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Farm Environment Plan

Prepared for
Brodick Farms Ltd
849 Matahuru Road.

Ian Hanmore
March 2018

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1.0 FARM SUMMARY

Feature	Farm Data
Farm Name	Brodick Farms Ltd
Farm Owners	John and Janet Evans
Location	849 Mathuru Road
Waikato Regional Council PC1 Catchment	Priority 1 Matahuru sub-catchment and the Riverine Lakes Freshwater Management Unit
Enterprise	Breed/Fatten lambs, yeaner cattle to store.
Climate	Average annual rainfall 1500 mm Annual mean temperature 14.3˚C
Topography	1% Flat to undulating 14% Undulating to rolling 20% Rolling to strongly 65% Strong rolling to very steep
Soils	24% Ash soils 10%Ash/sedimentary soils 65%Sedimentary soil 1% Alluvial soils
Total Area	394ha
Total Paddock Area	369ha
Indigenous Vegetation	28.6ha
Fenced Indigenous Vegetation	22.9ha
Length of Perennial Waterways	20,432m
Length of Ephemeral Waterways	7,654m
Number of Wetlands	0

2.0 INTRODUCTION

The purpose of this Farm and Environment Plan (FEP) is to provide a collaborative document in association with the land owner(s) that identifies the goals of the farm business, provides a resource stock take and address any environmental and sustainability issues. The focus of the plan is fourfold.

(i) To summarise the farm enterprise, including the farm business goals and highlighting any challenges it faces.

(ii) To describe the land and soil resources including their strengths, weaknesses and management requirements.

(iii) To summarise and assess the current land management in relation to soil health, water quality, nutrient management, chemical use, stock and pasture management and biodiversity.

(iv) Develop a works plan, based on the land management assessment, in association with the land owner, to help achieve long-term sustainability of the farm business.

3.0 FARM ENTERPRISE

The Evan's run a sheep and beef operation on their 394ha property. 300 beef weaners are brought in each year during March/April and sold as yearlings during December/January. 2000 ewes (plus rams) are also run with lambs being fattened and sold from December through to March/April. Cattle are set stocked over the winter while sheep are set stocked prior to lambing.

3.1 Farm Business Goals

- To improve economic performance by increasing profit before tax to over $400/ha. KPIs for this include:
    - 150% lamb weaning rate
    - 32kg lamb weaning weight at 90-100 days
    - Market 50% of lambs at weaning
    - Maintain a margin of at least $350 per head on yearling cattle
- To improve environmental status by completing this FEP and the agreed works programme.

3.2 Challenges to Farm Business Goals

- Externally due to Government policy
- Managing stock, pasture production and environmental impacts on steep topography
- Lack of water reticulation

3.3 Health River Plan Change One

Under the Waikato Regional Council's Health River regulations the Evans' property is located in the Matahuru sub-catchment and the Riverine Lakes Freshwater Management Unit. This is a priority 1 sub-catchment with the following key dates:

- Register with council and provide a Nitrogen Reference Point between 1 May 2020 and 30 November 2020
- Complete a Farm Environment Plan by 1 March 2022
- Complete stock exclusion by 1 March 2025

4.0 RESOURCE AND ENVIRONMENTAL ASSESSMENT

The land resources of the Brodick Farms have been mapped based on the Land Resource Inventory (LRI) at a scale of 1:7,500. The LRI records five resource features – soil, rock type (parent material), slope, erosion and land cover. The data is then used to classify land according to the Land Use Capability (LUC) system. This information is presented in the LUC table in section 4.2 below. Soil descriptions have been presented separately in section 4.1 due to their importance in supporting farm production and the specific management each type requires.

4.1 Soil Descriptions

Soil Name:

Soil classification: Yellow-brown loams

Parent material: Mairoa ash

Soil description:

0-150mm: Very friable, weakly developed, fine crumb non-sticky, non-plastic, very dark brown (7.5YR 2.5/2) sandy loam.

150-1400mm: Friable, moderately to strongly developed fine crumb, sticky, plastic yellowish-brown (7.5YR 5/8) sandy loam/clay loam

A moderately to strongly developed, very friable, sandy loam that has a very low structural and water logging vulnerability.

A stone less soil profile with no barrier to plant rooting depth within one metre, moderate to high profile available water and a top soil bulk density of 0.78g/cm3

Nitrogen leaching vulnerability is rated as low and P retention as high at 83%.

Overall drainage: Well drained

Soil Name: Unnamed alluvial soil

Parent material: Alluvium from sedimentary rock and ash.

Soil description: Alluvium

0-100mm: Very friable, weakly developed, fine crumb, sticky, plastic, dark yellowish brown (10YR 4/4 – 4/6) sandy clay.

100-800mm: friable, moderately developed, sticky, plastic, dark yellowish brown (10YR 4/4) sandy clay.

Overall drainage: Well drained

Soil Name: Marua brown clay loam Marua brown clay loam hill soil (MRr, MRrH).

Soil Classification: Moderately to strongly leached yellow-brown earths from the Marua suite.

Parent material: Greywacke and Argillite

Soil description:

0-100mm: Friable, moderately to strongly developed fine crumb, non-sticky, non-plastic, strong brown (7.5YR 4/6) sandy loam.

150-750mm: Firm, strongly developed, medium nut, sticky, plastic, strong brown (7.5YR 5/8) fine sandy clay.

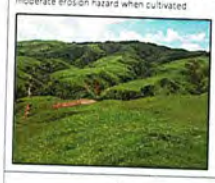
750mm+: Firm, strongly developed, medium to coarse nut, sticky, plastic, red (2.5YR 5/8 – 4/8) sandy clay.

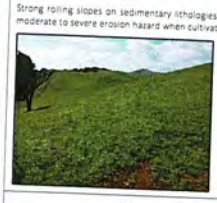
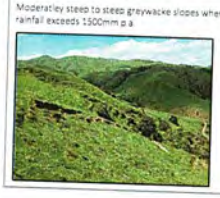
Like all YBE soils at this stage of development, they have a relatively high clay content in the topsoil making it difficult to create a fine tilth. Occupying hill country they can suffer dry summers followed by high intensity, short duration rainstorms with resultant slipping.

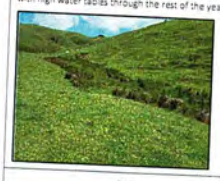
Overall drainage: Well drained

The above soil profiles show the four distinct soils on the property. The underlaying geology is graywacke and from this the Marua and Te Ranga soils have formed, Marua on the easier slopes and broader ridge tops and the Te Ranga on the steep gully sides and steep hills. Mairoa ash has then been deposited over the top of these soils and geology. In places these deposits have been deep enough to form the Mairoa ash soils described in the first profile description above. In other places the ash cover is very thin or non-existent. In these places the ash has formed a thin topsoil layer over the existing soil with negligible impact beyond that. As such there is a transition between the Marua, Te Ranga and Mairoa soils rather than abrupt boundaries.

4.2 Land Use Capability Assessment

Brodick farms resource information	Luc unit	Total area (ha)	Parent material	Dominant soil type	Slope degree	Land Cover	Erosion degree & severity		Strengths	Limitations	Landuse suitability	Stock carrying capacity (su/ha)	Conditions of use
							Actual	Potential				Forestry site index (FSI)	
Flat to undulating slopes on yellow-brown loams formed on Mairoa ash 	2s 2	0.4	Mairoa ash	Te Kuiti silt loam	0-7°	Pasture	Nil	Nil	• Contour • Accessibility • Free draining soil • Supports high producing pasture and cropping	• Slight soil limitation for cropping use	Intensive grazing Intensive cropping Forestry	Data not available	• Avoid structural degradation of soils under intensive, regular cropping
Rolling slopes on yellow-brown loams with slight to moderate erosion hazard when cultivated 	3e 1	19.8	Mairoa ash	Mairoa ash soil	8-15°	Pasture	Nil	Slight to moderate sheet and rill when cultivated	• Contour • Accessibility • Free draining soil • Supports high producing pasture and cropping	• Moderate erosion limitation under cultivation	Intensive grazing Cropping Forestry	Data not available	• Avoid structural degradation of soils under intensive, regular cropping • Contour cultivation required
Narrow river terraces with a moderately high water table and subject to runoff from adjacent hills 	3w 1	1.9	Recent alluvium	Unnamed alluvial soil	0-3°	Pasture	Nil	Moderate streambank	• Contour • Accessibility • Supports high producing pasture and cropping	• Wetness limitation	Intensive grazing Cropping	Data not available	• Drainage and streambank protection maybe needed in some places
Strong rolling slopes on yellow-brown loams with a moderate to severe erosion hazard when cultivated. 	4e 1	33.6	Mairoa ash	Mairoa ash soil	8-20°	Pasture	Nil	Slight gully Moderate to severe sheet and rill and moderate gully when cultivated	• Contour • Accessibility • Free draining soil • Supports high producing pasture	• Moderate to severe erosion limitation under cultivation	Intensive grazing Occasional cropping Forestry	Data not available	• Avoid structural degradation of soils under intensive, regular cropping • Contour cultivation required and minimum tillage practices required

