want to:

- encourage new species and more fish to come into Donald stream
- create a place where people want to hang out and enjoy the stream, and
- to make the river cooler, have more oxygen and a better current.

Figure 1. Students plans for Donald Creek restoration.

MAKING THEIR GOALS HAPPEN

The key ideas to help improve the stream are to:

- plant more trees, grasses and bushes,
- have a path and picnic areas for people to enjoy,
- put in rubbish bins and tell people about the plan to reduce litter, and
- make more homes/habitat for the fish - such as tuna tunnels and kokopu condos.

Students created visual maps of what they wanted the stream to look like in the future. Their plans also include:

- creating signs about the project and creatures of the stream, and
- finding ways to involve people to help support their project over time.

CHANGES THEY EXPECTED TO SEE IF THEIR GOALS ARE SUCCESSFUL

- trees would grow up and shade stream and provide food and habitat for other creatures too,
- there would be more fish in the stream,
- there would be more macro-invertebrates,
- the water would be cooler,
- there would be less litter,
- there would be less dirt on the bottom, and
- people would CARE more!

NEXT STEPS

1. Begin to promote and discuss the project with others and ask for help – already underway.
2. Plan for next steps for key actions. The students have decided that improving the stream is the first priority, and then make it a better place for people. Identify what they need to work on in order of priority (and use some of the work already done).
3. Figure out how they could monitor if they're being successful and begin to record this to track their progress.

Key actions are attached in the following table (ACTION PLAN). The specifics of the planting plan remain in line with Esther's Dijkstra plan in 2016 (attached as Appendix A) but may have some amendments relevant to community support and availability of plants.

A brief overview of the Monitoring Plan (APPENDIX B) provided.

The response from GWRC to the planting plan (Dijkstra 2016) is also attached and provides a good action list and considerations for the project.

ACTION PLAN

Goals	What to do	Actions/Tasks & Status	Who and by when
Promoting the plan and getting community support			
Sharing students' vision for the stream with others	MTSW – write up plan developed by students. Present to Wairarapa Moana Governance group Present to Community Board Prepare short story/ways to engage wider community	Completed (this living document) to share. Completed. Attended by Colin Old, Viv Napier (SWDC Councilors) + GWRC, Enviroschools. MTSW, SWDC Students present project to Community Board. Invited to next meeting Develop story for community and work with Fab Feathy to promote.	Zoe S. Support for school and project. Students/Organised by GWRC – presented in school. Students/ Liz Lark – follow up on next meeting-23 April. Students/ Zoe S/ Micheline (T2) (GWRC)/Amy(SWDC) Others- as interested
Find other groups to support project and raise awareness.	Local artist – Siv Fjaerestad. Nature Trail.	Siv contacted – interested to be involved (6 months time frame)	Zoe S. Seek funding to support artist/ students project (T3).
	Fab Feathy (Community involvement)	Seek Fab Feathy support (transition of staff at the moment)	Zoe/ Liz L – reconnect when new team member on board.
	Men's Shed (for help with picnic tables etc)-	Men's Shed not contacted yet	Students/Liz Lark – contact Men's Shed (T3/4)
	Project support – financial and logistic	Keep informed. Seek funding opportunities for project.	Zoe S. (also keep GWRC informed). All welcome!
Restoring the stream for Fish and Humans			
Stream Planting Program	Secure resources and prepare for planting days in 2019. Seek support from SWDC and GWRC for -Provision of plants -Permission to access site from SWDC -Preparation of site with assistance from SWDC.	Seek support from SWDC and GWRC to carry out planting Plan in line with 2016 plan by Esther Dijkstra (Appendix A) subject to any updates. Aim to begin first round of planting in June/July 2019. Further planting over subsequent years – plan developed for next 3-5 yrs. Maintenance of plants and stream (on-going)	Students/ Liz Lark & Esther liaise with Mark Allingham (SWDC) to approve works and support, plants and prep from SWDC. (while Zoe's away). Micheline/Esther - GWRC to assist with plants and project input.(ZS – pick up in May 2019). SWDC/Community/ Students/Zoe S/Liz L

