SIZA Environmental Standard

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Introduction

The SIZA Environmental Standard has been developed in collaboration with the South African office of the World Wide Fund for Nature (WWF SA) and is based on a number of relevant sustainable agriculture and environmental standards[1]. The goal of the standard is to assist the South African fruit industry with an approach to measuring and reporting against sustainability criteria, specifically those that are relevant for on-farm activities within the South African context. The structure has been designed to establish a starting point (baseline) and then measure against and report based on continuous improvement against that baseline and identified risks. There are different levels that are available, with the Basic and Essential levels covering recordkeeping and minimum legal compliance issues, after which the Intermediate and Advanced levels allow the user to assess where they are in the journey of environmental sustainability.

Following the structure of the SIZA Social standard, the SIZA Environmental Standard provides a principle statement for each code principle. Each code principle has a list of code requirements. Each code requirement has: (1) a benchmark which refers to evidence required to indicate compliance and identifies the applicable South African legislation; and (2) guidance notes to provide practical information on implementation of the requirement.

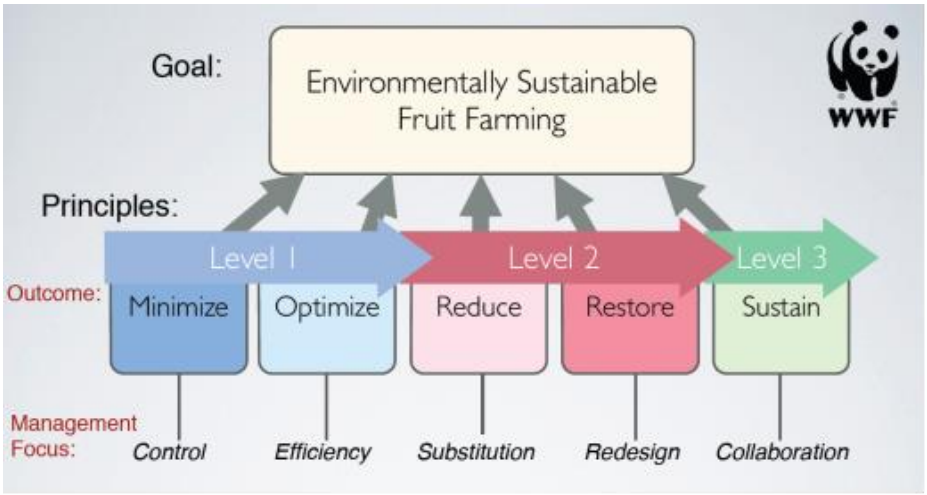
Scope of the Standard

The SIZA Environmental Standard has been developed for fresh produce industries and is focussed on addressing environmental risks at the farm level (on the land) and post-production level (packhouses). Future developments could expand this scope to further down the value chain to include processing industries; however, this is currently beyond the scope of this standard.

The structure includes:

- Environmental Management System (Policy, Environmental Management Plan)
- Risk Assessment
- Business Sustainability
- Legal Compliance
- Sustainable Farming Practices

The sustainable farming practices section contains questions relating to water, soil, biodiversity and energy/materials/waste, and progresses the considerations per criteria from basic (level 1) to advanced level (level 3), as depicted in the illustration below.



[1] GreenChoice Living Farms Reference; SAI Platform Farm Sustainability Assessment (FSA) tool, Global Gap IFA v.5, SEDEX

Relevant Legislation

The Department of Agriculture, Forestry and Fisheries (DAFF) and the Department of Environmental Affairs (DEA) are primarily responsible for legislation related to the agriculture sector. There are a number of acts and policies that speak to the conservation of agricultural resources while promoting social and economic development.

In the late 1990s, South Africa ratified several international conventions relating to the environment. Imparted as part of the Constitution of South Africa in 1996, the Bill of Rights was included with explicit provision for environmental rights. The National Environmental Management Act (NEMA) of 1998 is the overarching legislation that has several subsequent Acts as part of it.

The National Environmental Management Act (NEMA) defines "environment" as the surroundings within which humans exist. These are made up of:

1. The land, the water and the atmosphere of the earth;
2. Micro-organisms, plant and animal life;
3. Any part or combination of the first two items on this list, and the interrelationships among and between them; and
4. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

In addition, the Environment Conservation Act defines the environment as "the aggregate of surrounding objects, conditions and influences that influence the life and habits of man or any other organism or collection of organisms".

The laws dealing with natural and heritage resources that are included in the SIZA Standard are:

- NEMA – National Environmental Management Act 107 of 1998
- NWA – National Water Act 36 of 1998
- CARA – Conservation of Agricultural Resources Act 43 of 1983
- NHRA – National Heritages Resources Act 25 of 1999
- NEM:BA – National Environmental Management: Biodiversity Act 10 of 2004
- NEM:BA – Alien and Invasive Species Regulations - 18 September 2020
- NEMPAA – National Environmental Management: Protect Areas Act 57 of 2003
- NEM: WA – National Environmental Management: Waste Act 59 of 2008
- National Environmental Management: Air Quality Act 39 of 2004: National Greenhouse Gas Emission Reporting Regulations
- NFA – National Forest Act 84 of 1998
- NVFFA – National Veld and Forest Fire Act 101 of 1998
- SALA – Subdivision of Agricultural Lands Act 70 of 1970
- SPLUMA – Spatial Planning and Land Use Management Act 16 of 2013
- Fertilisers, Farm feeds, Agricultural Remedies and Stock Remedies Act 36 of 1947
- Genetically Modified Organisms Act 15 of 1997
- Agricultural Pests Act 36 of 1983
- Nature and Environmental Conservation Ordinance Act 19 of 1974

SECTION 1: MANAGEMENT SYSTEMS

	1. MANAGEMENT SYSTEMS Principle Statement: Senior management shall define and document the business's policy on environmentally sustainable practices that relate to the farm and business activities. The policy shall include a firm commitment from senior management to implement and uphold environmentally sustainable practices in the business, as well as a commitment to comply with the requirements of the SIZA Environmental Standard.	
	CODE REQUIREMENT	*BENCHMARK*
1.1	**The business shall have a comprehensive environmental management policy that provides strategic direction to the company and sets out its commitments regarding all aspects of key environmental dependencies and impacts, and their management of the environmental well-being of the business in the long-term.**	*There is policy in place relating to the management of the business and farming operations, activities, and the surrounding environment signed by a senior manager which clearly states a commitment to ensure:* *a. The business complies with ALL applicable legislation.* *b. Sustainable use and management of water, water resources, and the aquatic ecosystems onsite.* *c. Responsible and efficient use of energy and materials and minimising risk to the environment associated with their use and associated wastes, pollutants, and emissions.* *d. Sustainable use and conservation of the farm's soils.* *e. Healthy ecological functioning and biodiversity of the site and the broader landscape.* *f. Protection of heritage sites and respecting the legal and customary rights of indigenous people and local communities.* *g. Continuous evaluation of environmental stewardship, and where appropriate, improving performance and engaging with the surrounding community.*

GUIDANCE NOTES:

An environmental management policy is a written statement that is signed by management, which outlines a business's aims and principles in relation to managing the environmental impacts of the business. A comprehensive environmental management policy should (where applicable) address the business's impacts on the four cornerstones of the environment; namely soil; water; energy, waste & materials; and biodiversity & ecosystems.

The implementation of an environmental management policy is essential when implementing an environmental standard such as SIZA Environmental.

There is no typical format for writing an environmental management policy, however management should ensure that the policy is comprehensive and company specific. The key to achieving sound environmental performance is defining key strategic environmental objectives for the business that include:

i. Appointing a person in a management position to champion the policy.
ii. Clearly communicating the company's policy to employees and stakeholders.
iii. Motivating and driving legal awareness and compliance.
iv. Is comprehensive in covering all the major drivers of the business's environmental performance.

An example of an environmental management policy can be found in the SIZA website's Environmental Library. This document can be tailored to suit the business's own environmental management commitments.

1.2	**The business shall appoint, in writing, a senior management representative who shall ensure that the principles established by the business's environmental management policy are upheld.**	*A member of senior management must be identified, in writing, as the person that has overall responsibility for the implementation and management of the business's environmental management policy.*

GUIDANCE NOTES:

The environmental representative of the business should be appointed in writing, and it is recommended that the individual or group that is appointed as environmental representative(s) are in a decision-making position within the company. In smaller businesses, the environmental representative will most likely be the owner. However, in larger companies the environmental representative may be appointed by the most senior management. It is important that the appointed representative can make the necessary decisions and changes to ensure environmental compliance and to enable corrective actions where they are needed.

