



**Red Tree
Environmental Solutions**
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Direct Seed Revegetation

A Case Study: Direct Seed Revegetation
Location: Finnsarby Place, Sumner Port Hills, Christchurch
Principle: LINZ
Scale: 6000m² over Three Zones
Date: August 2016

Backstory

Throughout the year of 2016, Red Tree was active in the Port Hills Land Stabilization Project run by Land Information New Zealand. The objective was to remediate the landscape by restoring native flora to the sites that were no longer suitable for residential habitation after the Christchurch earthquake of 2011. Of the twelve sites engaged in this time frame, Finnsarby Place in Sumner with a footprint of 6000m² was the most substantial in terms of scale. Twelve residential houses were demolished. Finnsarby is a high-profile site so it was important to LINZ that the revegetation blended with existing surrounding plantings to give a high aesthetic value. The scope of work entailed installing 450 gsm coir matting over the recontoured site and planting root trainer grade natives at 1.5 meter centers.

KEY:

-  - Planted Specimines, August 2016
-  - Direct Seeded Natives at 9 Months

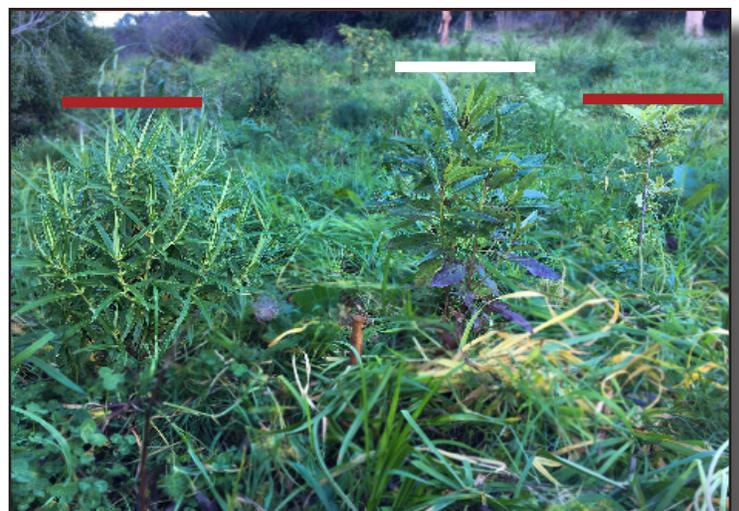
Topsoil was reinstated where the gradient allowed. Additional to planting the specified nursery grade stock Red Tree included direct native seeding in specific areas to boost stocking numbers.

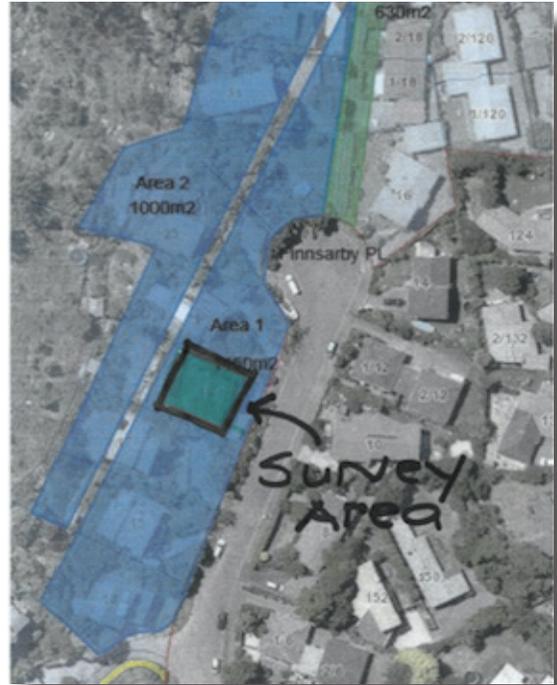
Challenges

The three major challenges working this site were:
- Maintenance of this scale without chemical herbicides
- Gradients 1-1 to 1-3 with rope access methodology to secure coir matting and planting on the steepest slopes.
- Degraded soil conditions due to compaction and lack of soil ecology within cut and fill zones, these areas can become swamped over winter and baked dry over summer
Contract delivery of these projects requires quantifiable results equaling 90% plant survival. Any required replacements are at the contractor's expense, which is a motivating factor to get it right. Our direct seeding initiative was insurance towards this end.

Assessment

Since 2006, Red Tree has been observing direct seeding methodologies used across New Zealand and has noticed inconsistent results. There are three major reasons for these inconsistencies: lack of suitable germination environments, inappropriate maintenance methodology, and incorrect species selection. Finding solutions to these problems has significantly increased our success with direct seeding.





Red Tree's Solutions

Our approach was to utilize our experience to create suitable germination conditions. Native seeds were dispersed at known ratios using appropriate seed blends. The area was then covered with a bio-degradable erosion control matting that doubled as a seed germination blanket. Understanding the process of stratification, which breaks seed dormancy, is another crucial step in this process

Traditionally, natives introduced by hydro-seeding methods are accompanied by fast germinating grass species which can cause smothering; since, native seedlings have a slower germination time. Within the Finnsarby trial we omitted the introduction of grass species as a nurse crop and instead selectively managed the sites exotic weed species without the use of chemicals. Mechanical topping and manual releasing was our maintenance methodology with manually cut bio mass harnessed as a resource to establish mulch circles around emerging seedlings which effectively created microclimates conducive for growth.

Results

Within the survey site the planted specimens have demonstrated slow to medium growth rates and native seedlings are in varying stages of establishment ranging from 10 to 50 cm in the nine month period.

Survey Area: 340m2
 Date: May 2017 9 months on
 Planted Natives: 162 = 95% survival rate
 Direct Seeding has yielded 123 plants
 A total stocking of 258 plants
 Delivering 168%

Conclusion

This case study demonstrates that direct seeding can produce strong healthy seedlings, which in some cases, are out performing planted specimens within nine months.

Used in conjunction with traditional methodologies this method has the potential to reduce economic inputs. For us this was a successful direct seeding trial that fulfilled our insurance objectives. We have further incorporated many of the technologies of this trial into a compost blanket application.

If you would like to inquire further about this methodology, please feel free to contact us at info@redtree.co.nz or by clicking [here](#).