	Finalise planting plan and set date with school and community	Invite community for first planting - TBC. Opportunity to celebrate the first year w/ Art project or stream engagement event.	Students/Zoe/Liz L + SWDC (set date by mid May). Students/Zoe S/Liz L. (T3/4).
Stream signage, and Art project	Plan for T4 signage and art project	Work with local artist to create opportunities for engagement with stream. Find opportunities to engage with community response to project.	Zoe S / Students work/ Siv/ ? TBD
Bike/walking Path, Rubbish Bins and Picnic tables for humans	Build a plan for public amenity improvements to make the site enjoyable for humans too.	Work with SWDC and Fab Feathy on pathway, picnic tables and signage/art + fish hotels etc.	Mark Allington/ Fab Feathy /Men's Shed and students Liz L/ Zoe S to follow up.
Monitoring Plan to track progress			
Students undertake project monitoring.	Build a monitoring plan for the project	Completed – students have identified their monitoring objectives (APPENDIX B)	Zoe S/Students
	Train students and community to monitor	Utilise the NIWA NZ Water Citizens database use for students to record long-term data set.	Zoe S/Liz L– teach and support students in Term 2 to use database

APPENDIX A – Planting Plan (2016)

Planting Plan Donald's Creek Featherston (prepared in late 2016 to GWRC)

1. Site Description

Site name: Donald's Creek
Site owner: South Wairarapa District Council (SWDC)

The section of the Donald's Creek stopbank between SH2 and SH53 is owned by South Wairarapa District Council (SWDC). It is an area of over 2 hectares, and is held as a Local Purpose (Drainage and Utility) Reserve. The stopbanks form part of the Greater Wellington Regional Council Flood Protection asset management programme. While previously used for horse grazing, the land is now no longer made available for that purpose to ensure the protection of the waterway and creek banks.

Person Responsible for Planting Plan:
Esther Dijkstra
06 379 8340
021 2220617
esther@ecoagrilogic.co.nz

2. Planting objectives

Restoration of Donald's Creek. This would begin with planting restoration on the banks of the creek, and potentially lead to a long-term beautification project.
A site for students to do water testing and monitoring.

3. Site context

The site is located in Featherston, flowing into the rural area towards Wairarapa Moana. This year, the stream side of the stop bank will be planted with grasses. The subsequent years the other side of the stop bank will also be planted with scrubs.

4. Site preparation

The site will be spot sprayed with Roundup prior to planting. The weed spraying will be the responsibility of SWDC.
The site is currently in grass and no other weeds like gorse or blackberry are present at the site.

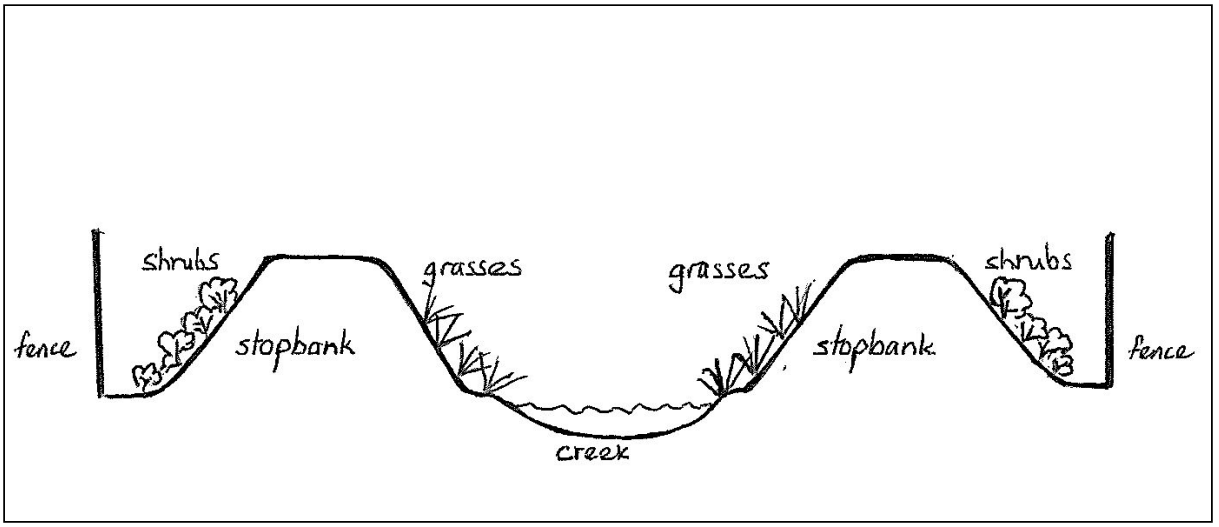
5. Planting design and selection of species

Grasses and sedges will be planted on the inner creek side of stopbanks at a spacing of about 0.5m. We proposed to plant an area of approximately 70 m^2 on the true right side of the creek, starting at the SH2 side. This is 7m from the top to the stopbank to the toe and 10 m along the stop bank (red line on siteplan below).