1.3	**The business shall communicate its environmental management policy to relevant stakeholders.**	*There is evidence that management has taken steps to communicate the environmental management policy to relevant stakeholders. This evidence could include:* *a. Training of new and/or temporary workers on appointment.* *b. Periodic training and/or other awareness raising initiatives with existing employees.* *c. Record of training should include training topic; name of trainer(s); date of training and attendance of trainees.*

		d. Communication of company policy through sharing of data through compliance platforms.

GUIDANCE NOTES:

Management must communicate the business's environmental management policy to employees and relevant stakeholders. Evidence of communication could include:

i. Training of permanent and temporary workers. Meeting minutes and attendance registers should be available for audit purposes.

ii. Awareness raising initiatives such as the SIZA *Caring for the Environment* video (available on YouTube in Afrikaans, English, and Xhosa).

iii. Communication of company policy by sharing data via email or third-party platforms (such as *MySIZA* and Sedex).

1.4	**The business shall have a comprehensive Environmental Management Plan that provides detailed guidance to the day-to-day operations and activities needed to give effect to its strategic commitments to ensure the environmental well-being of the business in the long-term.**	*There is evidence that the farm has developed a comprehensive Environmental Management Plan that outlines actions taken and progress made towards zero environmental impact.* *As a minimum, the Environmental Management Plan should cover:* *a.* ***The management of water*** *— including the efficient and sustainable utilisation of water, and the sustaining of water resources and aquatic ecosystems onsite.* *b.* ***The management of energy, materials, and associated wastes/emissions*** *— including the efficient use of energy and materials, and minimising risk to the environment associated with their use (emissions to air, climate change and pollution).* *c.* ***The management of the site's soils*** *— including ensuring the sustainable use, management, and conservation/restoration of soil.* d. ***The management of biodiversity and ecosystems*** *— including ensuring healthy ecological functioning and biodiversity onsite and across the broader landscape.* e. ***The management of food safety, worker welfare & safety, and animal welfare.*** ***f. Managing the business' resilience against climate change and associated extreme weather events.***

GUIDANCE NOTES:

An Environmental Management Plan (EMP) covers the operation and maintenance phases of each farming or packing activity that has an impact on the surrounding environment. A comprehensive EMP should identify the key environmental issues across the business and provide strategies and plans for managing them effectively. As such, the EMP should cover all aspects that are defined within the environmental management policy. An EMP can either be separate plans for each environmental issue, or it can be one plan, which typically includes the following:

i. Description of risks identified as part of annual risk assessments.
ii. Procedures and action plans on how to overcome/mitigate identified risks based on the four cornerstones of the environment (soil; water; energy, materials & waste; and biodiversity & ecosystems).
iii. Details on who carries responsibility in terms of environmental management and the lines of reporting.
iv. Measuring of key performance indicators (KPIs), i.e. annual energy usage, water usage, production of waste, and emissions.
v. Targets set to improve on current practices and minimise negative impacts on the environment.

Examples of such EMPs will be available for download in the SIZA website's Environmental Library.

1.5	**The business shall undertake integrated risk assessments of its environmental impacts across the four cornerstones of the environment (soil; water; energy, materials & waste; and biodiversity & ecosystems), with the objective of providing management with the depth of information and understanding required to ensure corrective actions can be implemented ensuring the environmental sustainability of the business in the long term. (Please note that this risk assessment can be conducted either in-house by management or outsourced to external service providers.)**	*A documented environmental risk assessment is available which covers all focus areas:* - *Soil;* - *Water;* - *Ecosystems & biodiversity; and* - *Energy, materials & waste.*

GUIDANCE NOTES:

It is essential that management maintain a deep understanding of the business' impacts on the environment and the environmental resources on which it depends, as well as the effectiveness of the current EMPs. The required information for an environmental risk assessment (ERA) and understanding the possible environmental impacts is derived from implementing a systematic assessment and review process that is undertaken annually. It is important

that management identify all possible impacts on the environment, in particular the impacts on living organisms, natural habitats, and ecosystems. As such, the scope of an ERA should include:

i. The suitability of the productive land for its current and future use.
ii. The use of energy and materials, and the related risks and impacts.
iii. The impact of business activities on biodiversity and ecosystems.
iv. Risks of soil degradation and measuring soil health periodically.
v. The business's water-use and impacts on water resources and aquatic ecosystems, and the aquatic ecosystem's health status.
vi. The effectiveness of current environmental management plan(s) and identifying where corrective actions should be implemented to address areas that potentially have high and medium risks to the environment.

Please note that ERAs can be conducted either in-house by management or outsourced to external service providers.

1.6	**Senior management shall periodically (at least annually) review the Environmental Risk Assessment.**	*Documentary evidence must be available to demonstrate that the risk assessment referred to above has been reviewed by senior management at least annually.*

GUIDANCE NOTES:

Even if there has been no change in risks, the review date should be recorded — either on the document itself or on a separate register to show that this process has been completed.

1.7	**Senior management shall ensure that the Environmental Risk Assessment is comprehensive and as part of the scope, it includes measurement and monitoring aspects related to soil management.**	*The risk assessment shall include measurement and monitoring aspects related to* ***soil management*** *such as:* *a. All soil types are identified and classified for each site/block, based on a soil profile and/or soil analysis or local (regional) cartographic soil-type maps.* *b. Soil nutrient content is regularly assessed through proper soil sampling procedures and analyses at an accredited laboratory using accredited methods.* *c. Soils are analysed periodically for levels of soil carbon by an accredited laboratory using an accredited method (e.g. Walkley Black).* *d. A visual assessment is undertaken to identify areas where soils are degraded or at risk of degradation.* e. *A review of the effectiveness of current management programmes to prevent or halt the degradation and/or to restore these soils.*

		f. *A review of post, current, and future land uses for the cultivated area to assess suitability of crop and productivity efficiencies.*
GUIDANCE NOTES: Adoption of good soil management practices include ensuring that the chemical and nutrient status of cultivated soils is optimised. Soil samples are the key measure of soil health and must be sampled and analysed using a standardised and accredited methodology. In line with best practice guidelines, a SANAS accredited laboratory (for environmental, chemical, and microbiological analysis) is required to be used. Proper technical interpretation of soil analyses results should be done by suitably qualified internal or external personnel and should take into consideration crop nutrient requirement, soil type, climatic conditions, and irrigation practices.		
1.8	**Senior management shall ensure that the Environmental Risk Assessment is comprehensive and as part of the scope, it includes measurement and monitoring aspects related to water management.**	*The risk assessment shall include measurement and monitoring aspects related to **water management** such as:* *a. Any pollution risks to aquatic ecosystems, biodiversity and workers/communities related to the use and storage of organic manure, treated sludge water, agro-chemicals, fertilisers, fuels, and other hazardous materials.* *b. Any water quality risks to above- and below-ground water resources related to wastewater and effluents that are generated onsite, as well the quality of irrigation water applied.* *c. All sewage disposal sites (including septic tanks and pit latrines) should be identified and the risk posed to aquatic ecosystems should be evaluated.* *d. Any water-use risks related to the farm's irrigation practices identifying opportunities to improve water-use efficiency, and to assess water storage infrastructure, canals and irrigation systems to minimise leakages and water wastage.* *e. Periodic reviews of the site's water use and abstraction in relation to the ecological and regional utilisation limits of the water resources used by the site and to identify any risks to the sustainability of these resources.* *f. Periodic environmental assessments to determine the ecological status/health of, and any risks to, the features of the aquatic ecosystem that occur onsite.*

GUIDANCE NOTES: It is essential that management have a deep understanding of the farm's aquatic system, water uses and impacts if they are to be effective in managing such a critical resource. Such understanding should include: i. The risks to the farm's aquatic system. ii. The risks to above and below-ground water resources. iii. Irrigation and water-use efficiency. iv. The sustainability of the hydrological system upon which the farm depends. v. The ecological health of the rivers, streams, wetlands etc. occurring on the farm. This information, insights and understanding is derived from various assessment and review processes that are undertaken periodically.		
1.9	**Senior management shall ensure that the Environmental Risk Assessment is comprehensive and as part of the, it includes measurement and monitoring aspects related to the management of energy, materials, and waste.**	*The risk assessment shall include measurement & monitoring aspects related to **energy-, materials- and waste management** such as:* *a. The identification, classification and quantification of all waste generated and stored on site, and the evaluation of all associated environmental and social risks, impacts and mitigation/control options.* *b. The identification, classification, and quantification of all emissions to air as well as greenhouse gas (GHG) emissions, and the evaluation of all associated environmental risks, impacts and mitigation/control options.* *c. Identifying risks of contamination of terrestrial biodiversity & ecosystems related to the storage and application and/or use of agro-chemicals, fertilisers, fuels and other hazardous materials, and the evaluation of all associated environmental risks, impacts, and control options.* *d. Assessing the site's direct energy types and consumption, and the effectiveness of its management plans and systems to optimise its use of energy.* *e. Assessing the farm's fertiliser types and consumption and the effectiveness of its management plans and systems to optimise its use of fertilisers.* *f. Assessing the farm's integrated pest management plan/strategy for each pest, effectiveness thereof and the measures to avoid the build-up of agrochemicals.*

		g. Assessing the site's agrochemical types and consumption and the effectiveness of its management plans and systems to optimise its use of agrochemicals. *h. Assessing of the site's use of non-renewable based inputs (energy, fertilisers and agrochemicals) and the effectiveness of its management plans and systems to reduce its dependence on these non-renewable based inputs.* *i. Assessing the risks associated with climate change and the effectiveness of its management plans to improve resilience against climatic threads.*

