



# **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<sup>1</sup>. 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 covering record keeping and minimum legal compliance issues, and then Intermediate and Advanced 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.

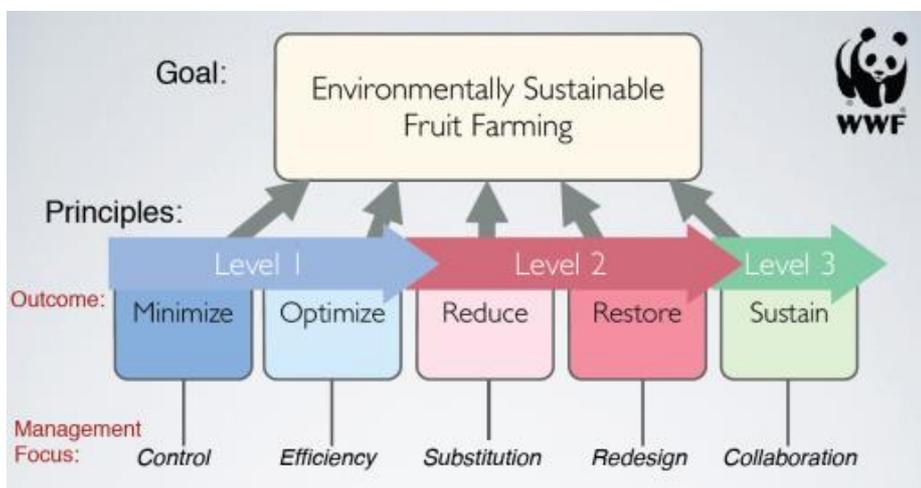
## Scope of the Standard

The SIZA Environmental Standard has been developed for fresh produce industries and is focussed on addressing environmental risks at a farm (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.



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

## Relevant Legislation

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 – the National Environmental Management Act 107 of 1998
- NWA – the National Water Act 36 of 1998
- CARA – the Conservation of Agricultural Resources Act 43 of 1983
- NHRA –the National Heritages Resources Act 25 of 1999
- NEM:BA – the National Environmental Management: Biodiversity Act 10 of 2004
- NEM:BA - Alien and Invasive Species Regulations - 19th July 2013
- NEMPAA - the National Environmental Management: Protect Areas Act 57 of 2003
- NEM:WA - The National Environmental Management: Waste Act 59 of 2008
- National Environmental Management: Air Quality Act (39/2004): National Greenhouse Gas Emission Reporting Regulations.
- NFA – the National Forest Act 84 of 1998
- NVFFA – The 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
- Fertilizers, 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)

## **SECTION 1: MANAGEMENT SYSTEMS**

<p><b>1. MANAGEMENT SYSTEMS</b></p> <p><b>Principle Statement:</b></p> <p>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 the environmentally sustainable practices in the business as well as a commitment to comply with the requirements of the SIZA Environmental Standard.</p>		
	<b>CODE REQUIREMENT</b>	<b>BENCHMARK</b>
1.1	<p><b>The farm shall have a comprehensive Environmental management policy that provides strategic direction to the farm and that sets out the farm's strategic commitments regarding all aspects of the farm's key environmental dependencies and impacts, and their management for the environmental well-being of the farm in the long-term.</b></p>	<p><i>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:</i></p> <ul style="list-style-type: none"> <li><i>a. the business complies with ALL applicable legislation</i></li> <li><i>b. sustainable use and management of water, water resources and the aquatic ecosystems on the farm.</i></li> <li><i>c. responsible and efficient use of energy and materials and minimizing risk to the environment associated with their use and associated wastes, pollutants and emissions.</i></li> <li><i>d. sustainable use and conservation of the farm's soils</i></li> <li><i>e. healthy ecological functioning and biodiversity of the farm and the broader landscape.</i></li> </ul>
<p><b>GUIDANCE NOTES:</b></p> <p>The key to achieving sound environmental performance is about defining key strategic environmental objectives for the business that;</p> <ul style="list-style-type: none"> <li>- are "championed" by an appointed senior person in the business;</li> <li>- are clearly communicated to and understood by staff and key stakeholders;</li> <li>- motivate legal awareness and compliance;</li> <li>- drive target setting and stimulate ongoing assessment of progress and improvement; and</li> <li>- which are comprehensive in covering all the major drivers of the farm's environmental performance, being Soil, Water, Energy, Material inputs, Wastes &amp; Pollutants and Ecosystem functioning &amp; health on the farm and across the</li> </ul>		

