TOOLBOX: GOOD MANAGEMENT PRACTICES (GMPS)

Here's a list of possible GMPs you could draw from when doing your Action Plans. You'll also find some good suggestions in each unit. Choose ones that suit your property and your goals.

01 Waterways

GENERAL

- ☐ Assess waterways and wetlands for risks and prioritise for protection
- ☐ Identify critical source areas and manage nutrient and sediment losses appropriately, including low spots where nutrients could collect and be flushed out with run-off
- ☐ Exclude stock from waterways and wetlands in accordance with council rules
- ☐ Exclude stock from at-risk streams with fences, or using other methods, eg, grazing sheep
- ☐ Silt traps or ponds capture sediment, nutrients and bacteria

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- ◯ Consider constructed wetlands for filtration of contaminants.
- ◯ Avoid grazing deer when ephemeral waterways are flowing
- ◯ Alternative sources of stock water in each paddock (eg reticulated water in troughs)
- ◯ Move troughs and gateways away from areas of high water flow
- ◯ Manage or retire bogs and swampy areas
- ◯ Permanently or frequently wet areas within paddocks are managed to avoid contamination from stock or fertiliser
- ◯ Shade trees are planted away from waterways
- ◯ Clean drains in a way than minimises sediment losses
- ◯ Maintain drains with good shape and vegetation
- ◯ Plant drain margins to shade them and reduce weed growth
- ◯ A riparian planting plan is in place for priority areas
- ◯ Consider strategic vegetated-buffer areas where runoff converges and around critical source areas
- ◯ Maintain vegetated riparian buffer strips around waterways (intensively farmed areas)
- ◯ Leave an uncultivated buffer strip wide enough to filter sediment from run-off
- ◯ Identifiy and control areas of stream bank erosion
- ◯ Riparian margins are of sufficient width to adequately filter run-off (1-10m)
- ◯ Wider riparian buffers provided at lower points to filter any run-off

MAHINGA KAI

- ◯ Knowledge of mahinga kai values and risks on-farm are reflected in the application of industry-agreed GMPs
- ◯ Stock are excluded from waterways, wetlands, springs and riparian margins and known mahinga kai sites
- ◯ Riparian margins provide habitat requirements for mahinga kai species
- ◯ Potential for runoff from stock tracks, water troughs, stock feeding areas, stock yards, wallow areas and gateways is recognised and appropriately managed to reduce risk of runoff to areas with mahinga kai value
- ◯ Plan drain clearance to avoid adverse effects on spawning times or migration of native fish, eg Nov-April young eels, Feb-Nov inanga spawning
- ◯ Plan drain clearance to avoid disturbance to key mahinga kai species including koura (freshwater crayfish) and kakahi (freshwater mussels) and key habitat for species such as lizards as far as practicable

- ◯ Drains are not deepened below the confining layer to protect groundwater quality
- ◯ No vegetation clearance occurs in the wet season
- ◯ Check worksites before starting drain clearance for any native nesting birds and, if present, plan work to avoid disturbing them.
- ◯ If there is potential for fish to be stranded, have someone to recover fish and return them to an undisturbed area upstream during the work and for at least one day after the work is completed
- ◯ Drain clearance material is disposed of so sediment is not lost back into waterbodies, and damage to mahinga kai species and/or habitats is avoided
- ◯ Areas of remnant native vegetation, wetlands and springs are being protected
- ◯ An active programme to control or remove pest species is in place
- ◯ Consent conditions in any District Council Discharge of Land Drainage Water resource consent that apply to the property are being met
- ◯ Ways to enhance on-farm biodiversity (eg habitats and/or corridors) have been identified and over time continuous progress is being made.

02 Nitrogen

- ◯ Overseer nutrient budget prepared according to input standards
- ◯ Nutrient budget reviewed annually and revised if necessary
- ◯ Nutrient budget used in assessment of options for minimising nutrient loss and maximising nutrient use efficiency
- ◯ Use of technical adviser to determine nutrient management policies
- ◯ Fertiliser application rates consistent with nutrient budget rates
- ◯ Fertiliser application rates based on adviser's recommendations
- ◯ Regular soil tests (specify frequency) undertaken as an aid to determining fertiliser needs
- ◯ Plant analysis undertaken as an aid to determine fertiliser needs
- ◯ Adjust cultivation practices and timing to minimise N losses
- ◯ N fertiliser application rates based on industry crop models, eg wheat calculator
- ◯ Deep soil N tests used as basis of N applications to crops
- ◯ N application rates set to match growth cycle of pasture or crop
- ◯ Pasture is at least 25mm high (1000kgDM/ha) before N is applied
- ◯ N applied when soil temperature is above 6 degrees and rising
- ◯ N is not applied when soils are at field capacity as measured using soil moisture equipment