GUIDANCE NOTES:

The farm shall undertake a risk assessment and analysis of the farm's energy & material uses and waste/pollution impacts using credible approaches and methods to give management the depth of information and understanding needed to ensure the effective management and sustainable use and impacts of the farm's energy & material inputs and waste/pollution. Such information should include:

i. Waste, emissions and pollution outputs and impacts.
ii. Risks associated with the location and relevant details of the waste storage facility (such as storage capacity, infrastructure to deal with spills, security of storage, separation of hazardous and non-hazardous wastes etc.).
iii. Risks to terrestrial biodiversity & ecosystems related to the materials stored and used.
iv. The efficiency of use of key energy and material inputs.
v. Risks and options related to the farm's dependence on non-renewable sources of energy & materials.

This information, insights, and understanding is derived from various assessment and review processes that are undertaken periodically.

1.10	**Senior management shall ensure that the Environmental Risk Assessment is comprehensive and as part of the scope, it includes measurement and monitoring aspects related to the management of ecosystems and biodiversity.**	*The risk assessment shall include measurement and monitoring aspects related to **ecosystem and biodiversity management** such as:* *a. Any risks associated with genetically modified (GM) materials used onsite, and the effectiveness of management plans and systems to manage GM materials and minimise the associated environmental risks.* *b. Any risks associated with the site's control of problem causing animals and conflict with wild animals, and the effectiveness of management plans and systems to*

		minimise environmental and human risks associated with the control of these animals. c. *An assessment to evaluate levels of invasive alien plant (IAP) encroachment onsite, and the effectiveness of management plans and systems to effectively control IAPs and minimise the associated negative environmental impacts.* d. *An assessment to evaluate all wildfire risks and the effectiveness of management plans and systems to control/manage fires and minimise the associated negative environmental impacts.* e. *An assessment of areas of the site under natural vegetation to evaluate the need/timing for proactive burning aimed at enhancing the ecological health of these areas.* f. *An assessment of the cultivated areas of the farm to assess the levels of natural plant diversity and connectivity within and across the cultivated areas, and to evaluate the effectiveness of management programmes aimed at increasing natural plant diversity and connectivity within and across these areas.* g. *An assessment of the cultivated areas of the farm to assess the levels and diversity of naturally occurring species and to evaluate the effectiveness of management programmes aimed at restoring and conserving natural species diversity.*

GUIDANCE NOTES:

The farm shall undertake risk assessment and analysis of the landscape and ecosystem using credible approaches and methods to give management the depth of information and understanding needed to ensure the effective management and sustainability of the farm's ecological landscape and ecosystem. Such information should include:

i. Environmental risks related to GM materials, wild animal control, wildfires, alien invasive species etc. where relevant;
ii. Challenges and opportunities for the restoration and conservation of natural vegetation across the farm; and
iii. Challenges and opportunities for the restoration and conservation of natural species diversity on the farm.

This information, insights and understanding is derived from various assessment and review processes that are undertaken periodically.

1.11	**The business shall have a management process in place to ensure that the business is up to date and compliant with all relevant/applicable national and local environmental regulations and laws.**	*Management should be able to provide proof that they have a basic understanding of the different legislative requirements for environmental impacts that the site's activities may have.*

GUIDANCE NOTES:

Various channels can be used to stay up to date on regulations and legal requirements such as customer briefings, reviewing government websites, or receiving office newsletter communication, industry body briefings, or through proactive updates from the management team that briefs all relevant staff members. Management should ensure that they remain up to date and compliant with all applicable aspects of the regulations related to the business's management of:

i. Soil
ii. Water abstraction
iii. Wastewater disposal
iv. Plant protection and production products
v. Emissions to air and greenhouse gas (GHG) or carbon emissions
vi. Genetically Modified (GM) materials
vii. Control of invasive alien plant species
iii. Controlled fires and prevention of wildfires
ix. Conservation of species

1.12	**There must be evidence of legal compliance for all activities on site that may impact the environment.**	*The business should have documentary proof that relevant authorisations and permits are in place for the use of land or impacts that activities may have on the environment such as:* *i. Authorisation permits, Environmental Impact Assessments (EIAs) for any land use change activities (ploughing/development), soil contamination incidents or any other NEMA listing notice triggered.* *ii. Authorisation permits for abstraction of water and discharge of wastewater.* *iii. Authorisation permits for any on-site waste management facilities.* *iv. Authorisation permits relating to air quality.*

		v. *Demarcation permits for cultivation of IAPs* vi. *Annually reviewed/updated IAP control plan.* vii. *Permits for controlled fire.* viii. *Compliance with the regulations related to genetically modified (GM) materials* ix. *Management plan or legal document formalising the conservation of biodiversity (especially endangered species) within production and natural areas.*

GUIDANCE NOTES:

For audit purposes, management should have documented proof that relevant authorisations are in place for the use of land or the impacts that certain activities may have on the environment. The National Environmental Management Act (Act no. 107 of 1998) (NEMA) is the overarching legislation for environmental management in South Africa, with several subsequent acts as part of it. NEMA is currently governed by three listing notices which contain listed activities that are typically threshold-dependant. If a proposed activity/project exceeds these thresholds, NEMA is triggered and it becomes a legal requirement for landowners to undertake either a Basic Assessment (BA) or an Environmental Impact Assessment (EIA), depending on the threshold exceeded, for environmental authorisation. Common activities that could trigger the NEMA regulations in the South African agricultural sector are as follows:

i. Development of soil:

Where the clearing of indigenous vegetation and the development of virgin soil (soil that has been left fallow and undisturbed for ≥ 10 years) takes place (especially with regards to clearing endangered or critically endangered vegetation as well as critical biodiversity areas), the NEMA regulations will be applicable, and a BA or EIA will be required as part of the authorisation process. The NEMA EIA regulations may also apply when any work is done within a river course or wetland. Activities and thresholds that may trigger NEMA regarding land development are as follows:

- Clearing ≥ 300 m^2 of endangered or critically endangered indigenous vegetation.
- Clearing ≥ 1 ha of non-threatened indigenous vegetation.
- Infilling or excavating ≥ 10 m^3 within 32 m of a watercourses or ≥ 5 m^3 within 100 m of the coastal high watermark.
- Construction of water related activities (dams, weirs, wastewater treatment plants etc.).

ii. Water usage:

All water uses that are not for domestic use (e.g. abstraction from rivers, boreholes and possibly dams, or irrigation) must be registered with the Department of Water and Sanitation (DWS) and/or relevant Irrigation Boards (IBs), Water User Associations (WUAs) or Catchment Management Agencies (CMAs). Also, ensure

that water used for agri-industrial purposes (e.g. water used in a packhouse) is registered for agri-industrial use and not for irrigation. In addition, water records must confirm that the business does not exceed its registered allocation figures.

For more info on registration or licensing forms (Western.Cape) :
W: http://breedegouritzcma.co.za/content.php?page=Documents&subpage=Forms&subsudopage=Licensing
or
Melissa Lintnaar-Strauss at the Department of Water and Sanitation
E: Lintnaar-StraussM@dws.gov.za

iii. Wastewater management:

Wastewater should be managed in accordance with the General Authorisations in terms of Section 39 of the National Water Act (Act no. 36 of 1998) (NWA) as published in Government Notice no. 665 of 6 September 2013. Although a formal authorisation letter from DWS would confirm legality of the specific wastewater end-use, evidence of compliance with the requirements of the DWS General Authorisation would also be regarded as legal. Where compliance with the DWS General Authorisation cannot be met, a licence application should be submitted to DWS.

In addition, storage dams containing wastewater may require registration or licencing in terms of the NWA. Where less than one (1) m^3 of agri-industrial wastewater is legally disposed of into an on-site disposal facility (e.g. direct soak away/French drain), no authorisation or registration is required, but evidence of the wastewater volume disposed of should be measured on a daily basis by using a water meter on the incoming line (if it can be motivated that it is equal to the volume of wastewater being disposed).

iv. Disposal of general waste to land:

The following actions are defined as listed activities in terms in terms of Government Notice No. 921 that requires a BA process as part of a Waste Management License Application as indicated by NEMA:

- The treatment of general waste using any form of treatment at a facility that has the capacity to process > 10 tonnes, but < 100 tonnes of waste
- The disposal of general waste to land covering an area > 50 m^2, but < 200 m^2 and with a total capacity not exceeding 25 000 tonnes.