Where possible the plants will be eco-sourced. Akura and Norfolk Road Nurseries have been asked for quotes.
(this may no longer be the case – can SWDC or GWRC provide plants for this winter? Planting plan and scale may also be revised based on advice from SWDC and others)

A mixture of the following plants are proposed (total of 300 plants – 0.5m spacing)

Pukio *Carex secta*
Rautahi *Carex geminata*
Toetoe *Austroderia fulvida*
Umbrella sedge *Cyperus ustulatus*
Carex virgate



Only the inside of the stopbank will be planted this year, on one side.

6. Maintenance

SWDC Amenities staff have general oversight of the project, and are responsible for liaison with City Care, who do on-demand weed control and grass cutting in the area.

Schools will do regular monitoring of plants, release weeding and watering.

As SWDC is the owner of the property, officers will have some responsibility in ensuring that suitable health and safety plans are in place before the commencement of any work.

(A response from Greater Wellington – March 2017 is attached and has good information which is mostly still all current and advise to improve the plan submitted).

Students are keen to identify if larger trees could be considered in some locations (especially to the true left side to provide good shading).

APPENDIX B. Monitoring Plan

Mountains to Sea Wellington will assist to establish the site as part of the WBC Wellington Project and utilize the NIWA Freshwater Citizen science database to collate their data.

Key elements for site monitoring to track changes in relation to restoration goals:

- Catch fish and measure, identify and count to see changes (fish surveys with support from MTSW)
- Take photos of the trees growing up over time (school lead)
- Do kick sampling of macro-invertebrates (school lead)
- Take temperature (school lead)
- Do litter audits (school lead)
- Survey in-stream habitats (school lead with MTSW support).

Response for St Teresa's School students: on their planting proposals for Donald's Creek restoration planting

March 2017

Background

Planting proposals for restoration planting at Donald's Creek were received from students at the end of Term 4 2016. This section of land, through which Donald's Creek flows, is owned by South Wairarapa District Council (SWDC) and has stopbanks that form part of the Greater Wellington Regional Council Flood Protection asset management programme. This means the planting planned and other operations requires approval by SWDC and GWRC Flood Protection department.
The students provided information about the purpose, background and some aspects of planning for the restoration planting of Donald's Creek, showing a good understanding of stream restoration. The little map showing an aerial view of the section of Donald's Creek was useful. It can be seen that more specific decisions can be made when the students have received permission for certain aspects of the work.

Requirements for restoration work on or near the stopbanks

The following list provides a summary of key requirements for the proposed undertaking of restoration work in the section of land between SH 2 and SH 53 in Featherston (see Appendix 1: Maps showing land parcel and Donald's Creek section). These requirements have been confirmed with GWRC Flood Protection department (see Figure 1 for a cross-section of the planting that is okay):

- Only **grasses and sedges** can be planted on the stream side/lower part of the stopbank
- Only **shrubs**[1] (not trees) can be planted on the outer/lower part of the stopbank
- Keep the top of the stopbank clear (for vehicle access in case any willow/tree or debris needs to be cleared from the stream)
- Gorse clearing must be by arrangement with SWDC
- GWRC, SWDC and the schools all have responsibilities to ensure the health and safety of people at the site. All organisations will need to share health and safety information.
- Hazards known by GWRC, relevant to the site are:

[1] A shrub is a small woody plant, usually having multiple stems that start close to the ground e.g. *Hebe stricta*, *Coprosma propinqua*

- the area can be subject to flash flooding when there has been rain in the ranges - always check the weather forecast for the catchment before entering the stream area
- people may carry out work to maintain the stopbank or stream from time to time – notify GWRC Flood Protection and SWDC in advance of a planned planting event