landscape in which the farm is situated.		
1.2	<b>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.</b>	<i>A member of senior management must be identified, in writing, as the person that has overall responsibility for the implementation and management of the companies' Environmental Management Policy.</i>
<b>GUIDANCE NOTES:</b> In smaller companies, this will most likely be the owner. However, in larger companies, this may be a person nominated / appointed by the most senior manager. It is important that this person can make the necessary changes to ensure compliance or enable corrective actions to be taken to uphold the companies' policy.		
1.3	<b>The business shall communicate the business's Environmental Management Policy to relevant stakeholders.</b>	<i>There is evidence that management has taken steps to communicate the Environmental Management Policy to relevant stakeholders. This evidence could include:</i> <i>a. Training of new and/or temporary workers on hiring</i> <i>b. Periodic training and/or other awareness raising initiatives with existing employees</i> <i>c. Communication of company policy through sharing of data through 3rd party data platforms e.g. SIZA data Platform, Sedex etc.</i>
<b>GUIDANCE NOTES:</b> The Environmental Management Policy should be communicated to employees, contractors and external stakeholders.		
1.4	<b>The farm shall have a comprehensive Environmental Management Plan that provides detailed guidance to the day-to-day operations and activities needed to give effect to the farm's strategic commitments to ensuring the environmental well-being of the farm in the long term.</b>	<i>There is evidence that the farm has developed a comprehensive Environmental Management Plan that outlines actions taken and progress made towards zero impact. As a minimum, the Environmental Management Plan should cover:</i> <i>a. <b>The management of Water</b> - including the efficient and sustainable utilization water, and the sustaining of water resources and aquatic ecosystems on the farm</i> <i>b. <b>The management of Energy, Materials and associated Wastes/Emissions</b> - including the efficient use of energy and materials and</i>

		<p><i>minimizing risk to the environment associated with their use and associated wastes, pollutants and emissions</i></p> <p>c. <b>The management of the farm's soils</b> - including ensuring the sustainable use, management and conservation/restoration of the farm's soils</p> <p>d. <b>The management of Biodiversity and Ecosystems on the farm</b> - including ensuring healthy ecological functioning and biodiversity on the farm and across the broader landscape</p> <p>e. <b>The management of food safety, work welfare &amp; safety and animal welfare.</b></p>
<p><b>GUIDANCE NOTES:</b></p> <p>Management plans provide the detailed guidance to the practical operations and activities needed to give effect to the farm's strategic commitments regarding the farm's key environmental dependencies and impacts, and their management for the environmental well-being of the farm in the long-term. As such, the management plan should cover all aspects that are defined within the environmental policy.</p> <p>Management plans typically include;</p> <ul style="list-style-type: none"> <li>- descriptions of risks identified in risk assessments and the activities to overcome/mitigate these risks;</li> <li>- descriptions of detailed activities &amp; standard operating procedures;</li> <li>- operational targets;</li> <li>- details of who is responsible for what, and lines of reporting;</li> <li>- operational key performance areas and indicators of management &amp; staff;</li> <li>- the processes to identify and manage the closing-out of needed corrective actions.</li> </ul> <p>The SIZA Library will be putting together a number of templates that will be available for download on the website in the Library section.</p>		
1.5	<p><b>The farm shall undertake an integrated risk assessment of the farms environmental impacts across the four focus areas (soil; water; ecosystem &amp; biodiversity; energy, materials &amp; waste) with the objective of providing management the depth of information and understanding needed to ensure corrective actions can be taken for the environmental sustainability of the farm in the long-term. (Please note that this risk assessment can be conducted either</b></p>	<p><i>A documented Environmental risk assessment is available which covers all focus areas</i></p> <ul style="list-style-type: none"> <li>- <i>Soil;</i></li> <li>- <i>Water;</i></li> <li>- <i>Ecosystem &amp; biodiversity and</i></li> <li>- <i>Energy, materials &amp; waste</i></li> </ul>

	<b>inhouse by management or outsourced to external service providers)</b>	
<p><b>GUIDANCE NOTES:</b></p> <p>It is essential that management maintain a deep understanding of the farm's impacts on the environment and the environmental resources upon which the farm depends, as well as the effectiveness of the farm's environmental management plan(s). The required information, insights and understanding is derived through a systematic assessment and review processes that are undertaken periodically (usually annually). The scope of such assessments and reviews should include;</p> <ul style="list-style-type: none"> <li>- the suitability of the productive land for its current and future use</li> <li>- the farm's energy and materials usage and related risks &amp; impacts, as well as its waste/pollution/emissions impacts</li> <li>- the farm's impacts on ecosystems and biodiversity and the farm's ecosystem health status</li> <li>- the farm's soils, their classification, risks of degradation and the farm's soil-health status as well as the potential impact of farming activities on neighboring soils,</li> <li>- the farm's water-use and impacts on water-resources and aquatic ecosystems, and the aquatic ecosystem's health-status</li> <li>- respect for the rights of communities regarding access to natural resources.</li> <li>- the effectiveness of the farms environmental policy and management plan(s) in identifying risks and where corrective actions must be taken and/or plans modified to be more effective in proactively ensuring the environmental well-being of the farm in the long-term.</li> </ul>		
1.6	<b>Senior management shall periodically (at least annually) review the Environmental Risk Assessment</b>	<i>Documentary evidence must be available to demonstrate that the risk assessment referred to above has been reviewed by senior management at least annually.</i>
<p><b>GUIDANCE NOTES:</b></p> <p>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.</p>		
1.7	<b>Senior Management shall ensure that the Environmental Risk Assessment is comprehensive and as part of the scope of the above-mentioned risk assessment, it includes measurement &amp; monitoring aspects related to soil management</b>	<p><i>The risk assessment shall include measurement &amp; monitoring aspects related to <b>soil management</b> such as:</i></p> <ul style="list-style-type: none"> <li><i>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</i></li> <li><i>b. The soil nutrient content is regularly assessed through proper soil sampling procedures and analyses at an accredited laboratory using</i></li> </ul>