Please note that where the disposal of general waste to land is < 50 m^2, the following requirements must be adhered to ensure good environmental management practices at the waste disposal or storage facility:

- The site should be situated outside a watercourse and above the 1:50 year flood line.
- It should be adequately fenced, locked and marked with relevant warning signs.

- It should not overlie an area with shallow of emergent water tables.
- The waste should not cause any nuisance conditions.
- It should be located in previously disturbed areas (i.e. virgin soil should not be disturbed to make way for a waste disposal or storage facility).

v. Establishment of windbreaks:

The use of invasive alien plants (IAPs) that are listed as Category 2 plants according to the National Environmental Management: Biodiversity Act (Act no. 10 of 2004) (NEMBA) to establish windbreaks, is a restricted activity and a demarcation permit for the planting of these trees should be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF). It is recommended that management rather consider using indigenous species as windbreaks. No IAPs should be planted or be allowed to spread within 30 m of any watercourse.

Download permits to carry out certain restricted activities with Category 2 listed plants and animals:
W: www.invasives.org.za

vi. Clearing of IAPs:

As stated by NEMBA, landowners are under legal obligation to control IAPs that occur on their property, in both natural and cultivated areas. When clearing IAPs within the 1:100 year flood line, an authorisation permit or licence may be required, and it is recommended that the DWS is contacted in this regard prior to the removal of IAPs within a watercourse.

vii. Conservation of ecosystems and endangered species:

Threatened ecosystems such as rivers and wetlands are protected by law and may not be disturbed, degraded or developed without special permission from relevant authorities. All producers with areas of natural vegetation and/or threatened ecosystems and endangered species should incorporate a conservation plan as part of their EMP, which addresses the specific risks and management strategies affecting these areas.

viii. Fire management:

In terms of the National Veld and Forest Act (Act no. 101 of 1998), landowners are responsible for the prevention and management of all fires that occur on their property. A fire management plan for the property is required that details emergency procedures in the case of controlled and uncontrolled fires. Assistance to comply with the act can be provided where landowners and their neighbours form a Fire Protection Association (FPA).

SECTION 2: SUSTAINABLE PRODUCTION PRINCIPLES

2. ENVIRONMENTAL PRINCIPLE 1: MINIMISE NEGATIVE IMPACTS

Principle Statement:

The end-goal is that all farming activities, processes, and infrastructure do not result in any contamination or degradation to the site's natural environment or surrounding communities.

	CODE REQUIREMENT	*BENCHMARK*
2.1	**Production, packing and processing activities do not impact the surrounding natural areas.**	*a. There is evidence that any natural area with a biodiversity priority protection status has not been disturbed or destroyed by any development or production related activities in the past 10 years (including riparian areas, wetlands, seep-zones, and all critical vegetation types, as well as formally protected areas or biodiversity priority areas).* *b. Where any natural areas (i.e., native vegetation areas outside of the biodiversity priority areas) have been impacted by production activities, it is in line with legal authorisations and evidence of compliance is provided.* *c. All native vegetation found on the property is protected and maintained, except for when it poses as a hazard to people or infrastructure.* *d. Where any natural areas (i.e. native vegetation areas outside of the biodiversity priority areas) have been impacted by production activities, there is evidence detailed in a map and plan of proactive restoration and conservation of these areas with progress monitored on the effectiveness of the restoration efforts.* *e. There is a site map indicating the location of production units, roads, infrastructure, ecosystems, boundaries, and areas that are set out for conservation. The map should include information of each production unit.* *f. Buffer zones are established, maintained, and conserved adjacent to all natural and protected areas to prevent contamination and protect wildlife habitats.* *g. There is evidence (recordkeeping and certificates) that all new planting material (including varieties of seeds,*

		plants, and grafting material) is from reputable sources, is of high quality, meets buyer's requirements. ***Legal reference:*** CARA – the Conservation of Agricultural Resources Act 43 of 1983 NEM:BA – the National Environmental Management: Biodiversity Act 10 of 2004 National Water Act (1998) National Environmental Management: Waste Act of 2008 and the Hazardous Substances Act, No. 15 of 1973) Fertilisers, Farm feeds, Agricultural Remedies and Stock Remedies Act, No 36 of 1947

GUIDANCE NOTES:

The disturbance of biodiversity priority areas should be avoided as far as possible. Any disturbance of pristine natural areas or biodiversity priority areas requires proper authorisation as detailed under Code Requirement 1.12. Biodiversity priority areas or areas of high conservation value should be mapped to guide management on where cultivation can take place and where alien clearing and fire management should be prioritised.

Management should allow adequate strips or buffer zones of indigenous vegetation adjacent to natural areas and water zones to minimise the effect of fertiliser and pesticide run-off from cultivated land. The size of buffer zones will depend on the size and characteristics of the river, but a general minimum requirement is up to the 1:20 year flood line and as high as the 1:100 year flood line.

Furthermore, management should be able to provide evidence to prove that planting material (including varieties of seeds, plants and grafting material) are from reputable sources, and that the selection of planting material was based on an informed decision. Good practice in selecting varieties is that the decision is based on any of the following factors:

i. Yield performance
ii. Genetic diversity on the farm
iii. Impacts on neighbouring cultivated areas
iv. Recommendation by extension officers
v. Results of a variety of field trails
vi. Disease resistance
vii. Pest/disease/weed pressure
viii. Crop nutrition needs
ix. Water needs and drought resistance
x. Adaptation to local climatic and geographic conditions
xi. Soil characteristics and crop rotation
xii. Customer requirements

2.2	**Products used and processes followed during production, packing and processing activities have the aim to avoid environmental contamination.**	*a. Products used for production activities are selected appropriately and decisions on application quantities and methods for all organic and inorganic nutrient management, crop protection, agrochemical products as well as fuel types, are in line with minimising negative environmental and social impacts and improving input efficiency.* *b. Products used are prepared and applied according to the label or as recommended by a competent technical advisor.* *c. Adherence to the guidelines as detailed in the South African National Standard — **SANS 10206 (2010):** The handling, storage and disposal of pesticides is a minimum requirement.* *d. There is evidence of compliance with a prohibited chemicals list for crop production and crop protection products as per international markets and/or industry norms and standards.* *e. Relevant staff are effectively and regularly trained in the safe and appropriate handling of agrochemicals and fuels.* *f. Measures are taken to protect workers and neighbours and prevent environmental contamination as a result of the storage and use of fuel, chemicals and/or other hazardous products.* *g. Measures are taken to protect non-target areas and crops from agrochemical and/or other hazardous product usage.* *h. Measures are taken to prevent the side effects of crop protection products. This includes measures to prevent the disturbance of beneficial organisms that support ecosystem function such as pollinators.* *i. Measures are taken to prevent pest resistance by using variable products.* *j. Measures are taken to avoid crop disease cross-contamination.*

		k. Measures are taken to prohibit using untreated sludge and untreated sewage sludge in the block/field. *l. The usage of human sewage, sludge and sewage water in production or processing activities are strictly prohibited.* *m. Measures are taken to ensure the composition and application of organic manure, treated sludge, or wastewater, and/or any other industrial waste residues are not contaminating the soil and surrounding environment.* ***Legal reference:*** CARA – the Conservation of Agricultural Resources Act 43 of 1983 NEM:BA – the National Environmental Management: Biodiversity Act 10 of 2004 National Water Act (1998) National Environmental Management: Waste Act of 2008 and the Hazardous Substances Act, No. 15 of 1973) Fertilisers, Farm feeds, Agricultural Remedies and Stock Remedies Act, No 36 of 1947

GUIDANCE NOTES:

Adhering to the guidelines as detailed in the South African National Standard (SANS 10206:2010) for the handling, storage, and disposal of agrochemicals is a minimum requirement. Management must ensure that all products and chemicals are used only on the crops that they are permitted for and that they are officially registered in South Africa. In addition, it is advised that management minimise the usage of Plant Protection Products (PPP) that are listed as persistent organic pollutants in Annex A of the Stockholm Convention and extremely hazardous PPP as listed under Criterion 1a of the World Health Organization.