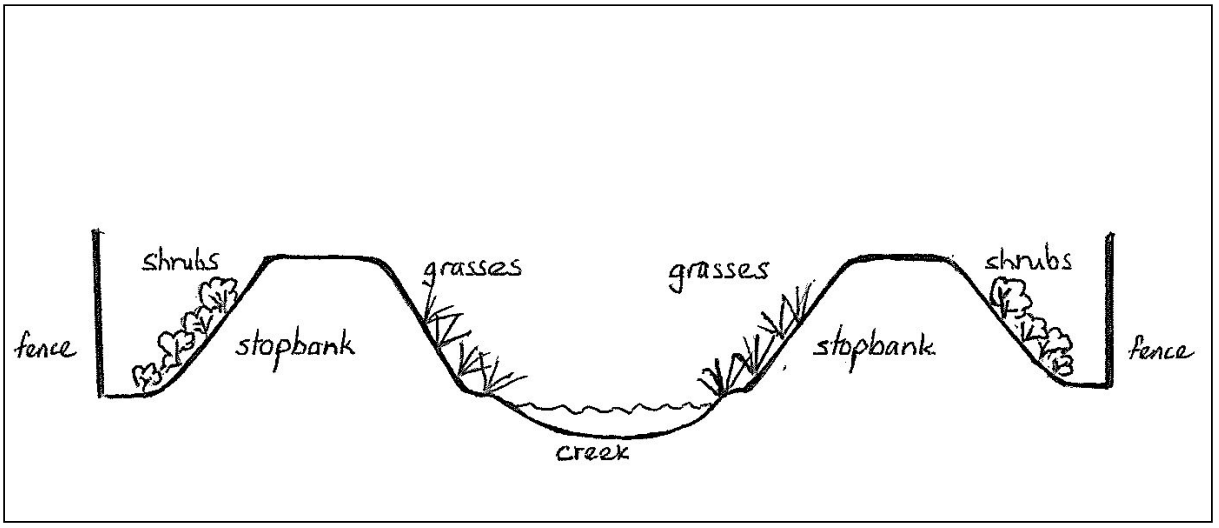


Figure 1: Cross-section diagram of plant types on stopbank

Notes on restoration planting

A checklist (see Appendix 2) provides some recommended tasks. The maps in Appendix 1 provide further information about the site.

Site Preparation

Pre-planting site preparation

The spraying for weed control and site preparation will need to be managed by SWDC because this involves the use of harmful chemicals on public land (people must have special qualifications and licences to do this work).

SWDC will need a simple map showing the area that is going to be planted and needs preparing (where it is located within the bigger area) and how big it is. The area may need to be marked out with stakes.

Weed control

It was great that gorse was identified as needing control – it competes with native plants and can be a fire risk. It will be useful to provide a map of the whole area and show where the main patches of gorse and other woody weeds such as blackberry are located.

The weeds will need to be controlled now and every year over the whole area, so that when you come to plant later, the gorse (or other weeds that show up) won't need to be sprayed (as it will kill your native plants). It is useful to have a long-term targeted weed control programme.

Some gorse can be cut and treated with a herbicide gel. You could get permission from the landowner (SWDC) to use gel on weeds (as you don't need special licences to use herbicide gel). You still need to be very careful when using the gel though – like keeping it away from your eyes and skin, wearing gloves and washing hands (read the warning label!). However,

gorse can grow pretty big, it isn't very nice to deal with and can take a bit of time – so up to the schools on this one! If there's lots of weed growth removed, it might be better if the contractor takes this away from the site (to avoid it being washed down the creek in a flood or being a fire risk).

Planting

Plant types

There was quite a variety of plants listed between the students' plans. Unfortunately only smaller plants such as grasses, sedges and shrubs are suitable for this site. These still provide habitat for fish, birds and other fauna. Donald's Creek needs to allow a good water flow through the town to **prevent flooding** when there is heavy rain, so there is a need to avoid plants that restrict the flow of water.
This is a **dry area** over summer, so it is best to choose plants that will tolerate dry (and windy) conditions. **Tall trees** can't be planted because they grow big enough to cause problems by affecting the stopbanks, access to the stopbanks or the stream.
Suitable plants can be selected from the following list:
<u>Grasses and sedges</u> (inner creek side of stopbanks)
Pukio *Carex secta*
Rautahi *Carex geminata*
Toetoe *Austroderia fulvida*
Umbrella sedge *Cyperus ustulatus*
Carex virgata

<u>Shrubs and flax</u> (outer side of stopbanks)
Swamp flax *Phormium tenax*
Akiraho *Olearia paniculata*
Karamu *Coprosma robusta*
Koromiko *Hebe stricta*
Minimingi *Coprosma propinqua*

<u>Sourcing plants</u>

Collecting seedlings from bush reserves was a popular idea with students. This is okay if you get permission from the landowner. Some seedlings could be from plants that have been introduced to the area – so it isn't always known whether they have been **eco-sourced**. Since this site is quite modified, this shouldn't be a problem. It is good to check with the landowner (SWDC) whether they have a policy or recommendation on this.