		<p><i>accredited methods</i></p> <p>c. <i>Are soils analyzed annually for levels of soils organic carbon by an accredited laboratory (SANAS) using an accredited method (e.g. Walkley Black)</i></p> <p>d. <i>A visual assessment is undertaken to identify areas of the farm where soils are degraded or at risk of degradation.</i></p> <p>e. <i>A review of the effectiveness of current management programs to prevent or halt the degradation and/or to restore these soils.</i></p> <p>f. <i>A review of post, current and future land uses for the cultivated area to assess suitability of crop and productivity efficiencies.</i></p>
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**GUIDANCE NOTES:**

Adoption of good soil management practices include ensuring that the chemical and nutrient status of cultivated soils is optimized. Soil samples are the key measure of soil health and must be sampled and analyzed using a standardized 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.

<p><b>1.8</b></p>	<p><b>Senior Management shall ensure that the Environmental Risk Assessment is comprehensive and as part of the scope of the above-mentioned risk assessment, it includes measurement &amp; monitoring aspects related to water management.</b></p>	<p><i>The risk assessment shall include measurement &amp; monitoring aspects related to <b>water management</b> such as:</i></p> <p>a. <i>Any pollution risks to aquatic ecosystems, biodiversity and workers/communities related to the organic manure, treated sludge water, agro-chemicals, fertilizers, fuels and other hazardous materials stored and used/applied on the farm.</i></p> <p>b. <i>Any water quality risks to above and below-ground water resources related to waste water and effluents that are generated on the farm as well the quality of irrigation water applied.</i></p> <p>c. <i>Any water-use risks related to the farm's irrigation practices to identify opportunities to</i></p>
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		<p><i>improve water-use efficiency, and to assess water storage infrastructure, canals and irrigations systems to minimize leakages and water wastage.</i></p> <p><i>d. Periodic reviews of the farm's water use and abstraction in relation to the ecological and regional utilization limits of the water resources used by the farm and to identify any risks to the sustainability of these resources</i></p> <p><i>e. Periodic environmental assessments to determine the ecological status/health of and any risks to the features of the aquatic ecosystem that occur on the farm.</i></p>
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**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;

- the risks to the farm's aquatic system
- the risks to above and below-ground water resources
- irrigation and water-use efficiency
- the sustainability of the hydrological system upon which the farm depends
- 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.

<p>1.9</p>	<p><b>Senior Management shall ensure that the Environmental Risk Assessment is comprehensive and as part of the scope of the above-mentioned risk assessment, it includes measurement &amp; monitoring aspects related to energy-, materials- and waste-management.</b></p>	<p><i>The risk assessment shall include measurement &amp; monitoring aspects related to <b>energy-, materials- and waste-management</b> such as:</i></p> <p><i>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.</i></p> <p><i>b. The identification, classification and quantification of all emissions-to-air as well as greenhouse gas emissions, and the evaluation of all associated environmental risks, impacts and mitigation/control options.</i></p> <p><i>c. Identifying risks of contamination of</i></p>
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		<p><i>terrestrial biodiversity &amp; ecosystems related to the storage and application/use of agrochemicals, fertilizers, fuels and other hazardous materials, and the evaluation of all associated environmental risks, impacts and control options.</i></p> <p><i>d. Assessing the farm's direct energy types &amp; consumption, and the effectiveness of its management plans &amp; systems to optimize its use of energy.</i></p> <p><i>e. Assessing the farm's fertilizer types &amp; consumption and the effectiveness of its management plans &amp; systems to optimize its use of fertilizers.</i></p> <p><i>f. Assessing the farm's agrochemical types and consumption and the effectiveness of its management plans &amp; systems to optimize its use of agrochemicals.</i></p> <p><i>g. Assessing of the farm's use of non-renewable based inputs (energy, fertilizers and agrochemicals) and the effectiveness of its management plans &amp; systems to reduce its dependence on these non-renewable based inputs.</i></p>
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**GUIDANCE NOTES:**

The farm shall undertake risk assessment and analysis of the farms 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 & impacts of the farm's energy & material inputs and waste/pollution. Such information should include;