- ◯ N is not applied to severely compacted soils
- ◯ No fertiliser applications when heavy rain forecast
- ◯ No N-fertiliser application in high-risk months (May-July)
- ◯ No direct application of fertiliser into waterways
- ◯ Maximum fertiliser application rates set
- ◯ Equipment used for fertiliser application is calibrated
- ◯ GPS technology used for precise application of all P and N fertiliser
- ◯ Spreading contractors used are “Spreadmark” certified
- ◯ Council nutrient allocation N loss limits met
- ◯ Avoid excessive N fertiliser rates
- ◯ Ensure other nutrients are non-limiting (eg to maximise N-uptake opportunity)
- ◯ Permanently/frequently wet areas within paddocks are managed to avoid contamination from fertiliser
- ◯ Fertiliser storage sites are designed and managed to avoid nutrient leaching loss to any water body including drains
- ◯ Fertiliser is loaded in a way that minimises the risk of spillage resulting in leaching and losses to water bodies
- ◯ Crop rotation designed to utilise residual N in soil eg cereals following forage crops, catch crops

03 Phosphorus

- ◯ Identify and manage critical source areas for sediment (and P) losses
- ◯ Overseer nutrient budget prepared according to input standards
- ◯ Nutrient budget reviewed annually and revised if necessary
- ◯ Nutrient budget used in assessment of options for minimising nutrient loss and maximising nutrient use efficiency
- ◯ Use of technical adviser to determine nutrient management policies
- ◯ Fertiliser application rates consistent with nutrient budget rates
- ◯ Fertiliser application rates based on adviser’s recommendations
- ◯ Regular soil tests (specify frequency) undertaken as an aid to determining fertiliser needs
- ◯ Plant analysis undertaken as an aid to determine fertiliser needs
- ◯ No fertiliser applications when heavy rain forecast
- ◯ No P-fertiliser application in high-risk months (May-Sept)

- ◯ No direct application of fertiliser into waterways
- ◯ Maximum fertiliser application rates set
- ◯ Equipment used for fertiliser application is calibrated
- ◯ GPS technology used for precise application of all P and N fertiliser
- ◯ Spreading contractors used are “Spreadmark” certified
- ◯ Permanently/frequently wet areas within paddocks are managed to avoid contamination from fertiliser
- ◯ Fertiliser storage sites are designed and managed to avoid nutrient leaching loss to any water body including drains
- ◯ Fertiliser is loaded in a way that minimises the risk of spillage resulting in leaching and losses to water bodies
- ◯ Olsen-P maintained at optimum levels
- ◯ Use of slow release P-fertiliser where risk of P-loss is high

04 Waste management

- ◯ Silage pits, rubbish dumps, offal pits
- ◯ Silage pits, rubbish dumps and offal pits located in areas where there is no risk of contamination of groundwater
- ◯ Silage pits, rubbish dumps and offal pits located in areas where there is no risk of overland flow of water entering the pits
- ◯ Risks of leachate from silage pits to waterways identified and managed
- ◯ No runoff of leachate from silage pits to waterways including drains
- ◯ Silage is made at optimum moisture content (30% dry matter or more) to minimise possible leaching
- ◯ Silage pit is lined with concrete or other impervious lining and leachate drains to a sump and bunding or other safe outlet
- ◯ Offal pits covered and or fenced (child safety, dogs, vermin)
- ◯ Composting used for dead stock disposal
- ◯ No rubbish dumps, silage or offal pits are located adjacent to sites of mahinga kai value
- ◯ Rubbish and waste is recycled where possible

EFFLUENT

- ◯ Effluent storage facilities are designed in accordance with the Effluent Design Code of Practice