Brodick farms resource information	Luc unit	Total area (ha)	Parent material	Dominant soil type	Slope degree	Land Cover	Erosion degree & severity		Strengths	Limitations	Landuse suitability	Stock carrying capacity (su/ha)	Conditions of use
							Actual	Potential				Forestry site index (FSI)	
4e 3 Strong rolling slopes on sedimentary lithologies with a moderate to severe erosion hazard when cultivated 		2 2	Greywacke	Maruia clay loam	16-20°	Pasture, indigenous vegetation	Nil	Slight gully Moderate to severe sheet and rill and moderate gully when cultivated	• Contour • Accessibility • Free draining soil • Supports high producing pasture	• Moderate to severe erosion limitation under cultivation	Intensive grazing Occasional cropping Forestry	Data not available	• Avoid structural degradation of soils under intensive, regular cropping • Contour cultivation required and minimum tillage practices required • Pair plant gullies
6e 1 Moderately steep to strong rolling slopes on yellow-brown loams over various lithologies 		53 0	Marroa ash	Te Kuiti series	16-25°	Pasture	Negligible	Slight sheet and soil slip	• Free draining soil • Stable, high producing hill country	• Steep gradient precludes cropping • Gradient gives slight erosion risk	Intensive grazing Forestry	Data not available	• Maintain good pasture cover • Carefully plan all earthworks and minimize exposure of bare ground • When harvesting plantation trees follow industry best practice guidelines
6e 3 Moderately steep to strong rolling slopes on sedimentary lithologies 		38 5	Greywacke	Maruia clay loam hill soil	16-25°	Pasture	Negligible	Slight gully, soil slip and sheet	• Free draining soil • Stable high producing hill country	• Steep gradient precludes cropping • Gradient gives slight erosion risk	Intensive grazing Forestry	Data not available	• Maintain good pasture cover • Carefully plan all earthworks and minimize exposure of bare ground • When harvesting plantation trees follow industry best practice guidelines
6e 5 Moderatley steep to steep greywacke slopes where rainfall exceeds 1500mm p.a 		106 3	Marroa ash over greywacke, and greywacke	Marroa ash, Maruia clay loam hill soil	21-35°	Pasture Native vegetation	Negligible	Slight to moderate sheet, soil slip and gully	• Free draining soil • Stable hill country	• Steep gradient precludes cropping • Gradient gives a slight to moderate erosion risk	Intensive grazing Forestry	Data not available	• Maintain good pasture cover • Carefully plan all earthworks and minimize exposure of bare ground • When harvesting plantation trees follow industry best practice guidelines • Open plant poplar poles to help prevent/control erosion • Pair plant willows in gullies

Brodick farms resource information	Luc unit	Total area (ha)	Parent material	Dominant soil type	Slope degree	Land Cover	Erosion degree & severity		Strengths	Limitations	Landuse suitability	Stock carrying capacity (su/ha) Forestry site index (FSI)	Conditions of use
							Actual	Potential					
6w 2* Hillside springs and narrow seeps with a severe wetness limitation. Surface water present during the winter with high water tables through the rest of the year 		1.5	Alluvium and swamp material	19.8	0-7°	Rushes, pasture	Severe debris flow	Moderate to severe streambank and debris flow	• If retired water quality and biodiversity benefits	• Severe wetness limitation • Erosion potential	Retirement Light sheep grazing in summer	Data not available	• Pair plant willow poles at the edges of seeps to help stabilize slopes above and prevent slumping and to stabilize seep soil material and vegetation during high rainfall events • Willow poles will help to dry out the seeps and minimize pugging damage
7e 2 Steep to very steep slopes with a severe soil slip and surface erosion potential 		138.0	Greywacke	Te Ranga steepland soil	25->35°	Pasture Native vegetation	Slight to moderate soil slip	Severe soil slip, sheet and scree Moderate gully	•	• Severe erosion risk	Pasture Forestry Retirement	Data not available	• Open plant poplar poles to help prevent and control erosion • Pair plant willow poles in gullies • Consider erosion control forestry

LUC descriptions based on; Waikato Region: Land use capability Extended Legend.

5.0 LAND MANAGEMENT ASSESSMENT

5.1 Current Farm Management

Resource	Management Consideration	Current Management	Future Management Plans
Soil	Erosion	• Soil slip erosion is a challenge on the property due to steep topography, especially during high intensity rain storms. To address this, 500 poplar. Survival rates past the second spring are variable due to wind damage. • Stock policy has been tailored to the topography to help minimise erosion. No heavy cattle are run on the property, only R1 cattle are wintered then sold as yearlings to help minimise damage on the steep slopes. • Pasture covers are built up before winter and are aimed to be kept above 1200kgDM/ha throughout winter. • Maintaining good paddock subdivision allows for regular stock shifting in the winter rotation which helps to limit pasture and soil damage. • Pasture cover is maintained on access tracks to help minimise sediment generation. • Crops are planted using direct drilling methods to minimise any potential soil loss through runoff. • Cropping is not carried out near waterways which helps to minimise the risk of sediment loss to waterways in runoff	• Poplar poles will continue to be planted at a rate of 100 poles/yr
	Structural Management	• Soil is well drained, so pugging risk is low. • Only R1 cattle and sheep are wintered when pugging risk is high to minimise potential damage. • Only a small area of cropping is carried out with crops being direct drilled.	• Owners will continue with current management and ongoing monitoring to ensure policy continues to be sustainable.
Water	Waterways	• There is a significant length of perennial waterways on the property with almost all paddocks having at least one section of waterway. No waterway fencing has been carried out but four paddocks containing waterways are only used for sheep grazing to prevent waterway degradation due to cattle trampling banks and depositing waste in and around the waterways. • Most waterway track crossings have either bridges or culverts • A digger is on site for two days per year to clean out culverts and prevent blockages.	• Bridge paddock will be fenced at the top of the slope and the steep hillside used for sheep only grazing.
	Wetlands	• There are no established wetlands on the property only large seeps and springs which have full stock access.	• There are no current plans to develop wetlands
	Sources	• Stock are watered from waterways as no reticulated system is in place	• There are no regulatory requirements to fence waterways as land is over 25° so stock will continue to be watered from waterways. • The possibility of a reticulated water system utilising high elevation water sources has been investigated and maybe considered in the future
Nutrients	Fertiliser	• 100T/year of Super 10 +selenium and cobalt is flown on annually in February • kg/ha of N is applied to the paddocks with multiple birth ewes in June	• Will continue with current application method as topography and access restricts ground-based application. • Timing of application will continue as this is within best practice guidelines.
	Soil nutrient status	• Soil tests carried out every two years • Olsen P levels are below optimal at 14-18 • pH is below optimal at 5.4 to 5.7	• When finances allow capital P will be applied to increase Olsen P levels
	Nutrient Budget	• A nutrient budget has been completed. N loss to water 17kg/ha/yr. P loss to water 0.7kg/ha/yr	• Budget will be updated and reviewed with any change in management/fertiliser policy
Pasture	Pests and weeds	• Thistles are actively managed by spraying annually	• Will continue as long as required
	Legume content	• Sulphur has been added to fertiliser to help increase legume growth	• This will continue as needed to optimise legume growth

Resource	Management Consideration	Current Management	Future Management Plans
	Chemical use	• Aerial application of spray to control thistles annually	• This will continue as needed
	Trace elements	• Herbage tests have been carried out. Analysis shows that pasture element status is mostly optimal or above. Mixed pasture analysis shows possible deficiencies in N, Cu and Co. Clover analysis shows possible deficiencies in Molybdenum	• This will continue to be monitored but tests over 16years have shown no concerns for stock health.
Livestock	Farm enterprise	• 300 beef weaners brought in March/April and sold as yearling in December/January • 2000breeding ewe with lambs fattened and sold from December to March/April	• Farm enterprise is well matched to the topography and soil types being farmed and will largely continue as is into the future. • One change being considered is strip grazing cattle on crop from July to September. This would leave more pasture for ewes to grow and feed lambs. This would occur on the cropping paddocks utilising high crop covers.
	Stock management	• Animals are set stocked over winter with cattle stocked at approximately 2.5 R1 cattle/ha	• Will continue as is a good fit for management and to the soil and topography
	Shade and shelter	• Some areas of the farm have little or no shade or shelter for livestock	• A number of oak trees will be planted this autumn/winter to serve as shade and shelter trees for livestock
Natural Heritage	Indigenous Vegetation	• Just under 23ha of mature native bush has been fenced and retired. • New native plantings have been carried out in some fenced off areas.	• There are no current plans to retire more land from grazing.
	Cultural/heritage sites	• None present on the property	
	Plant and animal pests	• Possums are trapped to control numbers and protect native vegetation	• Active management is in place
Greenhouse Gases	Budget	• No budget has been completed	• No current plans

Figure 1: An example of a steep paddock which has been planted with poplar poles to help control erosion and is a sheep only paddock.

Figure 2: An example of the mature native bush that has been retired form grazing. Also, an example of the stable broad hills on left of the picture.

5.2 Land Management Units and Management Considerations

Based on the LUC units, soil types and environmental considerations an assessment has been made of the current management policies and practices and where necessary recommended management changes have been made. Areas of the property that have similar land and soil types and therefore require similar management have been grouped together into Farm Management Units. Each unit has listed the LUC units it contains, its land use suitability and a discussion and the location of any issues identified. Accompanying this table are a number of field photos which present examples of the specific management issues on the property and a FMU map.