- waste, emissions and pollution outputs and impacts
- risks associated with the location and relevant details waste storage facility (such as storage capacity, infrastructure to deal with spills, security of storage, separation of hazardous and non-hazardous wastes etc.)
- risks to terrestrial biodiversity & ecosystems related to the materials stored and used
- the efficiency of use of key energy and material inputs
- risks and options related to the farms 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	<p><b>Senior Management shall ensure that the Environmental Risk Assessment is comprehensive and as part of the scope of the above-mentioned risk assessment, it includes measurement &amp; monitoring aspects related to Ecosystem &amp; Biodiversity management</b></p>	<p><i>The risk assessment shall include measurement &amp; monitoring aspects related to <b>Ecosystem &amp; Biodiversity management</b> such as:</i></p> <ul style="list-style-type: none"> <li><i>a. any risks associated to GM materials used on the farm and the effectiveness of management plans &amp; systems to effectively manage GM materials and minimize the associated environmental risks.</i></li> <li><i>b. Any risks associated with the farm's control of problem causing animals and wild animals and the effectiveness of management plans &amp; systems to minimize environmental risks associated with the control of these animals.</i></li> <li><i>c. An assessment to evaluate levels of alien invasive plant encroachment on the farm and the effectiveness of management plans &amp; systems to effectively control alien invasive and minimize the associated negative environmental impacts.</i></li> <li><i>d. An assessment to evaluate all wild fire risks and the effectiveness of management plans &amp; systems to control/manage fires and minimize the associated negative environmental impacts.</i></li> <li><i>e. An assessments of areas of the farm under natural vegetation to evaluate the need/timing for proactive burning aimed at enhancing the ecological "health" of these areas.</i></li> <li><i>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 programs aimed at increasing natural plant diversity and connectivity within and across these</i></li> </ul>
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		<p><i>areas.</i></p> <p><i>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 programs aimed at restoring and conserving natural species diversity.</i></p>
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**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;

- Environmental risks related to GM materials, wild animal control, wildfires, alien invasive species etc. where relevant,
- challenges and opportunities for the restoration and conservation of natural vegetation across the farm, and
- 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	<p><b>The farm shall have a management process in place to ensure that the farm is up-to-date and compliant with all relevant/applicable national and local environmental regulations and laws.</b></p>	<p><i>Management should be able to provide proof that they have a basic understanding of legislative requirements of the different legal requirements for environmental impact that the farming activities may have</i></p>
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**GUIDANCE NOTES:**Legislation on land cultivation:

New vineyards should ideally be developed on old agricultural land and not on virgin soil with ~~pristine~~ natural vegetation. **A ploughing permit must first be obtained from the National Department of Agriculture in order to develop virgin soil as stipulated in the Conservation of Agricultural Resources Act 43 of 1983, regardless of who owns the land. Any land that has not been worked for more than 10 years is regarded as virgin land.**

**Before you undertake to cultivate a new area, check with the Department of Environmental Affairs if an Environmental Impact Assessment (EIA) or Basic Assessment Report (BAR) needs to be done.**

Familiarize yourself with the legislative requirements in the **National Environmental Management Act 107 of 1998 (NEMA), Listing Notice 3: Activities Requiring a Basic Assessment:**

- **Activity 12:** Clearing of >300 m<sup>2</sup> in critically endangered or endangered vegetation.  
In the Western Cape:
  - \*within any critically endangered or endangered ecosystem listed in terms of section 52 of the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) or in an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004
  - \*within critical biodiversity areas identified in bioregional plans.
- **Activity 13:** Clearing of >1 ha in areas with high conservation status (e.g. CBAs).
- **Activity 14:** Clearing of >5 ha in all areas outside urban areas.

Furthermore, management should ensure that they remain up-to-date and compliant with all applicable aspects of the regulations related to the farm's management of :

- Soil
- Water
- Plant protection and production products
- Emissions-to-air and greenhouse gas emissions
- GM materials
- Invasive Plant Species
- Fire
- Conservation of species

Various channels can be used to stay up-to-date on the regulations such as customer briefings, reviewing government websites or receiving office newsletter communication, industry body briefings, or through proactive updates from management team that briefs all relevant staff members.

<b>1.12</b>	<b>Is there evidence of legal compliance for all activities on site that may impact on the environment.</b>	<p><i>The business should have documentary proof that relevant authorizations and permits are in place for the use of land or impacts that activities may have on the environment such as</i></p> <ul style="list-style-type: none"> <li>- <i>authorization permits, EIA's for any land use change activities (ploughing/planting) and/or soil contamination incidents</i></li> <li>- <i>authorization permits for abstraction and discharge quality</i></li> <li>- <i>authorization permits for any on-site waste management facilities</i></li> <li>- <i>authorization permits relating to air quality</i></li> <li>- <i>annual reviewed/updated Alien plant clearing plan</i></li> <li>- <i>permits for controlled fire</i></li> <li>- <i>management plan or legal document formalizing the conservation of biodiversity within natural areas.</i></li> </ul>
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**GUIDANCE NOTES:**

The following activities are most frequently triggered in terms of requiring environmental authorization through a basic assessment prior to the activity commencing:

- Registration of water use
- Abstraction ('taking') of water for irrigation
- Abstraction of groundwater
- Irrigation with waste water
- Drainage, clearance and cultivation of wetlands and riparian areas
- Development and expansion of canals, dams, reservoirs, etc by 100 m<sup>2</sup> or more and/or off-stream storage of water, with a combined capacity of 100 000 m<sup>3</sup> or more
- Development and expansion of drifts and bridges within 32 m of watercourse
- Construction of soil conservation works (weirs, groynes, bulldozed bank protection/berms, etc) within 32 of watercourses and wetlands.
- Excavations and sediment movement in flood channels and wetlands
- Burning of veld, including wetland vegetation, prior to land preparation
- Clearing of natural/indigenous vegetation, including virgin land, i.e. land that hasn't been mechanically disturbed for the preceding 10 years

