

P A Handford & Associates Ltd

Battle Hill Farm Forest Park

Sustainable Land Management Plan



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Executive Summary

This sustainable land management (SLM) plan provides an operational plan for achieving sustainable land management across the Battle Hill Farm Forest Park. It provides practical operational implementation of the broader vision, objectives and policies in the Park Management Plan. It addresses a range of GWRC policies plans and other initiatives including community outcomes, total catchment management, the Porirua Harbour Programme and Biodiversity Implementation Plan.:

Objectives of the Sustainable Land Management Plan

- Sustainable management of the Park's natural resources, in accordance with the Battle Hill Farm Forest Park Management Plan, for the benefit of current and future generations.
- Achieving a holistic approach to land management as part of total catchment management.
- Providing a clear and practical basis for guiding actions and allowing operational planning toward achieving sustainable land management

How the document works

The plan consists of:

- A property resource assessment:
- Identification of Land Management Zones
- An Action Plan

A summary of the action plan is also provided in Appendix 12 as the working document for day to day use. This consists of a double sided A3 sheet with map and text identifying action areas.

Property Resources

Geology & Soils: Land area is 501 hectares. Underlying bedrock is greywacke with some areas of wind-blown soil or "loess" and younger alluvial deposits. Soils are derived from this underlying material and influenced predominantly by slope.

Land Use Capability: Land use capability (LUC) mapping of the entire property was undertaken. Detailed analysis of the approximately 160 hectares that is currently farmed shows that around 56% is comprised of land use capability units that can be grouped as productive ridges and easy slopes. Approximately 10% of the area is less productive steep slopes. Around 20% of the farmed area is productive flats and terraces with less productive flats and terraces (often wet or very stony) covering the remaining 14%. Exposure to strong winds is a key limitation to stock production on some of the high ridges, particularly around Battle Hill summit.

Waterways: The Park contains sections of both the eastern and western branches of the Horokiri Stream. The smaller Swampy Gully catchment drains the central area of the property. A variety of wetland areas are present, particularly within the Swampy Gully catchment. The major wetland areas have been enhanced with fencing and planting. Waterways, particularly the eastern Horokiri, present considerable opportunity for environmental protection and enhancement.

Flora, Fauna – Biodiversity: The park contains an important mature - lowland native forest remnant (35ha). It also has a variety of other smaller areas in various stages of reversion to native woody vegetation, as well as wetland areas. The relative biodiversity significance of different areas of native vegetation on the park was assessed. A good range of native forest birds are present. The streams form important habitat for native fish species, particularly where good riparian cover is present.

Biosecurity – plant & animal pests: Weed pests are concentrated around the forest remnant and western Horokiri Stream. A pest plant control plan is present for this area. Holly occurs in a range of locations across the Park. Agricultural weeds include thistle and gorse.

Recreation: Recreation is regionally important and continuing to increase in the Park. Recreational user surveys identify the most common activities as walking, horse riding, and picnicking. Mountain biking is also an important recreational use. Sustainable land management activities in the Park have potential to significantly enhance the recreational experience for users.

Farm business resources: The Park is grazed under a license in conjunction with adjacent properties. GW are responsible for fertiliser application and fences and the licensee is responsible for weed control. Around 1330 stock units are carried on the Park, close to the potential 1550 stock units estimated from LUC information. The operation is small in comparison with the average NZ sheep and beef farm. Paddock sizes are relatively large for an operation of this size which can present challenges given the diversity of stock types carried, and the need to sometimes move stock away from public horse riding events. The property could benefit from additional stock shelter and shade and there is potential to improve livestock production off better areas of the property through activities such subdivision fencing and pasture renewal.

Forestry: Major forest areas on the eastern side of the Park cover over 200 hectares and are managed as part of GW's Puketiro Forest. Around 60 hectares of this area were planted in the 1970's and will be harvested shortly. The major area was planted in 1991. A variety of old farm stands of macrocarpa and radiata pine are present on the currently farmed area of the Park. Small areas of new planting are also present on the farm area.

Carbon: A "desktop" assessment suggests annual greenhouse gas emissions of around 450 tonnes (CO₂ equivalents) from the Park, with livestock being the major contributor. Under international and national agreements and legislation, carbon sequestered by forests planted or regenerated after 1989 can potentially be claimed as credits. Assessment of forest areas in the Park suggest current credits in the order of 3500 tonnes annually, more than sufficient to off-set Park emissions.