LMU	LUC Units	Land Use Suitability	Management Area	Location	Land Management Assessment/Recommended Management Changes
Whole Farm			Fertiliser application	Whole unit	• N leaching loss of 17kg/ha/yr appears high for the current management system and fertiliser programme. Overseer inputs may need to be reviewed. • P loss to water is low and reflects the soil Olsen P levels and minimal erosion occurring on the property. • Ensure fertiliser spreaders are Spreadmark accredited • The risk of P entering waterways during aerial application is high due to the number and distribution of waterways across the farm. Consider a split between ground based and aerial application if sufficient area of the farm can be reach by ground spreading equipment.
			Stock Policy	Whole unit	• Stock policy is a good match for the land classes and soils present on the property. Light classes of stock help to minimise erosion on the steep slopes and minimise pugging damage over the winter. • Cattle access to waterways and seeps will be adding sediment, pathogens and nutrients to water on and off farm. To prevent this stock need to be excluded from waterways and seeps or only sheep run on the property. There is no regulatory requirement to fence the waterways as slopes are over 25° and a sheep only operations is not viable. Mitigation measures however have been put in place to minimise these negative impacts. Stock policy, erosion control planting and planting shade trees have all been tailored to minimising any negative impacts on waterways.
			Erosion Control	Whole unit	• Poplar pole planting has been carried out across the farm with ongoing planting planned to help control/prevent erosion. Going forward pole planting needs to target erosion prevention in hot spot areas such as gully heads, hill side springs and steep sided gullies. These areas have been highlighted on individual FMUs. • A planting plan should be developed to target high priority areas over the next few years.
			Culvert crossings	Whole unit	• In many places culvert crossings are acting as sediment traps. When these are cleaned out ensure spoil is placed where it cannot re-enter the waterways. • Ensure culvert size is suitable for the water flow demands. If culvert size is inadequate, during times of high flow water will flow around the culvert and over the track causing track wash out and gully erosion. • Pipes should be installed so there is no drop off as water is discharged from the pipe as this can be a source of significant erosion.
Alluvium – 1.5ha This unit is only small and consist of an alluvial valley bottom and permanent waterway.	Main unit – 3w 1 Minor units – 6e 5	• Pasture	Stock Policy	Whole unit	• The sheep only stock policy for this unit is a good match for the land. It has been implemented to minimise negative waterway impacts while keeping the land productive.
Easy Ash – 32.6 ha The easy ash unit has a good depth of ash cover and is dominated by class four land and has no erosion present.	Main unit – 4e 1 Minor units – 6e 1, 6e 3, 6e 5, 7e 2	• Pasture • Forestry • Cropping	Stock Policy	Whole unit	• This unit contains some of the easier contour land on the farm and is well suited to the stock classes it supports.
			Cropping	3 Ridge, Right Hand and Left Hand Hay, Pinetree	• Cropping is carried out on this unit. Crops are direct drilled and there are sufficient buffers between the cropping area and the nearest waterways to mitigate any potential sediment carried in runoff. • The LUC units being cropped on this unit are 3e 1 and 4e 1. The former unit list cropping as a suitable land use where as latter lists it only as an occasional land use. Care should be taken to ensure there is minimal bare soil exposed as heavy rain combined with the slope of class four land could result in topsoil loss from these slopes. If full cultivation were being considered this risk would be significantly increased.
			Potential erosion	Right hand hay, 3 Ridge	• Plant gully heads with poplar poles to stabilise and help minimise erosion potential • Tree maintenance is important to ensure trees don't become to big and cause safety issues and infrastructure damage from broken branched and toppled trees.
			Stock access to waterway	0.7ha holding	• This paddock should be sheep only to prevent waterway degradation from cattle trampling and depositing waste into and around the waterway.

				paddock, Pinetree	• This paddock has been used as a holding paddock for cattle a couple of times a year. Under the Healthy Rivers regulations without the waterway being fenced this paddock should not be used as such. • The main waterway that runs through the bottom of Pinetree paddock should be fenced to exclude cattle as this small section is the only place they have access to this waterway on the property.
Ash Hills – 177.1ha This unit is dominated by class six land that tends to have rounded ash covered ridge tops with class four land on broader ridges. Gully sides are a mix of class six and seven. Erosion is minimal across the unit.	Main unit – 6e 1, 6e 5, Minor units – 7e 2, 6e 3, 4e 1, 4e 3	• Pasture • Forestry	Stock policy	Whole Unit	• Stock policy is a good match to the land classes in this unit. Cattle however are causing trampling damage on hill side springs and seeps as well as having access to perennial waterways (see figure 3 below for an example of this). This will be contributing to waterway degradation as previously discussed. Mitigation measures are outlined below.
			Potential erosion	Whole unit	• There is minimal erosion occurring across this unit. Most slip scars are from old slips. A number are associated with cross slope track cuttings or on steep slopes with shallower soils. As such poplar pole planting on this unit will be focused on erosion prevention. Space planting should be carried out on steep slopes with willow pair planting on hillside seeps and gully heads.
			Stock trampling seeps and springs	Whole unit	• Stock trampling hillside springs and seeps generates increased levels of sediment during runoff events and increases the risk of erosion. Planting with willow poles can help stabilise and dry these areas out, helping to minimise these risks.
Steep Gullies – 77.8ha This unit has a significant portion of steep class seven gullies. Ash is present on ridge tops where class three and four land is located. Gullies sides tend to drop sharply from the ridges with little or no ash cover present.	Main unit – 7e 2, 6e 5 Minor units – 6e 1, 6e 3, 6w 2, 4e 1, 3e 1	• Pasture • Forestry • Conservation	Stock policy	Whole unit	• Stock policy is a good match for this unit but care needs to be taken with cattle on the steep gully sides. These should be monitored to make sure trampling damage is not causing erosion. Space planting poplar poles is needed on these slopes.
			Potential and active erosion	Whole unit	• Erosion has been occurring on the steep hills/gully sides as well as at the base of easy slopes that are wet and have flowing water. To address these issues poplar poles should be open space planted on slopes with willows planted at the base of slopes where the ground is wet and pair planted either side of small waterways higher up in the hills. This will help to stabilise slopes and dry out wet areas.
			Stock access to waterways	Te Ranga	• There are two unbridged and one bridged track waterway crossings on this unit. When possible move stock across the bridged crossing rather than through the fords to help minimise any negative water quality impacts from animal waste and sedimentation.
			Stock trampling seeps and springs	Whole unit	• Stock trampling seeps generates increased levels of sediment during runoff events and increases the risk of erosion (see Figure 2 below). Planting with willow poles can help stabilise and dry these areas out, helping to minimise these risks. Alternatively, they could be fenced and retired. • Seeps in the 6w 2* LUC class that sit directly on parent material are prone to float on water during heavy rain. The floating vegetation and soil can then be carried with the water flow down slopes causing significant damage to farm infrastructure. To help minimise this risk willow poles should be planted along the edge of the seeps but not directly in the seep.
Steep Hills – 79.4 ha The steep hills unit is dominated by class seven slopes which drop sharply from ridge tops forming steep to very steep gully sides. This unit has shallow soils and a severe erosion risk with moderate erosion occurring.	Main unit – 7e 2 Minor units – 6e 1, 6e 3, 6e 5, 4e 1	• Pasture • Forestry • Conservation	Stock policy	Whole unit	• Erosion potential on this unit is rated as severe under the lass 7e 2 classification. Stock policy has been tailored to this limitation. There is still significant tracking on the steep slopes in this unit and though not severe, slight to moderate erosion is occurring. As such, this unit would lend itself to sheep only grazing. Under the current policy slopes need to be monitored to ensure cattle trampling is not causing erosion. Space planting poplar poles on steep slopes would help to mitigate this issue. • Adopting the proposed winter strip grazing plan for cattle will help to reduce the number of cattle on the rest of the farm. This unit should be kept as sheep only grazing through those months. If possible, excluding or minimising the time cattle spend on this unit trough the rest of the wet months of autumn/winter/spring would help to minimise erosion potential.
			Potential and active erosion	Whole unit	• Erosion has been occurring on the steep gully sides of this unit as well as above cross slope track cuttings. To address these issues poplar poles should be open space planted on slopes and willow poles pair planted either side of small hillside waterways/seeps and around hillside springs. • Care needs to be taken when constructing farm tracks. Where possible tracks should be kept to ridge tops and easy slopes.
			Stock trampling seeps and springs	Whole unit	• Stock trampling at these wet sites generates increased levels of sediment during runoff events and increases the risk of erosion (see Figure 2 below). Planting with willow poles can help stabilise and dry these areas out, helping to minimise these risks. Alternatively, they could be fenced and retired

Retired – 23.8ha	7e 2, 6e 5	• Conservation	Habitat development	Whole unit	• These areas have already been fenced and retired form grazing with a pest management programme in place.

Figure 3: An example of trampling damage on a hillside spring/seep

Figure 4: An example of mass movement of a seep as a result of heavy rain.

5.3 Recommended Information Sheets

It is recommended that the following information sheets, are used to complement and extend the Best Management Practises outlined in the LMU table.