- Ploughing and other disturbances in the vicinity of wetlands and watercourses
- Bulldozing of roads wider than 4 m, outside urban areas
- Regulation of the sale, acquisition, disposal etc of agricultural remedies (herbicides, pesticides, fertilizers, farms feed and stock remedies)
- Registration of dealers that import and/or sell agricultural remedies
- Registration of pest control operators
- Control of plants and prevention of plant diseases (agricultural pests)
- Pollution and emergencies
- Production, release and use of GMOs
- Accidental, general release of GMOs
- Control of invasive alien plants and weeds
- Control of other invasive alien species (including plants, insects, fish, amphibians, reptiles and mammals)
- Construction of farming-related accommodation, out-buildings, sheds etc
- Development of holiday accommodation and resorts
- Erection of powerlines
- Development of wind and solar energy facilities

Please ensure that the necessary permits and authorizations are approved and available for evidence as is required to meet this criterion.

## **SECTION 2: SUSTAINABLE PRODUCTION PRINCIPLES**

### **2. ENVIRONMENTAL PRINCIPLE 1: MINIMIZE 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 farm's natural environment or surrounding communities.

	<b>CODE REQUIREMENT</b>	<b>BENCHMARK</b>
2.1	<b>Farming activities do not have an impact on the surrounding natural areas.</b>	<p>a. <i>There is evidence that any <del>pristine</del>-natural area with a biodiversity priority protection status have not been disturbed or destroyed by any farming related activities in the past <u>10</u> years (especially including riparian areas, wetlands, seep-zones and all critical vegetation types as well as formally protected areas or biodiversity priority areas).</i></p> <p>b. <i>Where any natural areas (i.e. native vegetation areas outside of the biodiversity priority areas) have been impacted by farming activities, it is in line with legal authorizations and evidence of compliance is provided.</i></p>

- c. *Where any natural areas (i.e. native vegetation areas outside of the biodiversity priority areas) have been impacted by farming 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.*
- d. *Buffer zones are established, maintained and conserved adjacent to all natural areas to prevent contamination and protect wildlife habitat.*
- e. *There is evidence (record keeping 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)  
 Fertilizers, Farm feeds, Agricultural Remedies and Stock Remedies Act, No 36 of 1947

**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 organizations. 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) in to 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 prioritized.

Good practice in **selecting varieties** is that the decision is informed and based on any of the following factors:

- Yield performance,
- genetic diversity on the farm,
- impact on neighboring cultivated areas,
- recommendation by extension officers,
- results of a variety of field trails,
- disease resistance,
- pest/disease/weed pressure,
- crop nutrition needs,
- water needs,
- adaptation to local climatic and geographic conditions,
- soil characteristics and crop rotation, and/or
- customer requirements.

<p>2.2</p>	<p><b>Products used and processes followed during farming activities have the aim to avoid environmental contamination.</b></p>	<p><i>a. Products used for farming activities are selected appropriately and decisions on application quantities &amp; methods for all organic &amp; inorganic nutrient management, crop protection, agrochemical products as well as fuel types is in line with minimizing negative environmental &amp; social impacts and improving input efficiency.</i></p> <p><i>b. Adherence to the guidelines as detailed in the South African National Standard - <a href="#">SANS 10206 (2010)</a>: The handling, storage and disposal of pesticides, is a minimum requirement.</i></p> <p><i>c. There is evidence of compliance with prohibited chemicals list for crop production and crop protection products as per international and industry norms &amp; standards.</i></p> <p><i>d. Relevant staff are effectively &amp; regularly trained in the safe/appropriate handling of agrochemicals and fuels.</i></p> <p><i>e. Measures are taken to protect workers/neighbors and prevent environmental contamination as a result of the storage and use of fuel, chemical and/or other hazardous product.</i></p>
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	<p><i>f. Measures are taken to protect non-target areas and crops from agro-chemical usage.</i></p> <p><i>g. Measures are taken to prevent the side effects of crop protection products.</i></p> <p><i>h. Measures are taken to prevent pest resistance by using variable products.</i></p> <p><i>i. Measures are taken to avoid crop disease cross contamination.</i></p> <p><i>j. Measures are taken to prevent using untreated sludge and untreated sewage sludge in the block/field.</i></p> <p><i>k. Measures are taken to ensure the composition and application of organic manure and treated sludge, treated sludge or waste water and or any other industrial waste residues are not contaminating the soil and surrounding environment.</i></p> <p><i>l. Soil samples are taken annually by an accredited lab.</i></p> <p><i>m. Records of all soil and crop samples are kept and results are used to adjust the integrated crop protection and nutrient management plan.</i></p> <p><b>Legal reference:</b>      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)      Fertilizers, Farm feeds, Agricultural Remedies and Stock Remedies Act, No 36 of 1947</p>
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**GUIDANCE NOTES:**

**Good practice** includes only using products on the crops they are permitted for, using products that are from trustworthy sources, that are officially registered and permitted in the country of use, and products that are in-line with the buyer's requirements.