Spray operators should be trained regularly in the safe and appropriate handling of chemicals and/or fuels, and proof of training should be available for audit purposes. This training should be done by qualified experts and can include the following aspects:

i. The appropriate use and safe storage of agrochemicals
ii. Personal protective equipment (PPE) needed
iii. Environmental concerns
iv. Accidental spillage

It is also important to protect workers, neighbours and all surrounding natural areas from contamination due to the use of fuel, crop nutrition and protection products, and any other agrochemicals or hazardous products. Equipment and containers of chemical products should be cleaned in a safe manner that does not pose a threat to human health or the environment. Fuel should be stored separately from crop nutrition and protection products, and suitable storage facilities for these products should be located in areas where risks to the environment and human health are minimised.

Non-target areas, i.e. areas not intended to receive any agrochemical applications, should be protected at all times. Practices to protect non-target areas can include: i. Preventing spray drift by only applying agrochemicals in suitable weather conditions ii. Using selective pesticides iii. Targeted agrochemical applications iv. Establishing buffer zones next to natural areas and water sources Bulk fuel tanks should be protected with bunding in order to minimise the risk of accidental spillage or pollution. All tanks should be bunded in such a way to contain at least 110% of the tank's storage capacity and should be located a safe distance away from any water source. The integrity of underground fuel storage tanks should be confirmed to ensure that no leakages occur.		
2.3	**Production activities, processes and infrastructure do not result in any contamination or degradation of water resources above or below ground.**	*a. Measures are taken to establish and conserve buffer zones adjacent to all water sources to control pollution, prevent erosion, and protect wildlife habitats.* *b. Measures are taken to prevent water contamination as a result of run-off of chemicals, mineral and organic substances (such as compost), including all nutrient management, crop protection, and agrochemical related substances.* *c. Composition and application of organic manure and treated sludge, treated sludge water, wastewater and/or any other industrial waste residues are not contaminating water resources.* *d. Water samples are taken at a point of abstraction (source) and disposal (outflow), Where applicable, water samples should be taken at the last point of disposal.* *e. All samples are sent to an accredited laboratory for results and comparison and show no decrease in water quality.* *f. The results are included in the farm water management plan which is updated annually.* *g. An up-to-date water management policy specifies details for water quality management procedures.*

		h. A procedure aimed at the management of pollution (including the disposal and storage of the pollutant) is in place. *Legal reference:* National Environmental Management: Waste Act of 2008 Hazardous Substances Act, No. 15 of 1973 NWA – the National Water Act 36 of 1998 CARA – the Conservation of Agricultural Resources Act 43 of 1983

GUIDANCE NOTES:

The establishment of buffer zones is one of the key measures in preventing chemical run-off. Other measures to prevent water contamination can include:

i. Protecting non-targeted areas.
ii. Avoiding the use of fertilisers on water-logged, compacted, steep, or frozen soil.
iii. Taking weather forecasts into account before applying agrochemicals.
iv. Using precision application practices or split application.
v. Using slow-release or stabilised fertilisers.

It is also important to ensure that the composition and application of organic manure and treated sludge, treated sludge water, wastewater and/or any other industrial waste residues are not causing contamination to water resources. Measures that can be taken to prevent the contamination of water sources by these practices may include testing the water quality of ground and surface water, as well as adhering to the NWA General Authorisation for wastewater disposal as explained under Code Requirement 1.12.

Water samples for both irrigation and consumption should be taken at a sample of abstraction (source) and outflow points at least once a year. Samples should be analysed by a SANAS accredited laboratory for results and comparison. The results of water quality analyses should be incorporated as part of the business's water management plan, along with procedures that are in place to rectify water quality if/when results do not meet required standards for irrigation and/or consumption.

A water management policy needs to be in place and should be updated annually and include targets which are measured/met and updated (aimed at a zero-pollution incident target). All policies and procedures should be communicated to staff. Records of corrective actions should be recorded and monitored as part of the water management plan.

2.4	**There is no loss or degradation of soil due to pollution, erosion, compaction, salinisation etc.**	*a. Measures are taken to prevent soil contamination as a result of run-off of chemicals, mineral & organic substances, including all nutrient management, crop protection, and agrochemical related substances.* *b. Soil and crop samples are taken periodically by an accredited laboratory.*

		c. *Records of all soil and crop samples are kept and results are used to adjust the integrated crop protection and nutrient management plan.* d. *There is evidence of a map indicating different management units based on soil structure types and high-risk areas for soil degradation (e.g., salination, compaction, erosion etc.).* e. *There are measures in place to prevent soil erosion in identified high-risk areas.* f. *Measures are taken to avoid soil compaction by machinery and/or livestock.* g. *A soil management policy is in place that clearly states:* *- A commitment to developing the site's infrastructure, roads, and layout to sustainably maximise the potential of the most productive soils and to avoid the sub-optimal use of soils and/or the use of marginal soils;* *- A commitment to supporting good soil management and soil health across the farming region/valley/catchment within which the site is situated.* h. *The associated management plan outlines effective actions taken and progress made towards zero-impact and/or soil restoration/conservation.* i. *Crop rotation should be used where applicable as a soil health management practice.* ***Legal reference:*** Conservation of Agricultural Resources Act (CARA 1983), NEMBA (2004)

GUIDANCE NOTES:

Soil samples should be taken at least once every three years and analysed by a SANAS accredited laboratory to assess the chemical load of the soil and the residue levels of all crop production products. It is recommended that crop and/or leaf samples are analysed at least annually. Recordkeeping of soil and crop samples should be kept, and the results of analyses should be used to adjust the integrated crop protection and nutrient management plan.

Soil management is a key element for enhancing the productivity of a farm and conserving ecosystems. Soil health, also referred to as soil quality, is defined as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. The key concepts for managing soil health is to familiarise yourself with the

major threats to soil health and how they should be managed. Some of the major threats to soil health include erosion, compaction, loss of soil biodiversity, and salinisation.

Soil erosion is largely responsible for the loss of fertile topsoil and the degradation of soil productivity. However, the effects of soil erosion go beyond the loss of fertile land, as it increases pollution and sedimentation in rivers and streams. The effects of soil erosion can be reduced by making use of the following practices:

i. Avoid cultivating areas with a gradient steeper than 20% as far as possible.
ii. Make use of terracing and follow contours with operations.
iii. Planting trees as windbreaks.
iv. Cultivating or encouraging the establishment of cover crops.
v. Minimising tillage.
vi. Channelling run-off water and avoiding over-irrigation.

Soil compaction is largely responsible for reducing in water infiltration, thereby decreasing the rate at which water will reach the soil root zone and subsoil. Soil compaction can be reduced by implementing the following practices:

i. Avoid the repetitive use of same tractor trails (where possible).
ii. Minimising passes on the field.
iii. Avoid using equipment in wet, waterlogged conditions.
iv. Make use of low-pressure tyres.

The farm should be in possession of a map that indicates different soil management units and identifies areas which might be of high-risk to degradation due to erosion, compaction, salinisation etc. The map should be used to prioritise areas of conservation, as well as to implement pro-active management strategies to prevent possible soil degradation.

2.5	**Invasive alien plant (IAP) species are controlled.**	*a. Foremost, there is no cultivation of IAP species on the farm.* *b. Management can demonstrate knowledge of all the relevant IAPs on the farm.* *c. Relevant staff are effectively & regularly trained in the safe and appropriate IAP clearing methods and techniques.* *d. A map is available indicating areas prioritised for IAP clearing.* *e. An IAP control and monitoring plan is in place that prioritises mountain catchment and riparian (river) areas (where relevant) for IAP removal.* ***Legal reference:*** NEMBA Invasive Alien Species Regulations List, within the National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004)

GUIDANCE NOTES:

Invasive alien plant (IAP) species refers to plants that are not native in a country or region and have been brought in from another. Invasive alien species have a significant negative impact on the environment by causing direct habitat destruction, reducing the availability of water, and increasing the risk and intensity of wildfires. As governed by NEMBA, landowners are under legal obligation to control the IAPs occurring on their property. The Alien and Invasive Species Regulations (AIS) of 2014 list four different categories of IAPs that must be managed, controlled or eradicated. These categories are as follows:

i. Category 1a: Most harmful species which require immediate action to control and to eradicate. Any form of trade or planting is strictly prohibited.
ii. Category 1b: Invasive species that must be controlled and, wherever possible, removed and destroyed. Any form of trade or planting is strictly prohibited.
iii. Category 2: Invasive species or species deemed to be potentially invasive, for which a permit is required to carry out a restricted activity. This category includes commercially important species such as pine, wattle and gum trees.
iv. Category 3: Invasive species that may remain in prescribed areas or provinces. Further planting, propagation or trade is, however, prohibited.