From the Waikato Regional Council: Farm fact sheets on soil, nutrient and waterway management at:

- www.waikatoregion.govt.nz/community/your-community/for-farmers/news-and-events/farm-management-factsheet

From the Bay of Plenty Regional Council (www.boprc.govt.nz): under knowledge centre/fact sheets

- Farm tracks: Planning, construction and maintenance
- Plant selection for environmental protection areas
- Management of retirement areas
- Runoff management on pastures
- Uses and management of willow species
- Efficient fertiliser use

From Dairy NZ:

- Seasonal Nitrogen Use At www.dairynz.co.nz/media/255711/7-11_Seasonal_nitrogen_use_2012.pd

From the Northland Regional Council (www.nrc.govt.nz): under the land, water and wetlands sections of publications

- Sediment pollution
- Trees for the land
- Poplar and willows for the land

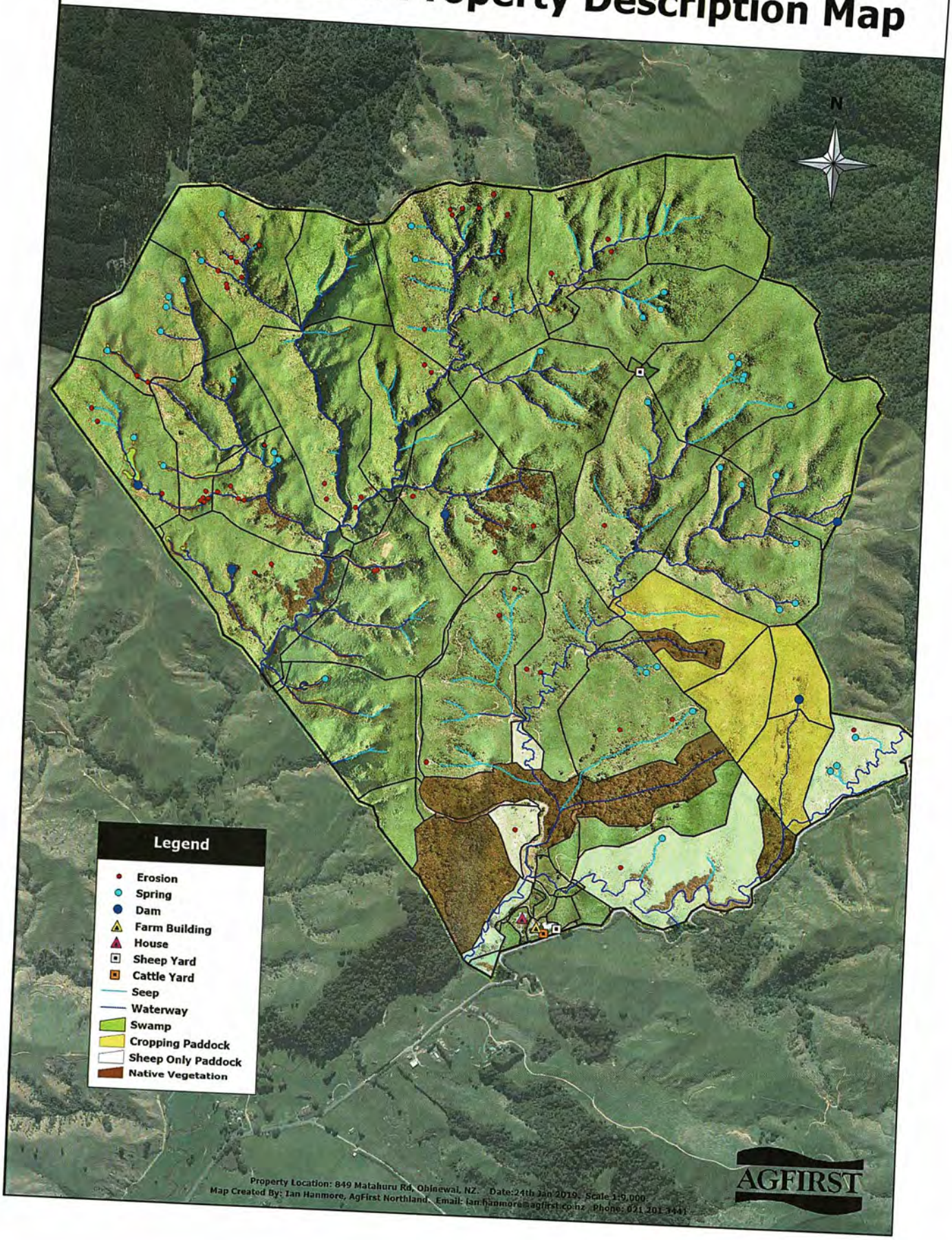
Best Practice Environmental Guidelines - Land Drainage

6.0 RECOMMENDED ENVIRONMENTAL WORKS AND ACTIONS PROGRAMME

The key recommended works and actions are detailed below and shown on the Recommended Works Map. These address the priority soil conservation issues and the management considerations. The Recommended Works and the Best Management Practises (BMP) should be implemented for long-term farm sustainability.

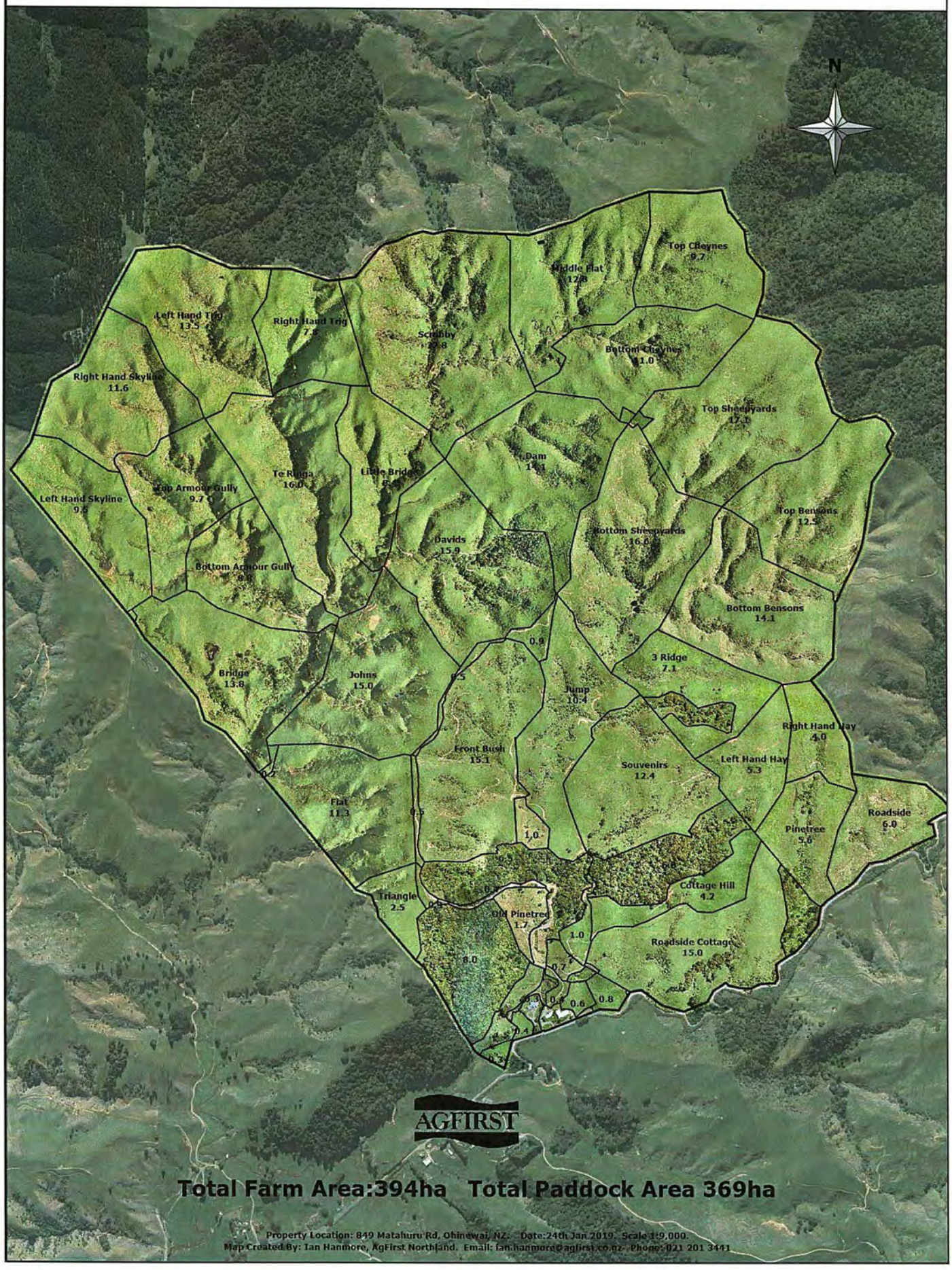
Location	Issue	Actions to be Undertaken	Action Quantities		Priority	Date to be completed
			Fencing (m)	Planting (Ha)		
Pine Tree	Cattle access to waterway	Fence to exclude cattle	80		Medium	
0.7ha holding paddock	Cattle access to waterway	Change cattle management to use a different holding paddock with no waterway			High	Immediate
Whole Farm	Erosion/potential erosion	Pair plant seeps and springs with willow poles Starting on the Steep Hills and Steep Gullies units			High	Target these areas with yearly plantings
Whole Farm	Erosion/Erosion Potential	Space plant poplar poles on steep faces Starting on the Steep Hills and Steep Gullies units			High	Target these areas with yearly plantings
Steep Hills	Stock trampling damage and erosion	Keep cattle off over the winter			Medium	With change of stock policy