Relevant staff should be effectively and regularly trained in the safe and appropriate handling of agrochemicals and fuels. This training should be done by suitable qualified experts and can include the following aspects relating to agrochemicals: appropriate use, environmental aspects, legal concerns, personal protective equipment and safe storage.

Adhering 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.

Soil samples should be taken at least annually by an accredited lab to assess chemical load of the soil and the residue levels of all crop protection and crop production products.

SANAS accredited labs in South Africa are listed [here](#).

Measures taken to protect surrounding environment and people from storage and use of fuel, chemical

and/or other hazardous products can include:

- Managing cleaning of equipment and containers of chemical and/or hazardous products in a safe manner,
- Managing the risk of spray drift appropriately,
- Fuel is stored separately from pesticides and fertilizers,
- Storage facilities are constructed of suitable materials,
- Storage facilities are located where risks to the environment and human health are minimized,
- Managing run-off of fuel, chemicals, mineral and organic substances, including all nutrient management, crop protection, agrochemical and waste water related substances.

Measures taken to prevent the side effects of crop protection products can include:

- Using selective pesticides
- Targeted application
- Seed dressing

Measures taken to avoid/prevent crop disease cross contamination can include:

- Chopping or burying infested/diseased plant material
- Removal of infested/diseased plant material
- Disinfection of pruning and propagation equipment

Measures taken to ensure the composition and application of organic manure and treated sludge, waste water or industrial waste residues are not contaminating the soil and surrounding environment can include:

- Testing the ground and surface water quality, at least annually and during peak season,
- Testing potential risks for farm workers and the community
- Assessing the threats to biodiversity
- Where risks are identified, the contaminated residue is not used.

<p>2.2</p>	<p><b>Farming activities, processes and infrastructure do not result in any contamination or degradation of water resources above or below-ground.</b></p>	<p><i>a. Measures are taken to establish and/conserve buffer zones adjacent to all water sources to control pollution, prevent erosion and protect wildlife habitat.</i></p> <p><i>b. Measures are taken to prevent water contamination as a result of run-off of chemicals, mineral and organic substances, including all nutrient management, crop protection and agro-chemical related substances.</i></p> <p><i>c. Composition and application of organic manure and treated sludge, treated sludge water, waste water and or any other industrial waste residues are not causing contamination to the water resources.</i></p> <p><i>d. Water samples are taken at a sample of abstraction (source)/ incoming &amp; outflow points.</i></p> <p><i>e. All samples are sent to an SANAS accredited lab for results &amp; comparison and show no decrease in water quality.</i></p> <p><i>f. The results are included in the farm water</i></p>
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		<p><i>management plan which is updated annually.</i></p> <p><i>g. Up to date water management policy specifies details for water quality management procedures.</i></p> <p><i>h. A procedure aimed at the management of pollution (including the disposal and storage of the pollutant).</i></p> <p><u>Legal reference:</u></p> <p>National Environmental Management: Waste Act of 2008</p> <p>Hazardous Substances Act, No. 15 of 1973</p> <p>NWA – the National Water Act 36 of 1998</p> <p>CARA – the Conservation of Agricultural Resources Act 43 of 1983</p>
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**GUIDANCE NOTES:**

Approximately 44% of South Africa’s rivers are critically threatened by human created problems that require human-centred solutions at a local scale (WWF, 2016 Waters Facts & Futures Report).

Allowing adequate strips or buffer zones of indigenous vegetation next to the riparian zone will minimize the effect of fertilizer and pesticide run-off from cultivated land. The width of the 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. For more information visit the Buffer Zone Hub website: <https://sites.google.com/site/bufferzonehub/buffers-project-background>

All developments in or around water resources are likely to require an authorization from the Department of Water and Sanitation (DWS) in terms of sections 21 and 22 of the National Water Act 36 of 1998. The Conservation of Agricultural Resources Act 43 of 1983 (CARA) also restricts activities in wetlands. In addition, certain listed activities for rivers and wetlands require environmental authorization in terms of NEMA. In the Western Cape this is managed by the Department of Environmental Affairs and Development Planning (DEA & DP).

It is illegal to interfere with the flow regime of water through a wetland by canalising water flow, digging drainage ditches or infilling by dumping soil and rubble, except where the necessary authorisation has been obtained (e.g. to build a dam in a wetland). Wetland functioning can sometimes be successfully restored when the flow regime is reverted to its original state and ditches or canals are closed.

The **National Water Act 36 of 1998**: According to this Act all water-use activities from a river or watercourse have to be registered or authorized by the Department of Water and Sanitation (DWS).

These include:

- abstraction from a river
- building of farm dams
- discharging of effluent or any other form of pollution into a river or watercourse
- altering (e.g. ‘bulldozing’) the beds, banks and course or characteristics of a watercourse, even if the flow is erratic or seasonal
- planning any changes to the allocated amount of water (e.g. after a dam enlargement).

