

New Zealand GAP
Environment Management System

Templates

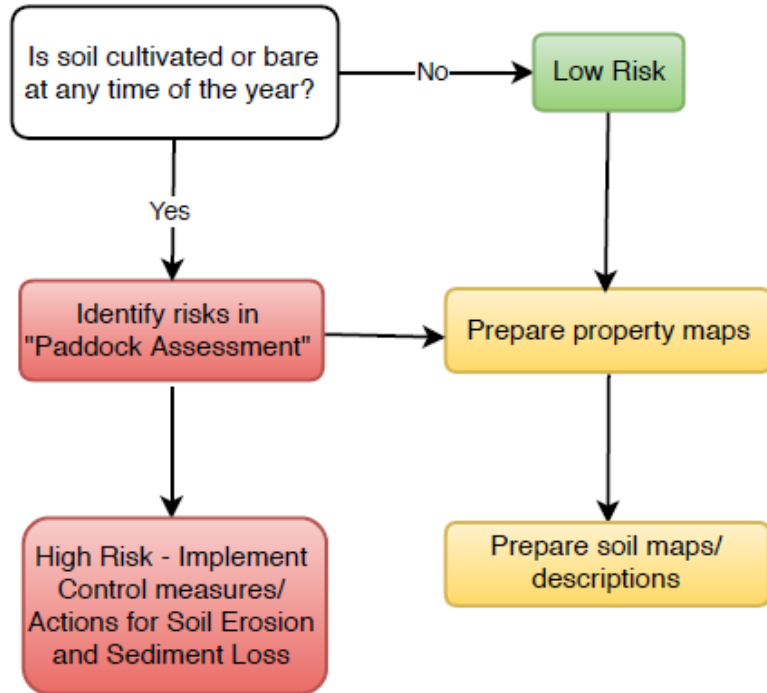
(i.e. Farm Environment Plan)



5A Mapping: Features to be included on the property plan (map)

1. General Map Features		Complete?		Date to be completed?
		Yes	No	
All	Property boundaries (currently owned and leased land)			
All	Land management units (e.g. cropped areas)			
All	Potential critical sources (point and area) for contaminants (e.g. erosion risk, fert storage)			
All	Permanent or intermittent rivers, streams, lakes, ponds, drains and wetlands			
All	Riparian vegetation and barriers/fences adjacent to waterbodies			
All	Any significant areas as defined by the local authority (see local authority mapping: e.g. significant indigenous biodiversity areas, cultural landscape values management area)			
Recommended	Environmental actions/mitigations			
All	Other features (please specify):			
2. Soil and water Map Features (questions also in EMS checklist)		Complete?		Date to be completed?
		Yes	No	
All	Have soil maps and/or descriptions been prepared for the property?			
All	Do property maps or descriptions identify locations where most surface water is entering and leaving each block/paddock?			
All	Has the location of any spring heads, wetlands or spring-fed streams on the property map been identified where required by the local authority?			

6A SOIL: Risk of soil erosion and sediment loss – Property Assessment



6B. SOIL: Risk of soil erosion and sediment loss – Paddock Assessment

Paddock Name/ID:				
Slope of paddock:	(Note: <1 degree = Low erosion risk, >1 degree = Medium/High erosion risk)			
Paddock assessment		Complete?		
		Yes	No	n/a
All	Identify site specific risks of this paddock (soil type, slope, proximity to waterways, critical source areas)			
All	Describe paddock management risks (paddock use, previous use, crop type, crop coverage, cultivation technique)			
All	Identify where water is entering the paddocks (map or description)			
All	Identify where water leaves the paddocks (map or description)			
Inherent Risk Level (i.e. without any control measures in place):		(High / Medium / Low)		
<u>Identified site-specific risks:</u>				
<u>Identified paddock management risks:</u>				
<u>Other risks: (e.g. description of water entering and leaving paddocks if not identified on map)</u>				