Costs associated with IAP control; especially for well-established, dense populations; can have a severe impact on landowners' budgets and resources. IAPs have huge economic implications with an estimated R600 million cost per year to clear the more than 10 million hectares of land in South Africa (Department of Environmental Affairs, 2019). The cost of controlling IAPs will continue to intensify as IAPs spread, so the best time to act is now. Once a suitable formal plan for clearing IAPs is in place, preparation for clearing can begin. A suitable IAP clearing plan should contain a map of IAP coverage, as well as a worksheet with the following minimum information:

i. Dominant IAP species present,
ii. Density,
iii. Maturity,
iv. Methods of clearing.

This information will be useful when it comes to prioritising the phasing of IAP clearing. Areas that should be prioritised are mountain catchment areas, riparian areas, and areas that pose a high fire risk. Lighter infested areas should also be prioritised in order to prevent the build-up of seed banks. If IAPs are located within or alongside a river, it is ideal to start clearing in the headwaters, moving downstream. Ideally, dense, mature stands should be cleared last, as their density likely will not increase.

When clearing operations are performed by on-site personnel, adequate training in safe and appropriate IAP clearing methods should be provided. Depending on clearing methods used, training could include the safe and appropriate handling of hazardous chemicals and chainsaw-handling. Where hazardous chemicals and power tools are used, it is important that health & safety and first aid representatives are present during clearing operations. It is also

important that personnel are provided with the necessary personal protective equipment (PPE) which could include hard hats, safety glasses, masks, rubber gloves etc. If the company makes use of external contractors for IAP clearing, evidence of removal by the external company should be available for audit purposes

Note: When making use of herbicides for alien control, environmental safety should be the main priority. Managers and herbicide operators must have a basic understanding of herbicides and their functions; as this will guide the correct selection of herbicides for the targeted plant. If used incorrectly, the usage of herbicides can do more harm than good, especially when working in riparian areas.

Information on identification of invasive species and the NEMBA Alien and Invasive Species Lists, 2016:
W: www.invasives.org.za

Early detection and rapid response on alien invasive species:
Ernita van Wyk at SANBI
E: er.vanWyk@sanbi.org.za
T: 078 107 7284

3. ENVIRONMENTAL PRINCIPLE 2: MEASURED & EFFICIENT USE

Principle Statement:

The use of natural resources, such as water and soil, and finite fossil-fuel based energy is measured and is as efficient as it can be.

	CODE REQUIREMENT	*BENCHMARK*
3.1	**Water abstraction & use is within legal limitations and is as efficient as it can be.**	a. *Evidence is available to show registration papers of all water sources (dam, river, borehole, wastewater etc.).* b. *Evidence is available for registration papers of water allocation for ground- and surface water abstraction.* c. *Water consumption is measured at the main point of abstraction and/or disposal (using metered records) and does not exceed water allocation figures. Where feasible water consumption for major water consumption points (orchards/vineyards, packhouse, infrastructure, etc.) should also be monitored.* d. *Water Use Efficiency (WUE) per crop (L/kg) is calculated and monitored.*

		e. The water efficiency targets per crop and per site are monitored and reviewed on an annual basis and fed into the water management plan to drive continuous improvement. *f. There is evidence of the use of technologies or water conservation practices as part of the water management plan.* ***Legal reference:*** The National Water Act 36 of 1998.

GUIDANCE NOTES:

Evidence of registration papers and consumption records for surface and groundwater abstraction should be available for audit purposes. As a minimum requirement, management must be able to illustrate what water efficiency and conservation techniques are integrated as part of the business's water management plan. These water efficiency and conservation techniques can include:

i. Making use of precision irrigation practices (i.e. irrigating only when absolutely necessary, taking soil type into account, and tailoring irrigation scheduling according to crop requirements).
ii. Making use of technologies such as Fruitlook.
iii. Ensuring the irrigation system is maintained and monitored regularly to minimise leakage and water wastage.
iv. Taking rainfall and evaporation predictions into account when planning irrigation scheduling.

It is recommended that management calculate the water use efficiency (WUE) of their cultivated crop. The calculation of WUE entails calculating the litres of water used per kilogram or tonne of fruit produced and should (where possible) be calculated per block. It is recommended that annual WUE is compared to establish a baseline for each block/field and to set realistic targets against the established WUE baseline. When calculating your WUE the following records should be used to ensure for accurate results:

i. The amount of fruit produced, including fruit wastage (in kilograms or tonnes)
ii. The volumes of water used to produce the crop (in litres or m^3)

The following formula can be used to measure the WUE of your business:

$$WUE = \frac{Volumes\ of\ water\ irrigated\ (L\ or\ m^3)}{Weight\ of\ crop\ produced\ (including\ waste)\ (kg\ or\ t)}$$

In order to provide proof of recordkeeping and monitor the efficiency of water usage, it is recommended that management make use of the SIZA Digital Recordkeeping Tool or any other tool that will allow management to monitor their water usage and compare it on an annual basis.

3.2	**Energy use is measured and efficient.**	*a. A data collection tool is in place as the start of an annual recordkeeping process for all direct energy usage.* *b. A baseline carbon footprint calculation is completed, and reports provided as evidence. Energy efficiency targets should be put in place and monitored annually against baseline to ensure maximum efficiency.* ***Legal reference:*** National Environmental Management: Air Quality Act (39/2004): National Greenhouse Gas Emission Reporting Regulations. The carbon tax will likely come in to affect from 2018 and will require some large businesses to start measuring and reporting on GHG emission reductions against sectoral targets.

GUIDANCE NOTES:

As a minimum requirement management should keep monthly or at least annual records of the business's direct energy usage and compare it on an annual basis to establish a baseline from which improvement can be monitored. To measure improvement of energy use, the records of electricity usage (kWh), diesel and petrol usage (litres) and liquid petroleum gas (LPG) are considered important.

The South African Government has committed to reducing greenhouse gas (GHG) emissions by 34% by 2020, and 42% by 2025. Part of the strategy to drive this includes the implementation of the Carbon Tax Act (Act no. 15 of 2019). The implementation of the first phase of the tax (focusing on scope 1 GHG emissions) has been delayed from 2015 – 2020 to 2016 – 2021 and phase 1 of the Carbon Tax Act was implemented in June 2019. Primary agriculture will mostly be exempted from the carbon tax in this first phase but will still be affected by it indirectly, as it filters through to input costs, including electricity and fuel tariffs. There are expectations that the second phase of the carbon tax, coming into effect from 2021, will affect the agricultural sector and those implications could be very costly, especially for larger production facilities that have high Eskom electricity bills.

In order to understand the implications of the carbon tax, it is recommended that management start to calculate their annual carbon footprint (tCO_2e) by making use of a carbon calculator such as Confronting Climate Change or any other recognised carbon calculator. Completing such an assessment will help management to quantify their GHG emissions which will form the basis for efficient management strategies.

In order to provide proof of recordkeeping and monitor the efficiency of direct fuel and electricity usage, it is recommended that management make use of the SIZA Digital Recordkeeping Tool or any other tool that will allow management to monitor their direct fuel and electricity usage and compare it on an annual basis.

3.3	**Nutrient management, crop protection and agrochemical usage is as efficient and effective as can be.**	*a. All recordkeeping is in place as evidence of annual quantities of fertiliser, pesticide, and agrochemical both in storage and in application.*

		b. *All equipment used in nutrient management, crop protection and agrochemical practices are annually calibrated and maintained at a level to ensure efficiency of application.* c. *Relevant staff have received training and implement precision practices when applying products so as to ensure efficiency and to avoid wastage/pollution. Where applicable, training also includes the implementation of the IPM strategy.* d. *A holistic fertiliser programme is in place that is suitable for the crop and conditions and is reviewed annually and adjusted for improvements.* e. *There is evidence of an integrated pest management (IPM) plan for each pest in place that is based on the prevention and monitoring of pests and aimed at avoiding significant crop losses while reducing pesticide risks and includes intervention thresholds. Where feasible, pests are managed using biological controls or other non-chemical.* f. *There is recordkeeping in place to control any pest infestations or disease outbreaks effectively, and to monitor progress. Recordkeeping to include pest type; infestation dates; location; degree of infestation; degree of damage, weather conditions during infestations and the preventative measures applied.* g. *Pest management measures are based on the analysis of pest monitoring records.* h. *Measures are taken to only apply chemical crop protection products when absolutely necessary and preference is given to low toxicity or non-chemical pesticides, where feasible.* i. *The usage of fire as a measure to control pests may only be allowed if it the impact on the environment is less than that of other pest control measures and is included as part of the IPM plan.* ***Legal reference:*** NEMA – the National Environmental Management Act 107 of 1998

		NEM:BA – the National Environmental Management: Biodiversity Act 10 of 2004 Fertilisers, Farm feeds, Agricultural Remedies and Stock Remedies Act, No 36 of 1947 The Genetically Modified Organisms Act, 1997 (Act No.15 of 1997) Agricultural Pests Act, 1983 (Act No. 36 of 1983)

GUIDANCE NOTES:

As a minimum requirement, management should record the annual fertiliser and agrochemical usage of the farm. Recordkeeping of annual fertiliser and agrochemical usage should include:

i. Type of product and target crop
ii. Active ingredient
iii. Dosage and volume applied
iv. Location and area (ha) of application
v. Name of applicator(s)
vi. Target pest
vii. Date applied and harvest interval

Inventory of fertilisers, pesticides and agrochemicals should include the following:

i. Date purchased
ii. Name of Product
iii. Active Ingredients
iv. Date of expiration

The decision in choice of product (for both organic and inorganic), application quantity and method should be based on sound technical advice aimed at improving input efficiency. A holistic decision-making process should be followed, which should at least include the consideration of soil type, soil sample analyses, nutritional requirements of crops, leaf analyses and plant performance (e.g. vegetative growth vigour, growth stage). Maintenance applications or adjustments to fertiliser quantities should be determined by the above-mentioned. It is recommended that the use of a set, predetermined fertilisation programme should be avoided.