External Infrastructure: Current and proposed external infrastructure potentially has a significant impact on how the Park is managed. Existing infrastructure includes transmission lines and powerlines passing through the Park. The proposed alignment of the transmission gully motorway passes along flats near the eastern Horokiri Stream. This motorway could have a major impact on the Park and needs to be incorporated into SLM planning. A future access road through the Park for forest harvest is also possible.

Cultural & Historic: Battle Hill Farm Forest Park has important cultural and historic values. It is important as the site of the 1846 battle between government forces and Maori. The buildings and old exotic plantings on the farm are important as being representative of early European farming operations in the area.

Land Management Zones

Land management zones have been identified within the Park which have a similar combination of resources and best use. These zones are helpful in identifying the appropriate management actions on particular parts of the property that will achieve integrated, sustainable land management over the whole Park. The following land management zones have been mapped:

1. Intensive recreation
2. Events and agricultural facilities.
3. Local adventure
4. Productive integration
5. Utility edge
6. Intensive agriculture
7. Riparian and forest edge
8. Intensive forestry
9. Extensive forestry
10. Remote ridgeline

Action Plan Summary

The key tasks to move toward sustainable land management are set out below. These tasks are identified based on consideration of property resources and land management zones.

Task	Project area	Zone	Description
Steepland soil protection			
• Poplar pole planting	Swampy gully catchment	4	<ul style="list-style-type: none"> • Pole planting on steeper unstable areas and gullies • To provide soil stabilisation but also shelter, shade, amenity and emergency stock fodder.
	Transmission gully	5	<ul style="list-style-type: none"> • Pole planting on some steeper less stable areas on eastern side of pipeline ridge. • Provides soil stabilisation, shelter, shade, emergency stock fodder, amenity and important screening of potential future motorway.
• Managed regeneration	Battle Hill	3	<ul style="list-style-type: none"> • Fencing, retirement and natural regeneration of steep eastern faces of Battle Hill ridge. • Occasional emergency grazing will occur initially to reduce possible weed issues and enhance recreational access. • Provides soil stabilisation and biodiversity linkages to the main forest remnant.
Strengthening waterways			
• Riparian fencing and planting	Horokiri – Eastern Branch	7	<ul style="list-style-type: none"> • Prepare a landscape plan for riparian area and forest edge, to provide a more varied and natural forest edge for recreation and landscape benefit. • Fencing to exclude stock from riparian area • Riparian planting with native species. • Small stands of high value exotic species on drier easily accessed areas adjacent to the stream to provide easy recreational access and variety and low impact high value timber production.
	Horokiri – Western Branch	1	<ul style="list-style-type: none"> • Fence localised areas and maintain specimen tree plantings while also having open areas with grazing to the stream edge for recreational benefit.
• Wetland enhancement	Swampy Gully	4	<ul style="list-style-type: none"> • Additional planting in unplanted areas of the main upper swampy gully wetland. • Fence and plant two additional smaller valley bottom wetlands in the upper swampy gully catchment.
Biodiversity enhancement			
• Restoration planting	Main forest remnant	3	<ul style="list-style-type: none"> • Fencing and planting of steep low production faces above north eastern edge of forest remnant. • Extends and buffers the edge of the remnant.
	Head of Swampy Gully	4	<ul style="list-style-type: none"> • Fencing and planting of steep reverting gully on northern boundary at head of Swampy Gully. • Links the Battle Hill managed regeneration area and the main Swampy Gully wetland, creating a corridor of varied native vegetation between the bush remnant and the wetland.
• Managed regeneration	Battle Hill	3	<ul style="list-style-type: none"> • As described under steepland soil protection, above.
Biosecurity			
• Weed control	Throughout	All	<ul style="list-style-type: none"> • Examine the wider distribution and control strategy for holly and hawthorn across the whole property. • Shift responsibility for farm weed control from the lessee to GWRC and undertake targeted spraying of thistle and gorse where it is a problem.
	Bush remnant	3	<ul style="list-style-type: none"> • Ongoing implementation of the Pest Plant Control Plan for the bush remnant.
• Animal control	Goats	All	<ul style="list-style-type: none"> • Ongoing control through Puketiro Forest as part of existing Akatarawa goat control programme. • Cease farming goats in the Park to avoid the risk of escapees • Work with neighbours to control goats to the west and north of