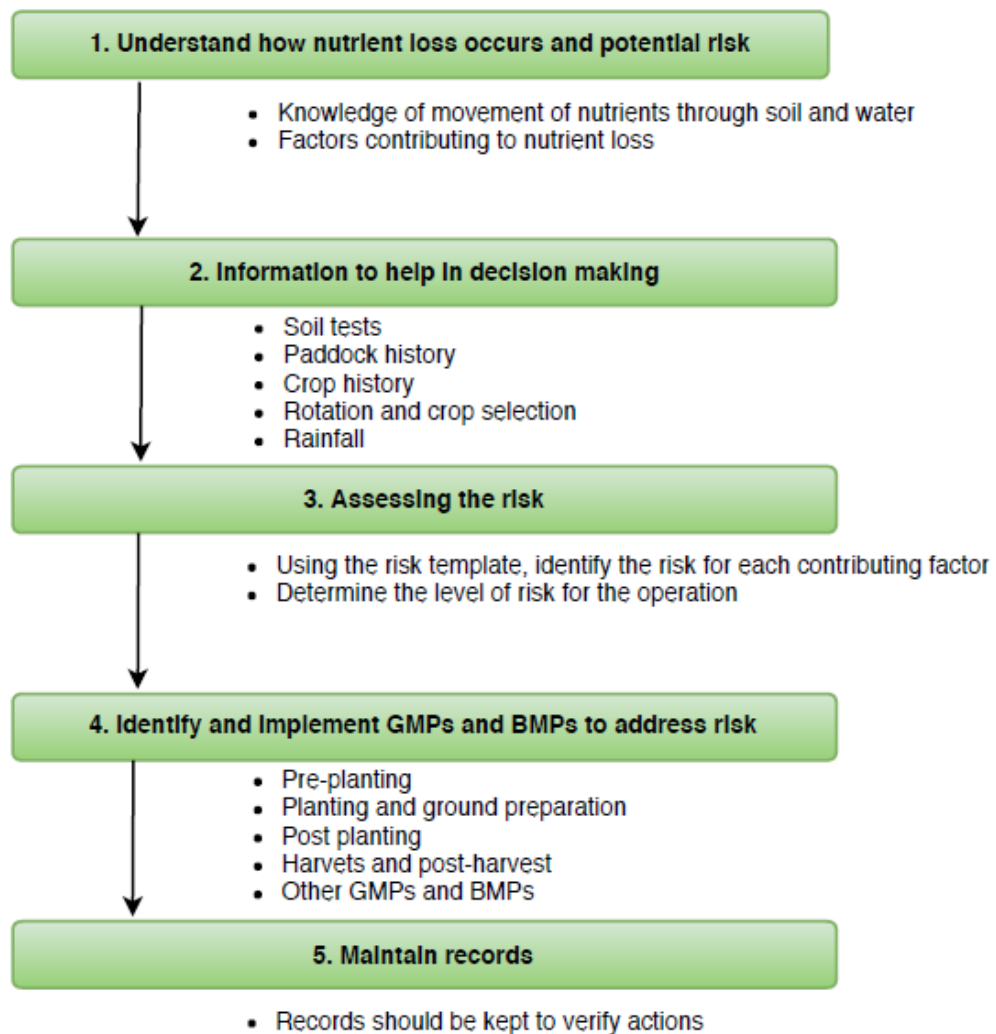


6C. SOIL: Soil erosion and sediment loss - Control Measures and Action Plan

1. Implement control measures for stopping or controlling water entering the paddock		Currently Implemented?			Date to be completed?
		Y	N	n/a	
All	Interception drains				
All	Correctly sized culverts				
All	Benched headlands				
All	Bunds				
All	Grassed swales (controlled overland flow through the paddock)				
All	Other (specify):				
2. Implement erosion control measures to keep soil on the paddock		Currently Implemented?			Date to be completed?
		Y	N	n/a	
All	Using short row lengths (<200m)				
All	Minimised cultivation passes				
All	Wind break crops/shelter belts (wind erosion)				
>1deg slope	Cover crops – enhance organic matter (OM) - monitoring				
>1deg slope	Wheel track ripping / Wheel track dyking				
>1deg slope	Contour drains				
All	Other (specify):				
3. Implement sediment control measures to manage the water and suspended solids that move off the paddock		Currently Implemented?			Date to be completed?
		Y	N	n/a	
All	Ensure access ways are <u>not</u> at the lowest point				
All	Raised access ways / Bunds				
All	Vegetated buffers / Riparian margins / Hedges				
>1deg slope	Super silt fences				
>1deg slope	Stabilised drains and discharge points				
>1deg slope	Decanting earth bunds and sediment retention ponds				
All	Other (specify):				
Managed Risk Level: (should be reduced from inherent risk level)		(High / Medium / Low)			



7A. NUTRIENTS: Process for addressing risks of Nutrient Loss



7B. NUTRIENTS: Assessing the risk of nutrient Loss

Contributing factor	Assessing extent of risk	Level of risk (L, M H)
Soil moisture	Applications of N when soils that are saturated - high risk. Applications when soils are not saturated – lower risk <i>Note:</i> It is important to assess the soil moisture status before an application to ensure that the potential for leaching is minimised. Use of foliar applications can reduce the risk	
Irrigation	Use of irrigation – high risk <i>Note:</i> Risk can be reduced by ensuring that irrigation is used to maintain soil moisture at target levels and applications of N timed accordingly.	