Brodick Farms Property Description Map



Brodick Farms Contour Map

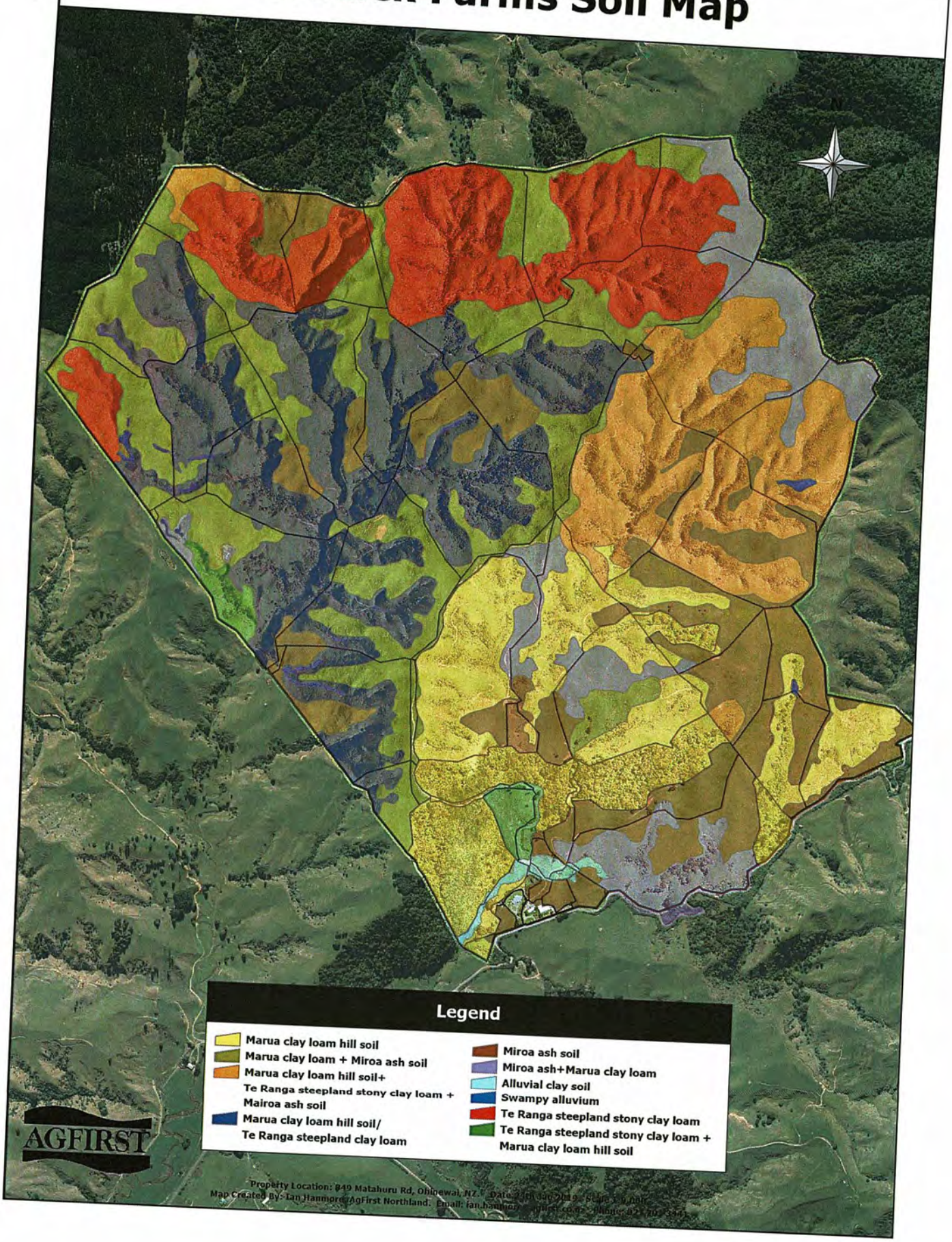
Brodick Farms Paddock Map



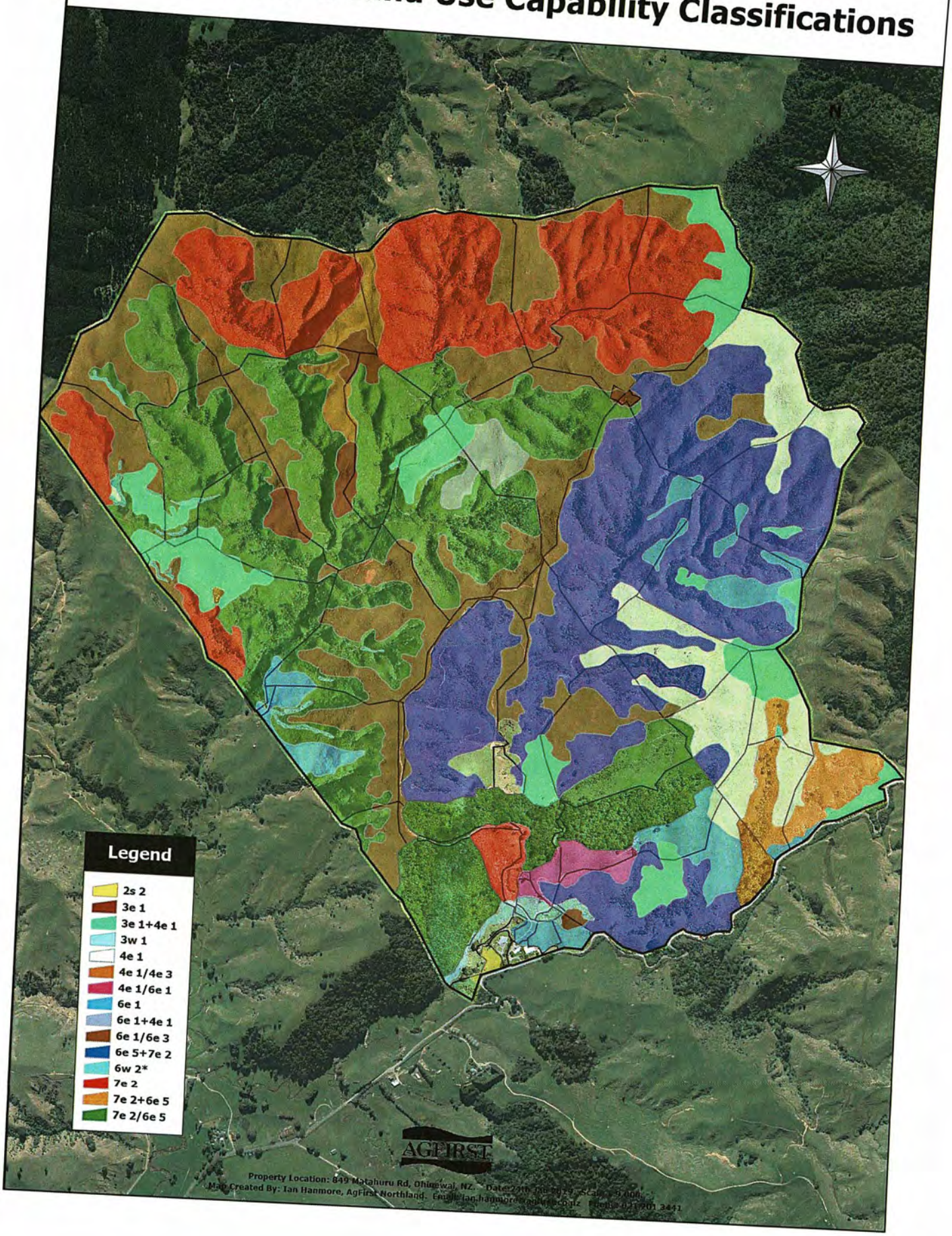
Total Farm Area:394ha Total Paddock Area 369ha

Property Location: 849 Matahuru Rd, Ohinewai, NZ. Date:24th Jan 2019. Scale 1:9,000.
Map Created By: Ian Hanmore, AgFirst Northland. Email: ian.hanmore@agfirst.co.nz Phone: 021 201 3441