Task	Project area	Zone	Description
	Possums	All	<ul style="list-style-type: none"> the Park Maintain existing intensive control in the bush remnant and six yearly aerial control over Puketiro Forest. Possible control through central areas of the Park Encourage neighbours in the west and north to undertake control.
Farming			
<ul style="list-style-type: none"> Fencing & paddock subdivision 	Northern boundary	3&4	<ul style="list-style-type: none"> Repair of the northern boundary fence on the Battle Hill and swampy gully paddocks.
	Throughout farm.	3-5	<ul style="list-style-type: none"> Subdivision fencing of the large Battle Hill paddock into two "managed regeneration" areas to the east and two main grazed paddocks on the ridge top and upper western slopes. Subdivision fencing of the Swampy Gully paddock into 3 smaller paddocks. Subdivision fencing of the Spring paddock into 2 smaller paddocks.
<ul style="list-style-type: none"> Stock water reticulation 	Throughout farm.	1-6	<ul style="list-style-type: none"> Maintenance and improvement of existing stock water reticulation system. Provision of stock water to new subdivided paddocks and paddocks without water due to new riparian fencing.
<ul style="list-style-type: none"> Pasture improvement 	Transmission Gully	6	<ul style="list-style-type: none"> Improve transmission gully flats paddocks and re-establish new pasture.
<ul style="list-style-type: none"> Fertility, nutrient management 	Throughout farm.	1-6	<ul style="list-style-type: none"> Implement consistent soil sampling grouped around LUC / pasture categories. Develop and implement an appropriate fertiliser regime based on reliable soil sampling. Increase the use of ground spreading and investigate helicopter application of particular fertiliser types to reduce waterway contamination and wastage.
<ul style="list-style-type: none"> Woolshed improvements 	Woolshed	2	<ul style="list-style-type: none"> Improve ventilation and drainage .
Forestry			
<ul style="list-style-type: none"> Harvest planning & management 	Puketiro forest	7-9	<ul style="list-style-type: none"> Ensure documented harvest plan in place for MOT stands and harvest operations managed to minimise impact.
<ul style="list-style-type: none"> Forest edge 	Puketiro Forest – East Horokiri	7	<ul style="list-style-type: none"> Enhance diversity and interest of forest edge at re-planting, see under riparian fencing and planting.
<ul style="list-style-type: none"> Species 	Lower Puketiro 301 (1991)	8	<ul style="list-style-type: none"> Examine use of longer rotation high value species on lower slopes, following harvest, to add recreational, carbon and landscape benefits.
<ul style="list-style-type: none"> Farm woodlots 	Swamp gully	4	<ul style="list-style-type: none"> Establish small woodlots of high value species (e.g cypress, eucalypt), for shelter, shade, amenity and small scale harvesting.
	East Pipeline Ridge	5	<ul style="list-style-type: none"> Establish small woodlots of high value species, e.g cypress, eucalypt, to provide screening of possible future motorway as well as soil stabilisation, shelter, shade, amenity and small scale harvesting.
	East Horokiri	7	<ul style="list-style-type: none"> Small stands of high value exotic species on drier easily accessed areas adjacent to the stream where interference with transmission lines can be avoided (see also under riparian fencing and planting).
Recreation			
<ul style="list-style-type: none"> SLM actions to benefit recreation 	Throughout	All	<ul style="list-style-type: none"> Actions introducing pole planting, woodlots, biodiversity enhancement etc will provide greater variety of recreational setting, shelter, shade and seclusion.
<ul style="list-style-type: none"> SLM interpretation 	Throughout	All	<ul style="list-style-type: none"> Examine opportunities to provide information on practical sustainable land management at the Park –what actions are being taken and how they fit into wider (e.g. total catchment management) initiatives.
Carbon			
<ul style="list-style-type: none"> Carbon management strategy 	Puketiro Forest	7-9	<ul style="list-style-type: none"> Decide on a wider forests approach to management of carbon credits. Register forest areas and accumulate credits in line with strategy.

Task	Project area	Zone	Description
	Other park areas	1-6	<ul style="list-style-type: none"> Decide on strategy for management of emissions and credits at a Park level. Register forest areas and manage credits and emissions in line with final strategy.
Cultural & Historic			
<ul style="list-style-type: none"> Heritage vegetation management 	Throughout farm.	1-7	<ul style="list-style-type: none"> Identify heritage stands of macrocarpa, pine and other specimen trees to be retained a long as possible Gradual replacement of problem stands with similar representative trees and woodlots.
Maintenance			
	Throughout	All	<ul style="list-style-type: none"> Fence maintenance Maintenance of stock water system Releasing of new plantings Poplar pole pruning and thinning Woodlot pruning and thinning Weed and pest control.
Monitoring			
	Throughout	All	<ul style="list-style-type: none"> Photopoints Water quality monitoring Fishery monitoring Forest condition monitoring