Soil type	Light soils – High risk. Medium soils – Medium risk. Heavy soils – Low risk	
Paddock history	Quantities of N applied not based on fertiliser recommendations or assessment of crop residues – high risk Applications take into account fertiliser recommendations and crop residues to ensure that appropriate levels of N are applied - lower risk	
Previous crop planted and residual N in the soil	High residue crop – high risk Crop failure or lower than anticipated yield – high risk Removal of previous residue – lower risk	
Crops being grown	Shallow root vegetables – higher risk	
Crop yield and quality	Nitrogen is used to achieve desired yield and quality. Inappropriate or excessive use can create quality issues and increase the risk of leaching – high risk	
Intensity of cropping	Repeated cropping – higher risk	
Topography	Sloped ground – higher risk of run off	
Plant uptake of nitrogen	Low plant uptake - high risk High plant uptake - lower risk <i>Note:</i> There are a range of factors that contribute to the plant uptake of nitrogen and hence reduce the N in the soil able to be leached – e.g time of years, growth stage, type and form of nitrogen, rooting depth. The combination of factors need to be assessed to determine uptake for each crop.	
Timing of nitrogen application	High level of base dressing at planting – high risk Applications split and matched to crop needs – lower risk	
Fertiliser application methods	Broadcast application – higher risk Application only to the row – reduced risk Foliar applications – low risk	
Applications of organic manures	Organic manures applied but not taken into account for N balance – High risk Organic manures applied but taken into account for N balance – Lower risk	
Pest and disease	Crop failure or lower than anticipated yield due to pest and disease – high risk	
Animals in the rotation	Animals included in the rotation – higher risk No animals – lower risk	
Ground preparation and planting methods	Direct drilling and reduced tillage – lower risk Presence of fines post cultivation – higher risk	
Compaction	Compacted soil will prevent roots being able to penetrate and access nitrogen. Compacted soil presents a higher risk.	
Overall Risk: (Low / Medium / High)		