Integrated Pest Management (IPM) involves the careful consideration of all available pest control techniques and the subsequent integration of appropriate measures to discourage the development of pest populations. The aim is to limit the use of plant protection products and other interventions to levels that are economically justified and to reduce or minimise risks to human health and the environment. Given the natural variation on pest development for different crops and areas, any IPM system shall be implemented in the context of local physical (climatic, topographical etc.), biological (pest complex, natural enemy complex, etc.), and economic conditions. IPM-based approaches could include:

i. Keeping monitoring and scouting records for pests
ii. Efficient irrigation applications

iii. Taking weather conditions into account before applying plant protection products
iv. Basing application quantities on soil and leaf sample analyses
v. Using biological/non-chemical plant protection products
vi. Releasing and/or encouraging natural predators of pests
vii. Maintaining orchard hygiene (e.g. removing fallen fruit, sanitising pruning shears etc.)

In order to provide proof of recordkeeping and to monitor the site's chemical and fertiliser usage, it is recommended that management make use of the SIZA Digital Recordkeeping Tool or any other tool that allows management to monitor their chemical and fertiliser usage and compare it on an annual basis. In addition, data should be used to interpret the effectiveness of current integrated pest management (IPM) practices and the progress made towards using more environmentally friendly products.

3.4	**The management of materials and wastes is monitored and in line with reduce, reuse, recycle best practices.**	*a. There is recordkeeping in place to identify and measure all waste streams (including what is recycled).* *b. There is document or visual evidence of recycling in place (e.g., bins for collection of paper/carton, plastic, glass, metal, oil, fruit waste). Where applicable, organic waste is composted and processed for further use.* *c. Storage facilities for waste are in line with legal requirements.* *d. There is evidence of a waste management plan that covers waste generation, storage, transportation and disposal, which is in line with avoiding any risks to humans and the environment.* *e. Where service providers are used for the management and/or removal of waste (e.g., used oil, plastic, empty chemical containers and sewage), management should ensure that waste is disposed in a safe manner that does not pose a risk to the environment.* *f. The site is kept clean and free of waste accumulation outside of designated storage and disposal sites.* *g. As part of the waste management plan, targets are set, and measures are implemented to minimise waste production and increase reuse and recycling.* *h. There is evidence of a reuse and recycling system in place that is annually reviewed and improved upon.*

		i. There is an overall reduction in kilogram of waste per kilogram product produced, packed or processed per year. ***Legal reference:*** NEM:WA - The National Environmental Management: Waste Act 59 of 2008

GUIDANCE NOTES:

The irresponsible disposal and management of waste can have severe impacts on the environment. As a minimum requirement, management should draft a waste management plan which includes the identification of all waste streams and types on the property (e.g. reusable, recyclable, general and hazardous waste), as well as how each waste type is managed. All activities as set out in the waste management plan must comply with the regulations as set out in part 2 - part 6 of the National Environmental Management: Waste Act 59 of 2008 (NEM:WA) and address all associated risks as per the site's integrated risk assessments. Realistic waste reduction targets should be incorporated as part of waste management plan and reviewed on an annual basis to monitor progress and to drive improvement.

As a general principle, solid waste should be managed in accordance to the waste management hierarchy (Figure 1), where the reduction and reuse of waste is the most favoured option, followed by recycling and with the disposal of waste being the leased favoured option.

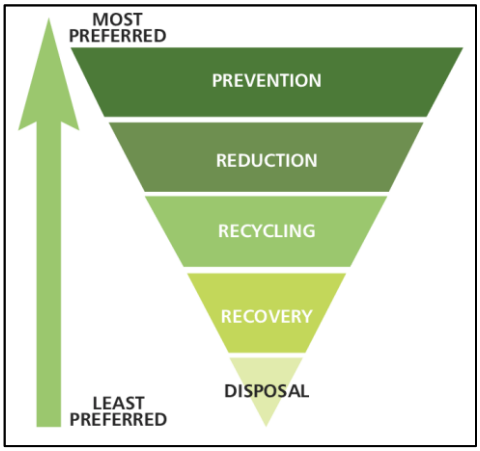


Figure 1: Waste Management Hierarchy

In order to provide proof of recordkeeping and to monitor the site's waste, it is recommended that management make use of the SIZA Digital Recordkeeping Tool or any other tool that allows management to monitor their waste production monthly and compare it on an annual basis. In addition, the data should be used to interpret the effectiveness of current waste management practices and progress made towards reducing waste going to landfill.

4 *ENVIRONMENTAL PRINCIPLE 3: SHIFTING TO ALTERNATIVES*

Principle Statement:

There are goals and evidence of implementation in place to shift activities and processes that require inputs from finite resources (energy, fuel, and agrochemical/fertilisers) to renewable and biological-based alternatives.

	CODE REQUIREMENT	*BENCHMARK*
4.1	**Meeting of direct energy needs (electricity and fuel) is not dependent on non-renewable energy sources.**	*a. The results of the carbon footprint assessment are incorporated into an energy management plan which includes realistic goals to shift high-emission activities to renewable energy sources.* *b. Where biomass energy is used as an alternative energy resource, management should ensure that a process is in place to minimize the direct or indirect effects of biomass use on natural ecosystems.* *c. A % of total energy usage that is from renewable energy sources or evidence of investment in renewable energy solutions.* ***Legal reference:*** National Environmental Management: Air Quality Act (39/2004): National Greenhouse Gas Emission Reporting Regulations. The carbon tax will likely come in to affect from 2018 and will require some large businesses to start measuring and reporting on GHG emission reductions against sectoral targets.

GUIDANCE NOTES:

The efficient management of energy will not only save input costs, but will also help to confront the causes of climate change by reducing direct and indirect air emissions. Better energy performance from a company can be achieved by changing the behaviour of management and personnel, as well as making use of technical interventions. Insufficient resources, shortage of capacity, and a lack of measuring improvements are the common pitfalls for improving energy performance. Therefore, management should compile a documented strategy for energy reduction that includes objectives, targets, and target dates. Also, it is recommended that management consider investing in renewable energy resources and that this strategy is linked to business budget.

To prioritise your practices and resources, it is important to have a breakdown of your company's main energy users. In die agricultural sector these main energy users may be:

i. Pumping of irrigation water
ii. Fuel used for on-site transport and machinery
iii. Cooling systems at post-production level
iv. Usage of synthetic agrochemicals

Once all energy users in the company are identified, management can formalise practices as part of the energy management plan and set realistic targets to reduce energy usage or to improve energy efficiency. It is a standard practice in energy management that a period of at least three years of annual energy usage or carbon footprint data is needed to account for seasonal variation. Targets should be set from at least the second year of data collection and reporting, which should drive the reduction of emissions from high impact activities.

4.2	**Crop nutrition and crop protection needs are not reliant on inorganic products.**	*a. Crop nutrition and protection needs are as efficient as possible and there is a plan in place to shift dependency away from chemical products towards more sustainable products.* *b. Targets are set to reduce the usage of high-impact products (e.g., glyphosate) to zero in short-term.* *c. Accurate fertiliser programme shows decline in synthetic product usage.* *d. There is evidence of soil health improving practices integrated within the soil management plan as part of the plan to reduce synthetic product usage.*

GUIDANCE NOTES:

All products that are used in farming for crop nutrition and protection should be measured and monitored to be as efficient as possible. In addition, management should implement a plan to start reducing the quantity of chemical products used and shifting to alternative products with a lower or zero environmental impact. The purpose of this plan should be to ensure that the company is not totally reliant on synthetic chemicals and that alternative products are used where possible. This plan to reduce the use of synthetic chemicals can include prioritising Integrated Pest Management (IPM) practices and making use of soil health improving practices. Soil health improving practices should be measured and the results incorporated into the soil management plan to enhance the soil health and thereby reduce the requirements for soil additions.