- [ ] No effluent is spread over drains or water races, within 50m of a bore, within 20m of a public road or within 150m of a residential dwelling
- [ ] No effluent is applied within 20m of rivers, streams, drains or known mahinga kai sites
- [ ] Backflow preventers installed on irrigation systems used for effluent management
- [ ] All effluent from dairy sheds, yards and feed pads is collected for land application
- [ ] Key effluent management risks have been identified and risks are managed.
- [ ] Immediate action is taken when incidents occur, including rectifying the problem, cleaning up, and putting in place actions to reduce risk of recurrence
- [ ] Emergency procedures are in place
- [ ] Effluent system is capable of delivering the correct amount of effluent for soil type and slope
- [ ] Application equipment tested annually to ensure it is applying effluent uniformly at a depth appropriate to the design specifications
- [ ] Effluent is applied at depths/rates that do not lead to ponding or runoff
- [ ] Effluent is not applied when soils are saturated or near field capacity and sufficient storage is available
- [ ] Effluent is spread over the whole of the available area
- [ ] Effluent application area of at least 8ha/100 cows is available for spreading
- [ ] Appropriate buffers are in place between effluent discharge activities and streams, rivers, drains, springs, and wetlands
- [ ] Fertiliser requirements for the effluent block/s are calculated taking into consideration the timing and amount of effluent applied.
- [ ] GPS technology is used to assist with the placement of effluent spreading
- [ ] Appropriate fail safe device is installed on effluent irrigator
- [ ] Effluent storage is the greater of the regulatory requirement or the calculated storage using the Dairy Effluent Storage Calculator
- [ ] Effluent storage facilities are constructed from materials that prevent effluent contaminating surface or groundwater
- [ ] Effluent storage is managed to ensure effluent is only stored when required to keep the level as low as practical to maximise storage availability
- [ ] Effluent solids are stored on an impermeable surface and there is no runoff
- [ ] Ponds are managed to ensure solids are not accumulating and becoming anaerobic
- [ ] Staff are trained in management of the system and appropriate decision making process for when and where to apply effluent

05 Soil erosion

- [ ] Recognise differences in soil susceptibility to compaction and managed to minimise damage

- ◯ Identify and appropriately manage eroding areas on the property
- ◯ Avoid over-grazing of pastures prone to drying out
- ◯ Shift stock regularly in wet weather
- ◯ Make a wet weather grazing management plan to minimise soil damage
- ◯ Restrict heavy machinery to specified pathways
- ◯ Make regular checks for soil compaction for high-risk soils, eg clay
- ◯ Manage significant soil compaction through soil aeration
- ◯ Space planted poplar poles on hill slopes at appropriate densities
- ◯ Retire severely erosion-prone areas, particularly those with marginal production value
- ◯ Afforestation of erosion-prone areas
- ◯ Use containment structure for certain erosion types (eg, debris dams)
- ◯ Strategic tree planting to protect key infrastructure from erosion (fences, tracks, buildings, public roads)
- ◯ Re-sow bare soil and areas of erosion with pasture seed
- ◯ Feed out hay on bare and pugged soil
- ◯ Engage a regional council land management adviser or similar specialist for advice on erosion and soil management
- ◯ Stabilisation planting such as flaxes, small trees, willows to prevent stream bank erosion
- ◯ Run fences along contour where possible
- ◯ Reduce weight of stock on erodible country (eg, replace cattle with sheep or move to a younger stock class)
- ◯ Direct drilling or minimum tillage used in preference to conventional cultivation in high erosion risk situations
- ◯ Make regular checks for erosion from channelled runoff (ie from wheel ruts, tracks etc) and take fast remedial action
- ◯ Measures taken to minimise wind erosion risk when paddocks are cultivated
- ◯ Irrigation system is managed to minimise the risk of erosion occurring as a result of the operation of the system

06 Winter forage crops

- ◯ Locate winter crop grazing blocks in low risk areas for sediment loss
- ◯ Graze cattle on and off forage block
- ◯ Place straw bales in low spots to absorb runoff from winter feed crops

- ◯ Feed winter feed crops on sloping ground from the top down
- ◯ Graze strip next to riparian margins last when break feeding
- ◯ When feeding winter forage crops, stock stood off block for at least 4 hours
- ◯ Cultivate along contours rather than up and down slope where slope is greater than 3 degrees, if safe to do so
- ◯ Retain crop residue to improve soil structure
- ◯ Manage cropping rotations to maintain and/or improve soil structure

07 Point sources – Tracks and crossings

- ◯ Culverts or bridges at cattle or deer waterway crossings
- ◯ Culverts are appropriately sized to cater for extreme events
- ◯ Culverts do not impede fish passage
- ◯ Approaches to stock crossings are managed to avoid runoff to waterways
- ◯ Tracks are bunded to prevent runoff to waterways
- ◯ Tracks have grassy edges to filter runoff
- ◯ Direct runoff from stock tracks, races, yards, stock camps away from waterways or filter through riparian buffers
- ◯ Design or locate tracks, fences and other infrastructure in a way that minimises the risk of erosion damage
- ◯ Spread shingle around troughs, on high use tracks, and in gateways to minimise sediment in runoff

08 Point sources – Sheds and yards

- ◯ Runoff from stock tracks, races, yards, stock camps is directed away from waterways or filtered through riparian buffers
- ◯ Design or locate tracks, fences and other infrastructure in a way that minimises the risk of erosion damage