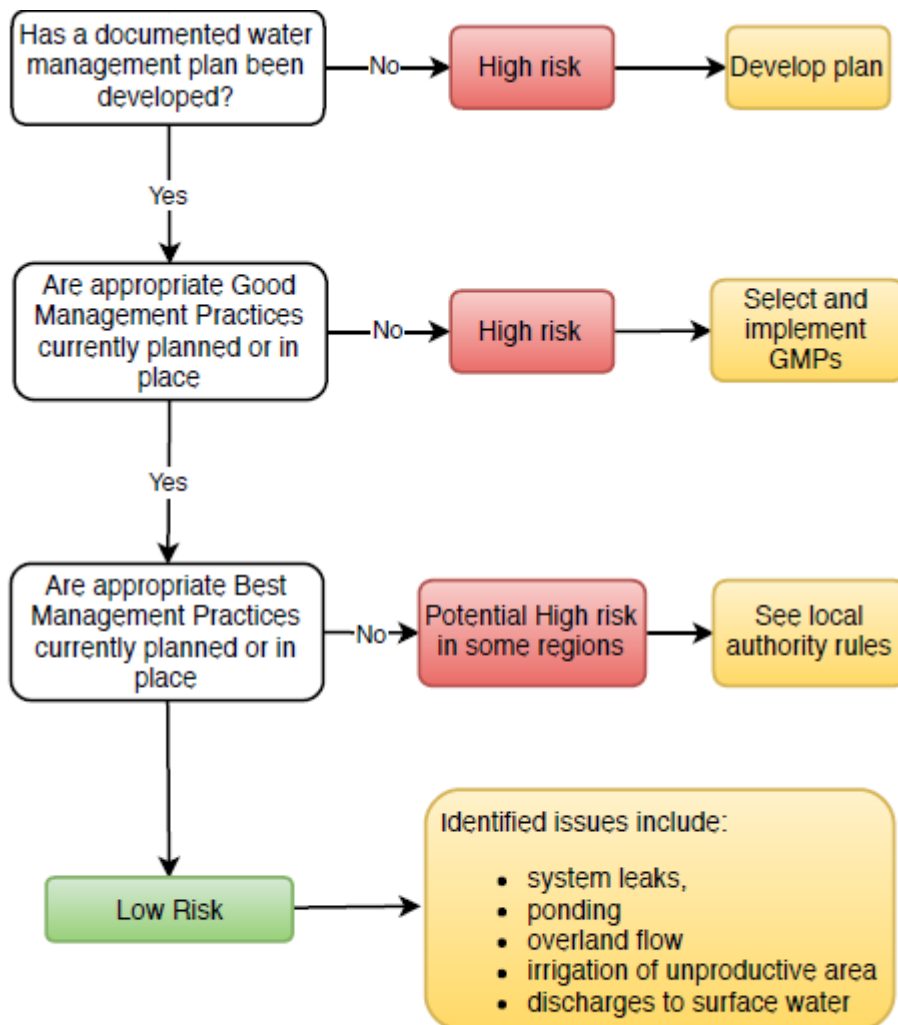


7C. NUTRIENTS: Nutrient Loss – Control Measures and Action Plan

1. Pre-planting		Currently Implemented?			Date to be completed?
		Y	N	n/a	
All	Plan fertiliser inputs for the crop				
All	Take into account any organic manures used				
All	Take into account any animals in the rotation				
All	Applications of N are managed to taking into account rainfall, field capacity and soil saturation levels.				
BMP	Obtain advise from a Nutrient Fertiliser Advisor or agronomist				
2. Planting		Currently Implemented?			Date to be completed?
		Y	N	n/a	
All	Nutrient applications are informed by available information or fertiliser recommendations.				
All	Fertiliser applications are applied relative to the predicted uptake levels of the plant from planting to maturity.				
BMP	Use improved fertiliser technology where appropriate (e.g. prills/coatings)				
BMP	Controlled traffic farming technology to increase application efficiency and soil management. Advanced farming systems that make use of GPS mapping and aerial photography.				
BMP	Crop calculators may be used if available and practical for local conditions.				
3. Post planting		Currently Implemented?			Date to be completed?
		Y	N	n/a	
All	Use side dressings				
BMP	Nutrient levels are managed according to rainfall /irrigation, informed by quick N test and/or deep N testing and will match likely yield and quality goals				
BMP	Leaf tests are conducted				
4. Other GMPs and BMPs		Currently Implemented?			Date to be completed?
		Y	N	n/a	
All	Use of Cover crops (greenfeed, oats, mustard, other biological activates) can reduce losses and nutrient use.				
All	Remove as much harvestable crop as possible				
All	Other (specify)				
Managed Risk Level: (should be reduced from inherent risk level)		(High / Medium / Low)			