4.3	**The management of materials and wastes results in zero waste ending in landfill on or off the farm.**	*a. Accurate record keeping of waste sources and quantities going to landfill.* *b. A waste management plan is in place with measurable targets that are updated annually and moving towards a zero-waste goal.* *c. Evidence shows waste targets are being met to reduce/reuse/recycle on-site waste.*

GUIDANCE NOTES:

It is recommended that management include accurate annual records indicating total quantity of waste produced for each waste type. These records can be used to identify waste reduction opportunities and to set realistic reduction targets. Accurate recordkeeping of waste production will also assist management in interpreting the effectiveness of current waste management practices.

4.4	**There are no emissions of harmful pollutants or net emissions of greenhouse gases.**	*a. A carbon footprint and GHG emission assessment is completed for at least three years with evidence to show a decline in all relevant GHG emissions related from onsite and transport activities.* *b. There is an emission reduction plan with zero emission targets set and reviewed annually.* *c. Emissions that cannot be mitigated are offset to achieve a zero emission rating.*

GUIDANCE NOTES:

It is standard practice in carbon accounting that a period of at least three years of carbon footprint data is required to account for seasonal variation. In addition to the seasonal variation, the accuracy of the data collected each year generally improves with better understanding and more streamlined systems, and therefore the accuracy of the results also increases. Targets should be set from at least the second year of data collection and reporting, which should drive the reduction of emissions from high impact activities. The eventual goal is to achieve a zero emission rating, which will require alternative energy sources and inputs such as fertiliser and packaging to be used.

5. ENVIRONMENTAL PRINCIPLE 4: RESTORED & CONSERVED ECOSYSTEM SERVICES

Principle Statement:

Services provided by the natural environment such as fresh water, soil for growing crops, functioning ecosystems and clean air is actively restored and conserved in future.

	CODE REQUIREMENT	*BENCHMARK*
5.1	**The biological, chemical, and physical characteristics associated with healthy soils are fully restored and conserved in all cultivated soils.**	*a. There is evidence that shows the soil carbon is increasing over time.* *b. No chemical/artificial inputs are required for plant protection or crop nutrition requirements.* *c. Soil health indicators are measured, and practices are adjusted to maintain a positive balance.*

GUIDANCE NOTES:

Soil health or soil quality can be assessed in many different ways, but field observations and laboratory testing are most commonly used as the backbone for determining soil health status. Field observations may include the following:

i. Topsoil colour
ii. Tilth
iii. Presence of earthworms or other soil fauna
iv. Evidence of compaction, erosion and surface crusting
v. Water infiltration
vi. Root health and development
vii. Comparing yields to past years
viii. Crop stress tolerance
ix. Crop nutrient deficiencies or disease symptoms

Soil organic carbon (SOC) is one of the key indicators of a healthy soil life, as it is a reflection of the amount of organic matter present in the soil. Higher levels of organic matter in soils holds many benefits for crop production including:

i. Improving soil structure, thereby helping to curb erosion, reduce compaction, prevent surface crusting, as well as improving drainage and aeration to roots
ii. Improving the soil's water-holding capacity
iii. Improving water infiltration
iv. Improving the soil's nutrient retention capacity
v. Stimulate micro- and macro-organism populations

Practices to improve and/or maintain SOC are explained under Code Requirement 2.4. It is recommended that management measure SOC levels when soils are sampled for analyses. The Walkley-Black method is the most common laboratory analysis used to determine SOC. The levels of SOC in soils should be compared over time to establish whether SOC is increasing or maintained at optimal levels.

Soil pH is another commonly used indicator of soil health. When soil pH is either too low (acidic) or too high (alkaline) for the specific crop produced, production can be negatively affected as nutrient imbalances are likely to occur and soil biodiversity populations will be disrupted. Monitoring soil acidification and alkalisation is therefore key to managing soil health. Practices to manage soil pH are described under Code Requirement 2.4.

Other soil health indicators include, but are not limited to:

i. Soil texture and stone content
ii. Aggregate stability
iii. Available water capacity
iv. Potentially mineralisable nitrogen (N)
v. Extractable phosphorous (P)
vi. Extractable potassium (K)

vii. Micronutrient availability (Ca, Mg, B, Fe etc.)		
5.2	**The farms water management plan is integrated into a regional scale assessment to ensure effective catchment level water management.**	*a. A water risk assessment is done for the catchment and results are used to start developing a collective plan for water management within the catchment.* *b. There is evidence of active participation in regional groups such as a water usre association (WUA), catchment management agency (CMA) or similar regional water stewardship initiatives.*

GUIDANCE NOTES:

The first step in collective regional water management is to be aware of the local Catchment Management Agency (CMA) and to become an active member of your area's Water User Association (WUA). Functioning CMAs are critical for the management of scarce water resources in South Africa, as Integrated Water Resources Management is best carried out at a local catchment scale. CMAs are envisaged as the operational arm to implement water policy and legislation in South Africa.

In some regions, river maintenance plans (RMPs) are active — such as along the Berg River in the Western Cape — through the technical guidance and financial support of Landcare. RMPs were approved under the 2010 NEMA Environmental Impact Assessment regulations, make it possible to introduce the principles and practices of ecosystem-based planning into the management and rehabilitation of rivers in agricultural settings. These plans would be drafted in terms of Activity 18 of Listing Notice 1, which exempts holders of an approved RMP from having to obtain environmental authorisation to excavate, move, or deposit more than 5 m^3 of material in a watercourse. You can find out from your Water User Association if there is a river maintenance plan for your specific river.

More information on river maintenance plans:
W: http://pmg-assets.s3-website-eu-west-1.amazonaws.com/130731appendix_3.pdf

FURTHER INFORMATION:

More about water stewardship in South Africa: http://www.wwf.org.za/what_we_do/freshwater/water_stewardship_programme/

5.3	**Commitment to conserving and restoring all pristine natural ecosystem areas (including riparian areas, wetlands, seep-zones, and all vegetation types) both currently and in future.**	*a. There is evidence of a biodiversity assessment undertaken for the site that identifies the important water source areas, critical vegetation types, important flora and fauna species in the natural and production areas.*

		b. *There is a biodiversity management plan which outlines how to manage the different areas (vegetation patches and corridors) accordingly to ensure conservation of areas of critical ecosystem function, as well as protected fauna and flora species and to work towards a goal of fully restored and conserved biodiversity areas.* c. *There is a map that includes the information from the biodiversity assessment, areas of high risk, and priority areas for restoration/conservation activities, for both land and water areas.* d. *There is evidence of policy level commitment that pristine natural areas (including riparian areas, wetlands, seep-zones and all vegetation types) will not be disturbed or destroyed by any production related activities, both currently, and in future.* e. *Protected areas, areas with a high conservation value and pristine natural areas are protected and no production or processing activities are allowed within these areas, except for when it is allowed by legislation.*

GUIDANCE NOTES:

Biodiversity priority areas are natural areas that have an important biodiversity status and warrant a set level of protection to secure the ecosystem functioning of the surrounding area. These can include riparian (river) areas, wetlands, seep-zones and all vegetation types (primary forests, grasslands, fynbos, succulent karoo, renosterveld) and the evidence must be for current and historical periods (10 years +).

Not all natural areas have the same conservation value. While large areas of mountain habitats still remain in marginal farming areas, the majority of lowland ecosystems have been transformed. Developing or cultivating biodiversity priority habitats should be avoided at all costs. It is important to ensure legal compliance with all the necessary Acts — especially CARA & NEMBA — when considering any future agricultural development applications.

The National Biodiversity Assessment (NBA) is a product of high scientific importance led by the South African National Biodiversity Institute (SANBI) in collaboration with the Department of Environmental Affairs and several other partner organisations. This forms the foundation for the definition of the conservation status of different ecosystems, vegetation types, and biodiversity areas. The conservation status is classified by vegetation types as critically endangered (CE), endangered (E), vulnerable (V) or least threatened (LT), according to how much remains compared to their original extent and/or how many Red Listed threatened plant species are present. In the Western Cape alone, 20 vegetation types are critically endangered (e.g. Swartland Shale Renosterveld). It is therefore strongly recommended that before any development is contemplated, you contact the representative from the local

conservation authority (such as CapeNature or KZN Wildlife) in your area to determine the conservation value of any virgin land and consider alternatives. The conservation authority's formal comment is likely to be required by the permitting authorities.

In addition, the development of spatial frameworks, maps and tools incorporating the Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs), Strategic Water Source Areas (SWSAs) into National Biodiversity Sector Plans and these should be used with any land-use planning and decision making. As a starting point, maps identifying the CBAs should guide the landowner where cultivation can take place and where alien clearing and fire management should be prioritised.