In addition, take note of the legislative requirements in the National Environmental Management Act 107 of 1998 (NEMA), Listing Notice 1, which lists activities that require a basic assessment:

- **Activity 11:** Construction of canals, dams, bridges; weirs.
- **Activity 18:** Infilling, depositing or moving of >5 m<sup>3</sup> of any material from a watercourse/wetland.

For more info on registration or licensing forms (W.Cape) :

W: <http://breedegouritzcma.co.za/content.php?page=Documents&subpage=Forms&subsubpage=Licensing>

or

Melissa Lintnaar-Strauss at the Department of Water and Sanitation

E: Lintnaar-StraussM@dws.gov.za

Measures taken to prevent water contamination include:

- protecting against non-targeted areas,
- not using fertilizer on water-logged,
- compacted, steep or frozen ground,
- taking in to account weather forecasts,
- using precision application practices, or split application,
- fertilizer and pesticides are not used on non-target,
- slow release or stabilized fertilizers can be used.

It is important to ensure the composition and application of organic manure and treated sludge, treated sludge water, waste water and or any other industrial waste residues are not causing contamination to the water resources.

A water management policy needs to be in place and should be updated annually and includes targets which are measured/met & updated (aimed at 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 a water management plan.

2.3	<p><b>There is no loss or degradation of soil due to pollution, erosion, compaction, salinization etc.</b></p>	<p><i>a. Measures are taken to prevent soil contamination as a result of run-off of chemicals, mineral and organic substances, including all nutrient management, crop protection and agro-chemical related substance.</i></p> <p><i>b. There is evidence of a map indicating different management units based on soil structure types &amp; high-risk areas (for salination, compaction, erosion).</i></p> <p><i>c. There are measures in place to prevent soil erosion in identified high risk areas.</i></p> <p><i>d. Where ploughing occurs, the necessary permits are in place to ensure legal compliance.</i></p> <p><i>e. Measures are taken to avoid soil compaction by machinery and/or livestock.</i></p> <p><i>f. A soil management policy that clearly states</i></p> <ul style="list-style-type: none"> <li>- <i>a commitment to developing the farm infrastructure, roads and layout to sustainably maximize the potential of the most productive soils and to avoid the sub-optimal use of soils</i></li> </ul>
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		<p><i>and/or the use of marginal soils;</i></p> <ul style="list-style-type: none"> <li>- <i>a commitment to supporting good soil management and soil health across the farming region /valley /catchment within which the farm is situated.</i></li> </ul> <p><i>g. The associated management plan outlines effective actions taken and progress made towards zero impact and/or soil restoration/conservation</i></p> <p><i>h. Crop rotation should be used where applicable as a soil health management practice.</i></p> <p><b>Legal reference:</b></p> <p>Conservation of Agricultural Resources Act (CARA 1983), NEMBA (2004)</p>
<p><b>GUIDANCE NOTES:</b></p> <p>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. Key concepts of soil health and ecological soil management include protecting soil habitat; managing more by disturbing less; keeping soil covered, diversifying food and carbon sources for soil microorganisms; diversifying plant and animal communities; and growing living roots throughout the year.</p> <p><b>Practices to improve soil health and reduce soil erosion include:</b></p> <ul style="list-style-type: none"> <li>- Gradients steeper than 20% are avoided in any farming activities (road, contours, planting blocks etc.)</li> <li>- The use of terracing and following contours with any new operations</li> <li>- Minimizing tillage</li> <li>- Where ploughing occurs, the necessary permits should be in place to ensure legal compliance</li> <li>- The use of trees as wind breaks</li> <li>- Using cover crops to protect the soil</li> <li>- Using crop rotation (where applicable) for non-perennial crops as a soil health management practice</li> <li>- Building soil carbon with above practices as well as incorporating organic manure and compost as per the soil requirements, including crop residues where possible</li> <li>- Encouraging soil organisms and macro &amp; micro bacterial elements.</li> </ul> <p><b>Practices to reduce soil compaction include:</b></p> <ul style="list-style-type: none"> <li>- Avoid repetitive use same tractor trails and minimizing passes on the field</li> <li>- Avoid using equipment in wet conditions</li> <li>- Using low pressure tyres</li> </ul> <p><b>Practices to maximize the potential of the productive soils include:</b></p> <ul style="list-style-type: none"> <li>- Ensuring the crop is suited for the soil &amp; micro climatic conditions</li> <li>- Precision farming to ensure crop requirements are met with little/no wastage or contamination</li> <li>- Intercropping</li> <li>- Optimizing crop quality and homogeneity</li> </ul>		
2.4	<p><b>O 4. Invasive alien plant species (IAP) are controlled</b></p>	<ul style="list-style-type: none"> <li><i>a. Foremost, there is no cultivation of IAP species on the farm.</i></li> <li><i>b. Management can demonstrate knowledge of all the relevant IAP's on the farm.</i></li> <li><i>c. Relevant staff are effectively &amp; regularly</i></li> </ul>