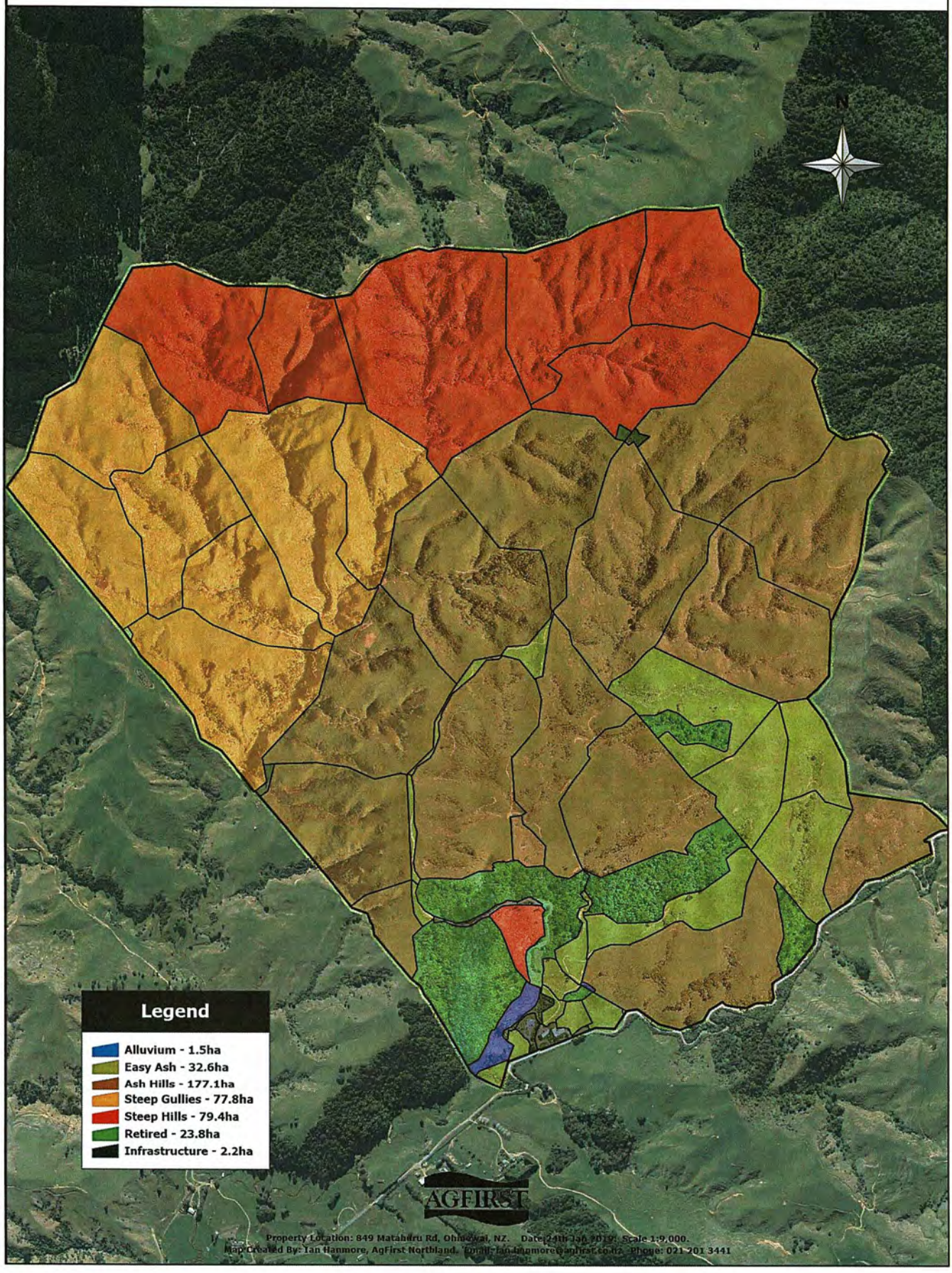
Brodick Farms Soil Map



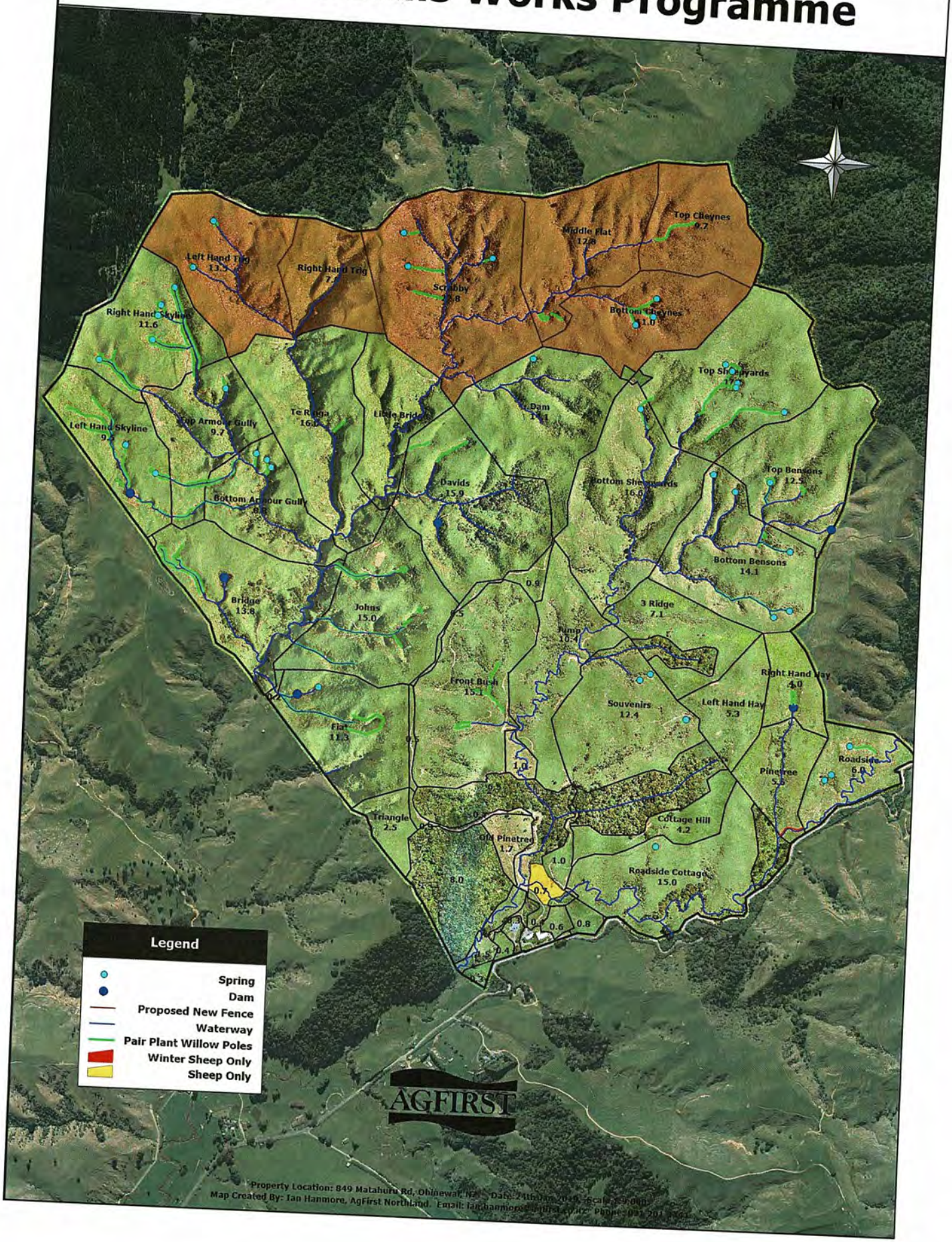
Brodick Farms Land Use Capability Classifications



Brodick Farms Management Units



Brodick Farms Works Programme



8.0 APPENDIX – SOIL FACT SHEETS

8.1 Soil Fact Sheets

Manaaki Whenua
Landcare Research

SOIL REPORT

Environment Waikato

Report generated: 18-Mar-2019 from https://smap.landcareresearch.co.nz

This information sheet describes the typical average properties of the specified soil to a depth of 1 metre, and should not be the primary source of data when making land use decisions on individual farms and paddocks.

S-map correlates soils across New Zealand. Both the old soil name and the new correlated (soil family) name are listed below.

Family: Te Rangaf

Smap ref: TeRa_1a.1

Te Ranga steepland soils (Te Ranga_1a.1)

Key physical properties

Depth class (diggability)		Moderately deep (50 - 90 cm)
Texture profile		Clay
Potential rooting depth		50 - 90 (cm)
Rooting barrier		Massive rock
Topsoil stoniness		Slightly stony
Topsoil clay range		60 - 70 %
Drainage class		Well drained
Aeration in root zone		Slightly limited
Permeability profile		Moderate over slow
Depth to slowly permeable horizon		50 - 90 (cm)
Permeability of slowest horizon		Slow (< 4 mm/h)
Profile available water	(0 - 100cm or root barrier)	Low (52 mm)
	(0 - 60cm or root barrier)	Low (46 mm)
	(0 - 30cm or root barrier)	Low (27 mm)
Dry bulk density, topsoil		1.08 g/cm³
Dry bulk density, subsoil		1.54 g/cm³
Depth to hard rock		Moderately deep
Depth to soft rock		No soft rock within 1 m
Depth to stony layer class		Moderately deep

Key chemical properties

Topsoil P retention	Medium (36%)

About this publication

- This information sheet describes the *typical average properties* of the specified soil.
- For further information on individual soils, contact Landcare Research New Zealand Ltd: www.landcareresearch.co.nz
- Advice should be sought from soil and land use experts before making decisions on individual farms and paddocks.
- The information has been derived from numerous sources. It may not be complete, correct or up to date.
- This information sheet is licensed by Landcare Research on an "as is" and "as available" basis and without any warranty of any kind, either express or implied.
- Landcare Research shall not be liable on any legal basis (including without limitation negligence) and expressly excludes all liability for loss or damage howsoever and whenever caused to a user of this factsheet.