8A. WATER and IRRIGATION: Assessing the environmental risk of water use



8B. WATER and IRRIGATION: Water use – Control Measures and Action Plan

1. Pre-planting		Currently Implemented?			Date to be completed?
		Y	N	n/a	
All	Plan irrigation requirements				
2. Post-planting		Currently Implemented?			Date to be completed?
		Y	N	n/a	
All	Volumes applied informed by relevant factors e.g. Plant growth/ stage/ soil type/ water holding capacity and climatic conditions				
All	Water is applied to maintain soil moisture between the wilting point and field capacity where possible				
All	Irrigation applied allows achievement of the yield target for fertiliser applied				
All	Irrigation efficiency is measurable at greater than 80%				
All	Water is metered				
BMP	Irrigation scheduling is undertaken using a crop model or tied into a soil moisture monitoring system				
BMP	On site soil moisture monitoring is conducted				
BMP	Irrigation is variably applied within the paddock to maximise efficiency				
BMP	Highly automated irrigation systems that allow more frequent applications of less water are used to maximise efficiency				
4. Other GMPs and BMPs		Currently Implemented?			Date to be completed?
		Y	N	n/a	
All	Non-irrigation water is used efficiently (e.g. wash water)				
BMP	Other (specify)				
Managed Risk Level: (should be reduced from inherent risk level)					(High / Medium / Low)



9A MAHINGA KAI and BIODIVERSITY: Risk Assessment, Control Measures and Action

Plan (Checklist question 9.4)

Mahinga kai species largely relate to indigenous plant, bird and fish species and their ecosystems and habitats Mahinga kai includes things such as species, natural habitats, materials and practices used for harvesting food, and places where food or resources are, or were, gathered. This includes:

- All waterways, drains (with water), wetlands, and springs
- Native vegetation and riparian areas
- Areas with specific mahinga kai species and their habitats.

1. Mahinga kai and biodiversity assessment		Complete?			Date to be completed?
		Y	N	n/a	
All	On-farm mahinga kai values have been identified (e.g. map of native vegetation, waterways, wetlands)				
All	Any key risks to mahinga kai have been identified (e.g. clearance of vegetation, drain maintenance)				
All	Ways to enhance on-farm biodiversity have been identified				
Identified risks:					
2. Actions to protect and enhance biodiversity and mahinga kai values		Currently Implemented?			Date to be completed?
		Y	N	n/a	
All	Mahinga kai values are considered when implementing other environmental actions (e.g. erosion and sediment control, riparian areas)				
All	Native vegetation and/or habitats are protected				
All	Waterway, drain management and vegetation clearance is carried out following good management practice				
BMP	Planting of native vegetation in shelterbelts or riparian areas				
BMP	Constructed wetlands developed for treating contaminants (e.g. nutrient run-off) to promote biodiversity and enhance mahinga kai values				
BMP	Pests are managed according to local authority rules				
3. Any additional local authority requirements		Currently Implemented?			Date to be completed?
		Y	N	n/a	
All	Other (specify):				



10A ENVIRONMENTAL ACTION PLAN: Other Actions

Ref.	Management area and risk addressed (e.g. soil erosion)	Action to be completed	Location	Person responsible	Expected Date of Completion	Actual Date of Completion	Evidence to be Provided (e.g. records, photo)