Planting

Planning: A **site planting plan**, drawn to show the types of plants, where they will be planted and how far apart would be a very useful guide (as this can be confusing on the day).
Plant size: The size of new plants can make a difference to how well they can get started. If they are too small, they may not compete very well with the pasture grasses and weeds. Preferably choose root trainers with a 400mm tall plant (Tinus) or bigger PB3 bag size.
Plant spacing: If plants are close together they will shade out the weeds as they grow bigger. If they are planted a bigger distance apart, the grassy weeds will grow more vigorously around them and they'll need more weeding. If they're kept clear of the native

plant, grasses can provide some shade and wind shelter for them. A guide is a space between plants of about 0.5m for grasses and sedges and 0.5m to 0.75m for shrubs.
Time to plant: Plan to do the planting in early winter. This is so that the plants get plenty of rain water to get established before summer.
Planting out: loosen the soil around the hole for the new plant; this will allow the roots to spread out easier and to get better contact with moisture and nutrients.
Consider the use of **fertiliser tablets** and **water-absorbing crystals** – this will give the new plants a head start to get settled in.
The use of **mulch** was mentioned. Bark-type mulch can be washed into the stream if the stream floods. Consider the use of coconut fibre matting instead.
Plant protectors were mentioned – this is a good idea to prevent rabbits or hares eating them.
Since this is a **dry site**, plant so that the base of the stem is 1-2cm below the surface (make a slight hollow) – this helps keep the water near the plant.

Plant maintenance

For the next couple of years, the plants will need to be maintained until they outgrow the grasses/weeds.
Weeding/releasing - This means weeds will need to be pulled out from directly around the plant. The weeds can be laid down around the plant as mulch. Spraying won't be practical as it might kill the native plants.
Watering - If it is dry for a long spell, some plants might benefit from watering. The bank along Donald's Creek is known to get very dry.
Remove the plant protectors – usually after a year, when they are big enough.

Other considerations

Does the public have access to the area?

Some people like keeping tracks for walking their dogs. Hopefully there are no off-road or trail bikes going through – otherwise new plants would need fencing off.
Appendix 1: Maps showing location of Donald's Creek and the SWDC-owned land parcel

Map 1. Location of Donald's Creek between SH 2 and SH 53

Map 2. SWDC-owned land parcel (Donald's Creek flows through the middle)

Appendix 2. Checklist for Donald's Creek restoration planting

Action	Comments	Who will do this?	Done (✓)
Draw a plan showing the whole restoration area, the stages/sections of planting and location of main weeds	Show the planting area for 2016/17 and the size of the area. Where are the main areas of gorse or other woody weeds?		
Order site preparation and weed control spraying from SWDC	Site preparation needs to be done in autumn, at least 6 weeks before planting		
Draw a plan showing the layout of the plants in the area for 2016/17	Draw an aerial view and you could include a cross section. This helps show which plants will be planted where.		
Ask SWDC for advice on whether you can help with the gorse and woody weed control.	People are allowed to use herbicide (weed killer) gel only – this gets painted on the stump left after cutting the plant.		
Find out how much gorse and other woody weed growth there is and whether it should be taken away from the site?	Does it cost money to take away the branches and who will do it?		
Get confirmation of approval of the final planting plan and plant list from GWRC Flood Protection			
Source plants – order from nursery and/or source locally	Landowner permission needed for seedlings		
Purchase other planting materials	Materials such as hare nets/plastic sleeves and stakes, coconut fibre (mulch) mats, fertiliser tablets, water-holding crystals		
Weed of plants in spring			
Water plants if dry summer			
Weed plants in autumn			
Remove plant protector sleeves	Remove if the plants have grown big enough (winter following planting)		