Family: Te Rangaf

Smap ref: TeRa_1a.1

Te Ranga steepland soils (Te Ranga_1a.1)

Additional factors to consider in choice of management practices

Vulnerability classes relate to soil properties only and do not take into account climate or management

Soil structure integrity

Structural vulnerability	Very low (0.37)
Pugging vulnerability	not available yet

Water management

Water logging vulnerability	Low
Drought vulnerability - if not irrigated	High
Bypass flow	Medium
Hydrological soil group	C

Contaminant management

N leaching vulnerability	Very high
P leaching vulnerability	not available yet
Bypass flow	Medium
Dairy effluent (FDE) risk category	C if slope > 7 deg otherwise D

Relative Runoff Potential

Slope	0-3°	4-7°	8-15°	16-25°	>25°
Risk	L	L	M	H	H

Additional information

Soil classification	Acidic Orthic Brown Soils (BOA)
Family	*Te Rangaf*
Sibling number	1
Profile texture group	Clayey
Soil profile material	Moderately deep soil
Rock class of stones/rocks	From hard sandstone rock
Rock origin of fine earth	From hard sandstone rock
Parent material origin	Rock

Characteristics of functional horizons in order from top to base of profile:

Functional Horizon	Thickness	Stones	Clay*	Sand*
Clayey Fine Sl Firm	5 - 15 cm	0 - 5 %	60 - 70 %	20 - 30 %
Stony Clayey Fine Firm	45 - 75 cm	30 - 35 %	60 - 80 %	20 - 30 %

* clay and sand percent values are for the mineral fines (excludes stones). Silt = 100 - (clay + sand)

Manaaki Whenua Landcare Research

Environment Waikato

Manaaki Whenua
Landcare Research

SOIL REPORT

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Report generated: 18-Mar-2019 from https://smap.landcareresearch.co.nz

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S-map correlates soils across New Zealand. Both the old soil name and the new correlated (soil family) name are listed below.

Family: Gladstone*f*

Smap ref: Glad_32a.1

Marua hill soils (Gladstone_32a.1)

Key physical properties

Depth class (diggability)		Deep (> 1 m)
Texture profile		Loam
Potential rooting depth		Unlimited
Rooting barrier		No significant barrier within 1 m
Topsoil stoniness		Stoneless
Topsoil clay range		20 - 25 %
Drainage class		Well drained
Aeration in root zone		Unlimited
Permeability profile		Moderate
Depth to slowly permeable horizon		No slowly permeable horizon
Permeability of slowest horizon		Moderate (4 - 72 mm/h)
Profile available water	(0 - 100cm or root barrier)	High (155 mm)
	(0 - 60cm or root barrier)	High (96 mm)
	(0 - 30cm or root barrier)	High (50 mm)
Dry bulk density, topsoil		1.09 g/cm³
Dry bulk density, subsoil		1.61 g/cm³
Depth to hard rock		No hard rock within 1 m
Depth to soft rock		No soft rock within 1 m
Depth to stony layer class		Moderately deep

Key chemical properties

Topsoil P retention	Medium (36%)

About this publication

- This information sheet describes the *typical average properties* of the specified soil.
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Family: Gladstonef

Marua hill soils (Gladstone_32a.1)

Smap ref: Glad_32a.1

Additional factors to consider in choice of management practices

Vulnerability classes relate to soil properties only and do not take into account climate or management

Soil structure integrity

Structural vulnerability	Moderate (0.54)
Pugging vulnerability	not available yet

Water management

Water logging vulnerability	Very low
Drought vulnerability - if not irrigated	Low
Bypass flow	Medium
Hydrological soil group	A

Contaminant management

N leaching vulnerability	Low
P leaching vulnerability	not available yet
Bypass flow	Medium
Dairy effluent (FDE) risk category	C if slope > 7 deg otherwise D

Relative Runoff Potential

Slope	0-3°	4-7°	8-15°	16-25°	>25°
Risk	VL	VL	VL	VL	L

Additional information

Soil classification	Acidic Orthic Brown Soils (BOA)
Family	*Gladstonef*
Sibling number	32
Profile texture group	Loamy
Soil profile material	Soil with stones (non contrasting)
Rock class of stones/rocks	Not applicable
Rock origin of fine earth	From hard sandstone rock
Parent material origin	Rock

Characteristics of functional horizons in order from top to base of profile:

Functional Horizon	Thickness	Stones	Clay*	Sand*
Loamy Weak				
Loamy Fine Firm	10 - 15 cm	0 %	20 - 25 %	40 - 50 %
Stony Loamy Fine Firm	30 - 50 cm	0 %	20 - 30 %	30 - 50 %
	40 - 60 cm	5 - 10 %	20 - 25 %	30 - 50 %

* clay and sand percent values are for the mineral fines (excludes stones). Silt = 100 - (clay + sand)

Manaaki Whenua
Landcare Research

SOIL REPORT

Environment Waikato

Report generated: 18-Mar-2019 from https://smap.landcareresearch.co.nz

This information sheet describes the typical average properties of the specified soil to a depth of 1 metre, and should not be the primary source of data when making land use decisions on individual farms and paddocks.

S-map correlates soils across New Zealand. Both the old soil name and the new correlated (soil family) name are listed below.

Family: Gladstonef

Marua clay loam (Gladstone_29a.1)

Smap ref: Glad_29a.1

Key physical properties

Depth class (diggability)		Deep (> 1 m)
Texture profile		Loam
Potential rooting depth		Unlimited
Rooting barrier		No significant barrier within 1 m
Topsoil stoniness		Stoneless
Topsoil clay range		25 - 30 %
Drainage class		Well drained
Aeration in root zone		Unlimited
Permeability profile		Moderate
Depth to slowly permeable horizon		No slowly permeable horizon
Permeability of slowest horizon		Moderate (4 - 72 mm/h)
Profile available water	(0 - 100cm or root barrier)	High (154 mm)
	(0 - 60cm or root barrier)	High (94 mm)
	(0 - 30cm or root barrier)	Moderate (49 mm)
Dry bulk density, topsoil		1.09 g/cm³
Dry bulk density, subsoil		1.61 g/cm³
Depth to hard rock		No hard rock within 1 m
Depth to soft rock		No soft rock within 1 m
Depth to stony layer class		No significant stony layer within 1 m

Key chemical properties

Topsoil P retention	Medium (36%)

About this publication

- This information sheet describes the *typical average properties* of the specified soil.
- For further information on individual soils, contact Landcare Research New Zealand Ltd: www.landcareresearch.co.nz
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Family: Gladstone*f*

Smap ref: Glad_29a.1

Marua clay loam (Gladstone_29a.1)

Additional factors to consider in choice of management practices

Vulnerability classes relate to soil properties only and do not take into account climate or management

Soil structure integrity

Structural vulnerability	Moderate (0.51)
Pugging vulnerability	not available yet

Water management

Water logging vulnerability	Very low
Drought vulnerability - if not irrigated	Low
Bypass flow	Medium
Hydrological soil group	A

Contaminant management

N leaching vulnerability	Low
P leaching vulnerability	not available yet
Bypass flow	Medium
Dairy effluent (FDE) risk category	C if slope > 7 deg otherwise D

Relative Runoff Potential

Slope	0-3°	4-7°	8-15°	16-25°	>25°
Risk	VL	VL	VL	VL	L

Additional information

Soil classification	Acidic Orthic Brown Soils (BOA)
Family	*Gladstonef*
Sibling number	29
Profile texture group	Loamy
Soil profile material	Stoneless soil
Rock class of stones/rocks	Not applicable
Rock origin of fine earth	From hard sandstone rock
Parent material origin	Rock

Characteristics of functional horizons in order from top to base of profile:

Functional Horizon	Thickness	Stones	Clay*	Sand*
Loamy Weak	15 - 20 cm	0 %	25 - 30 %	40 - 50 %
Loamy Fine Firm	20 - 30 cm	0 %	25 - 30 %	40 - 50 %
Loamy Fine Slightly Firm	50 - 65 cm	0 %	25 - 30 %	30 - 50 %

* clay and sand percent values are for the mineral fines (excludes stones). Silt = 100 - (clay + sand)

Manaaki Whenua Landcare Research

Environment Waikato

THE WAIKATO COMMUNITY HAS CONSISTENTLY IDENTIFIED WATER QUALITY AS THE TOP ISSUE FOR THE WAIKATO REGION FOR THE PAST TWO DECADES.

Healthy Rivers/Wai Ora Proposed Waikato Regional Plan Change 1 is the bold response to addressing the complex problem of water quality facing our Waikato and Waipā Rivers.

The proposed plan change gives effect to Government legislation on the management of fresh water (passed in 2014) and Te Ture Whaimana o Te Awa o Waikato (The Vision and Strategy for the Waikato and Waipa rivers) which was adopted by Government as part of Treaty Settlement legislation. The regional council has a legal requirement to give effect to both of these.

The proposed plan has been developed using a collaborative process involving community and sector representation which has ensured that those who are most affected by the changes have been at the table developing the policy and providing input and feedback from their communities and sectors over the last 2.5 years.

The proposed plan aims to encompass or include all landowners over 2ha within the Waikato River and Waipa River catchments.

New rules will complement existing rules in the Waikato Regional Plan. Existing rules in the Waikato Regional Plan will continue to apply, e.g. farm dairy effluent rules, earthwork rules and point-source discharge rules.

ADDITIONAL REQUIREMENTS FOR FORESTRY (5.1.5Q)

In addition to provisions already in the regional plan that manage forestry, there will be new requirements to ensure harvesting operations are managed. Council must be notified 20 working days prior to beginning harvest operations. Notification must include a harvest plan that clearly identifies the area to be harvested and how risks to water bodies will be managed.