09 Fence pacing

- ◯ Deer stocking density is reduced to minimise fence pacing
- ◯ Deer mobs are not grazed adjacent, to minimise fence pacing
- ◯ Keep deer settled to minimise fence pacing, including at weaning
- ◯ Provide deer with play objects such as tree stumps, rubbing posts or clean drench drums to minimise soil disturbance

- ◯ Separate deer mobs to reduce pacing and erosion on fence lines
- ◯ Plant corners to reduce pacing and erosion

10 Camps and play sites

- ◯ Stock time in vulnerable areas is minimised
- ◯ Provide shade trees away from waterways to keep stock cool and encourage stock camps in low risk areas
- ◯ Deer are provided with play objects such as tree stumps, rubbing posts or clean drench drums to minimise soil disturbance
- ◯ Runoff from stock tracks, races, yards, stock camps is directed away from waterways or filtered through riparian buffers
- ◯ Salt blocks and supplementary feed is placed away from at risk areas

11 Wallows

- ◯ Provide deer wallows that don't connect to waterways
- ◯ Deer wallows connected to waterways are filled in with material to discourage wallowing
- ◯ Deer water troughs are designed and installed to avoid damage and leaks
- ◯ Move troughs and gateways away from areas of high water flow

12 Irrigation

NEW IRRIGATION

- ◯ System designed with site specific knowledge of soil, climate and crop needs
- ◯ Independent evaluation of irrigation design undertaken before development
- ◯ System meets flow meter, flow rate, volume and area irrigated requirements
- ◯ All new irrigation infrastructure is installed in accordance with Installation Code of Practice for Piped Irrigation Systems (Irrigation NZ, January 2012)
- ◯ Post installation checks of application rate and distribution uniformity undertaken
- ◯ Commissioning tests show that system performs to desired specifications for - system capacity, application depth, intensity and uniformity and return interval

ALL IRRIGATION

- ◯ Soil moisture assessed – detail method and frequency
- ◯ Decision rules used (ie no irrigation after 10mm rain etc)

- ◯ Rainfall forecasts and soil temperature monitored and used in decision making
- ◯ Deficit irrigation used within soil moisture trigger points
- ◯ Crop irrigation scheduling model used
- ◯ Spray line shifts made to suitable plan (eg GPS on bike, follow map)
- ◯ Application to non-target areas is minimised
- ◯ System closed down if runoff and/or ponding occurs
- ◯ Rotation adjusted according to evapotranspiration, soil moisture status and rainfall
- ◯ Daily checks for excessive runoff/ponding
- ◯ Daily checks for irrigation problems and problems fixed
- ◯ Annual audit of system completed to identify efficiency improvements
- ◯ Audit upgrades identified in work plan with timelines for completion
- ◯ Application depth and uniformity checks pre-season, and through season
- ◯ Wetted width widened on outer spans on long pivots or on slopes
- ◯ System evaluated by certified evaluator 5-yearly
- ◯ Programme to remedy problems in 5-yearly evaluation implemented
- ◯ Annual water use checklist completed
- ◯ Variable rate irrigation together with soil EM mapping used to maximise water use efficiency

NON-IRRIGATION WATER MANAGEMENT

- ◯ An annual water use checklist is maintained
- ◯ Water use on farm is measured and monitored (excluding house/domestic use)
- ◯ All water takes are metered as required under Regional Council rules
- ◯ Reticulated water system is managed and maintained to avoid wasted water
- ◯ Troughs and tanks are checked regularly for leakages and repaired immediately
- ◯ Pipes and fittings are protected with insulation where heavy frost damage is a risk

13 Greenhouse gases

- ◯ Adopting good management practices to the whole farming system
- ◯ Continually making on-farm efficiency gains: input versus output
- ◯ Maximising forge crop quality

- ◯ Optimising fertiliser usage
- ◯ Optimising N use per hectare and/or per animal
- ◯ Optimising animal performance, ie reproductive rates, animal health, growth rates and maximising lifetime productivity
- ◯ More effective management of animal waste
- ◯ Using other mitigation technology as it is developed

14 Biodiversity

- ◯ Legally protected wetlands on farm identified and protected
- ◯ Legally protected areas of indigenous biodiversity on farm identified and protected
- ◯ Areas of indigenous biodiversity identified on a district plan are managed and protected
- ◯ Weeds and pests within protected areas are managed
- ◯ Riparian planting programme planned/implemented
- ◯ Enhancement programme in place for identified areas of indigenous biodiversity
- ◯ Mahinga kai value sites have been identified and measures taken to protect and enhance sites
- ◯ Prepare and implement programmes for wetland management, riparian management and mahinga kai management
- ◯ Advice on biodiversity identification and management is sought from environmental agencies

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