A harvest plan should include:

- Title, date and harvest boundary
- Location of existing and proposed roads, tracks, landings, fire breaks and stream crossings
- Location of all water bodies, streams and wetlands and measures to control sediment discharges into water
- Operations restrictions around water bodies
- Location of any protected riparian vegetation and significant natural areas and how they will be protected
- Proposed harvest methodology
- Proposed slash disposal areas and management

POINT SOURCES POLICY (DISCHARGE CONSENTS ETC.)

The water quality objectives in the proposed plan change also include point source discharges (e.g. urban storm water, municipal wastewater). These point source objectives and policies are to be applied when any existing or proposed discharges are consented. Resource consent applications will also need to look at whether the current discharge treatment reflects the "best practicable option" and how adverse effects are avoided, remedied or mitigated depending on the concerns of the particular subcatchment.

SCHEDULE A - REGISTRATION

Between 1 May 2020 and 30 November 2020, all rural properties > 2ha must provide Waikato Regional Council with information that includes:

- landowner/land user details and other basic information
- details of land use activities undertaken at date of plan change notification
- (if grazing animals) stocking rate, location of water bodies and any adjacent fences, location of livestock crossing points and type of structures
- map which highlights the above

SCHEDULE B - NITROGEN REFERENCE POINT

Properties over 20ha must provide Waikato Regional Council with a NRP (highest annual leaching loss in either the 2014/15 or 2015/16 financial year for the property) and associated data. NRP must be provided between 1 May 2020 and 30 November 2020.

All commercial vegetable production properties or enterprises

must provide Waikato Regional Council with a NRP (average N leaching losses from 1 July 2006 to 30 June 2016) and associated data at the date of lodgement of resource consent.

All NRPs are calculated using OVERSEER® or other approved model.

SCHEDULE C - STOCK EXCLUSION

Properties grazing cattle, horses, deer or pigs must have fences or stock proof natural barriers to prevent them from entering water bodies. Water bodies for stock exclusion in this plan change are any:

- rivers that continually contain surface water
- drains that continually contain surface water
- wetlands, including constructed wetlands
- lakes

The setback distance and the need for stock exclusion does vary depending on the applicable rule, slope etc. There is no requirement to move existing fences or stock proof natural barriers to the applicable setback.

ACTIVITY STATUS

Depending on the size of your property and how you use your land, your farm will fall into the different categories outlined below.

PERMITTED	No resource consent is required. Must comply with conditions in plan.
CONTROLLED	Requires resource consent. Must be granted. Must comply with standards and terms in plan. Can only consider control reserved and may only impose consent conditions relevant to those matters.
RESTRICTED DISCRETIONARY	Requires resources consent. May be granted. Can only consider specific matters over which discretion restricted and may only impose consent conditions relevant to those matters.
DISCRETIONARY	Requires resources consent. May be granted. may impose consent conditions. Full discretion.
NON-COMPLYING	Requires resources consent. May be granted, subject to gateway test which is that the adverse effects of the activity on the environment will be minor or the application is for an activity that will not be contrary to the objectives and policies of a relevant plan or proposed plan. May impose consent conditions. Full discretion.
PROHIBITED	Consent cannot be applied for.

RULE 1 - SMALL AND LOW INTENSITY FARMING ACTIVITIES

Permitted activity (see activity table)

This rule applies to farming activities on properties that are not used for commercial vegetable production and are not part of a multi-property enterprise and are registered (Schedule A) and have stock excluded (Schedule C) and are either:

- ≤ 4.1ha OR
- >4.1ha with <6 stock units/ha, no arable cropping

RULE 2 - OTHER FARMING ACTIVITIES (LOW-RISK PROPERTIES)

Permitted activity (see activity table)

This rule is designed to identify properties with low risk factors which do not need a Farm Environment Plan. It applies to farming activities on properties that are not commercial vegetable production and are registered (Schedule A) and have stock excluded (Schedule C) and can meet either set of the following conditions:

Properties >4.1ha and ≤20ha with > 6 stock units/ha OR arable cropping AND not part of multi-property enterprise AND

1. Stocking rate has not increased since notification (if grazing) OR
2. Nitrogen, phosphorus, sediment and microbial pathogen losses have same or lower discharges since notification (if not grazing) AND
3. Water bodies are fenced so that any new fences keep cattle, horses, deer and pigs at least 3m away from water body

Properties > 20ha with > 6 stock units/ha OR arable cropping:

1. N loss doesn't exceed Nitrogen Reference Point (see Schedule B) or 15kg N/ha/year (whichever lesser) AND
2. no land >15° slope cultivated or grazed AND
3. no soil cultivation occurs within 5m of a water body AND
4. no winter forage crops grazed in situ AND
5. Water bodies are fenced and stock are excluded. Any new fence are located to keep cattle, horses, deer and pigs at least 3m away from water body

Note: Properties between 4.1 and 20ha do not require a Nitrogen Reference Point modelled through OVERSEER, but must provide verification that they comply with points 1 and 2.

FEPs are a key aspect of the proposed plan change as they allow landowners to tailor their farm plan to suit the farm system, landscape/localised features and potential future changes. Farm plans help to identify areas where contaminants are lost, and identify appropriate mitigations.

Rules 3 & 4 are the two key rules for the majority of pastoral, horticultural and arable farming enterprises within the Waikato and Waipā catchments. The two options include the same approach for FEPs, but different routes. These are outlined below.

RULE 3 - FARMING ACTIVITIES WITH A FARM ENVIRONMENT PLAN UNDER A CERTIFIED INDUSTRY SCHEME

Permitted activity (see activity table)

Properties, excluding commercial vegetable production, that do not come under Rules 1 or 2, and are registered to a Certified Industry Scheme. Properties must also be registered (Schedule A) and stock excluded (Schedule C) and must provide a Farm Environment Plan to Waikato Regional Council and adhere to it by:

- 1 March 2022 for priority 1 sub-catchments, and properties with a Nitrogen Reference Point greater than 75th percentile nitrogen leaching value
- 1 March 2025 for priority 2 sub-catchments,
- 1 July 2026 for priority 3 sub-catchments,

Note: Certified Industry Schemes will have to be approved by Waikato Regional Council. Schedule 2 sets out the requirements for an industry scheme.

RULE 5 - EXISTING COMMERCIAL VEGETABLE PRODUCTION

Controlled activity (see activity table)

Commercial vegetable production enterprises operating under an approved Farm Environment Plan (in place by March 2022) as part of an industry scheme are a controlled activity as long as the area of the enterprise does not exceed the maximum area occupied by that enterprise from 1 July 2006 to 1 July 2016 and the enterprise does not exceed its Nitrogen Reference Point (see Schedule B).

Note: Policies require a reduction in 10% of nitrogen discharges across the sector by 2026.

RULE 6 – USE OF LAND FOR FARMING ACTIVITIES

Restricted discretionary activity (see activity table)

Properties used for farming activities but not covered by preceding rules.

This information has been provided based on Waikato Regional Council's interpretation of the proposed plan. The proposed plan is subject to change through the hearings process.

RULE 4 - FARMING ACTIVITIES WITH A FARM ENVIRONMENT PLAN NOT UNDER A CERTIFIED INDUSTRY SCHEME

Controlled activity (see activity table)

This applies to properties which do not come under Rules 1 and 2, farming where land use is not registered to Certified Industry Scheme is a controlled activity provided;

- It has an FEP provided by certified person as part of a consent application
- FEPs are in place by 'priority dates' (see table)
- Stock (Schedule C) are excluded from water bodies
- All stock are excluded within 3 years of priority date or at the latest by 2026 (whichever is soonest)
- FEP shows how NRP is complied with as measured via 5 year rolling average in OVERSEER
- FEP for 75th percentile prepared before 2022.

Note: Policy 2(d) says that reductions must be proportionate to the amount of current discharge (those discharging more are expected to make greater reductions) and proportionate to the scale of water quality improvement required in the sub-catchment.

RULE 7 - LAND USE CHANGE

Non-complying activity (see activity table)

The following land use changes (greater than 4.1ha) are non-complying activities from date of notification and therefore require a resource consent.

CURRENT LAND USE		NEW LAND USE
Woody vegetation	→	Pastoral farming
Any livestock grazing and/or arable cropping	→	Dairy farming
Any land use	→	Commercial vegetable growing

*Dairy farming means farming of dairy cows on a milking platform for milk production.

Note: Provision is made in Objectives and Policies for some flexibility for development of tangata whenua ancestral lands. This is to recognise that flexibility has been restricted in the past due to legal and/or historical impediments.

Any land that does change use will also be subject to other rules, for example the requirement to have a Farm Environment Plan under Rule 3 or 4. A Nitrogen Reference Point for any new land use will be established as part of the consent application.

PROPOSED KEY DATES FOR THE RULES

22 OCTOBER, 2016	Land use change rule in effect
1 MAY 2020 TO 30 NOVEMBER 2020	All properties over 2ha register with the Waikato Regional Council All properties over 20ha provide their nitrogen reference points
1 MARCH 2022	Priority 1 sub-catchments, the 75th percentile nitrogen leaching value dischargers and commercial vegetable production complete their Farm Environment Plans
1 MARCH 2025	Priority 2 sub-catchments complete Farm Environment Plans Priority 1 sub-catchments complete stock exclusion
1 JULY 2026	Priority 3 sub-catchments complete Farm Environment Plans Priority 2 and 3 sub-catchments complete stock exclusion Leaching exceeding the 75th percentile has been reduced to meet the 75th percentile Land use change rule expires

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