		<p><i>trained in the safe/appropriate IAP clearing methods and techniques.</i></p> <p><i>d. A map indicating areas of IAP and clearing plan that prioritizes mountain catchment and riparian (river) areas (where relevant) should be put in place.</i></p> <p><b><u>Legal reference:</u></b></p> <p>NEMBA Invasive Alien Species Regulations List, within the National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004)</p>
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**GUIDANCE NOTES:**

Alien vegetation refers to plants that are not native in a country and have been brought into a country from another. The **Department of Environmental Affairs in South Africa** describes invading alien plants as the biggest threat to plant and animal biodiversity. The impact, however, goes further than harming just the environment. It also has huge economic implications with an estimated R600 million cost per year to clear the over 10 million hectares of land in South Africa. For more stats on alien plant invasions in South Africa have a look **here**.

The most threatening alien plants in the Western Cape according to Cape Nature are:

- Rooikrans
- Black Wattle
- Port Jackson
- Silky hakea
- Long-leafed wattle
- Stinkbean
- Australian Myrtle
- Spider gum
- Cluster pine
- Blackwood

**The impact of alien plants**

The Department of Environmental Affairs list the following problems alien plants can cause:

- Use up precious water
- Take up favourable spaces were indigenous plants could have grown
- Reduce our ability to farm
- Intensify flooding and fires
- Cause erosion
- Destruction of rivers
- Siltation of dams and estuaries
- Poor water quality
- Lead to extinction of indigenous plants and animals

In the Western Cape alien vegetation also holds serious threats to the fynbos by intensifying the temperature and risk of fires in the hot summer months. In recent years, with the impact of climate change being felt with the drought, these risks are very real and present a major liability for landowners.

Here is a **list of alien invasive plants in South Africa**.

Also have a look at the Department of Water & Forestry's go-to-guide on cleaning invasive alien plants **here**.

**Information on identification of invasive species and the NEMBA Alien and Invasive Species Lists, 2016:**

**W:** [www.invasives.org.za](http://www.invasives.org.za)

**Early detection and rapid response on alien invasive species:**

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## **The Alien and Invasive Species Regulations, 2014**

The 2014 Alien and Invasive Species (AIS) Regulations of the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) specifies the legal obligations of landowners in respect of invasive plant and animal species that occur on their properties.

### Categories

The AIS Regulations list four different categories of invasive species that must be managed, controlled or eradicated from areas where they may cause harm to the environment, or that are prohibited to be brought into South Africa.

The alien and invasive species that must be controlled inside South Africa are listed in the NEMBA Alien and Invasive Species Lists, 2016. These lists include plants (383), mammals (41), birds (24), reptiles (35), amphibians (7), fresh-water fish (15), terrestrial invertebrates (23), fresh-water invertebrates (8), marine invertebrates (16) and microbial species (7).

These invasive species are divided into four categories:

- **Category 1a:** Invasive species that must be combatted and eradicated. Any form of trade or planting is strictly prohibited.
- **Category 1b:** Invasive species that must be controlled and, wherever possible, removed and destroyed. Any form or trade or planting is strictly prohibited.
- **Category 2:** Invasive species or species deemed to be potentially invasive, for which a permit is required to carry out a restricted activity. Category 2 species include commercially important species such as pine, wattle and gum trees.
- **Category 3:** Invasive species that may remain in prescribed areas or provinces. Further planting, propagation or trade is however prohibited.

Permits are required to carry out certain restricted activities with 118 Category 2 listed plants and animals.

**Download permits to carry out certain restricted activities with Category 2 listed plants and animals:**

W: [www.invasives.org.za](http://www.invasives.org.za)

See also the SIZA Enviro Resource library document “*Do the NEMBA regulations affect you?*”

### Declaration of invasive species

A property that contains invasive species is a liability to the buyer. The **AIS Regulations state that the seller of a piece of land must notify the purchaser of the property in writing of the presence of listed invasive species on that property before the sale agreement is signed.**

A copy of the Declaration of Invasive Species form needs to be lodged with The Compliancy Officer, Biosecurity Services, and the Department of Environmental Affairs.

### The impact of invasive species on water usage

Invasive alien trees and shrubs often use more water than surrounding indigenous vegetation and this lowers water availability by up to 4%. If left to spread uncontrolled, this figure could escalate to around 16%. Invasive alien plants can dramatically reduce available water resources, with significant impact on stream flows, and the associated increase in siltation and degrading water quality.

### The thirsty invaders

South Africa’s surface runoff is roughly 49 billion m<sup>3</sup>/yr., and of that 1.44 Billion m<sup>3</sup> of water is lost due to invasive alien plant nationally. It is estimated that approximately 2076 kilolitres of water is gained for every

hectare cleared of invasive alien vegetation.

***Best practice include:***

The associated IAP clearing plan is annually reviewed, progress documented and new prioritized areas targeted to move towards a 0% IAP record for the farm (all cleared & maintained).

### **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.

	<b>CODE REQUIREMENT</b>	<b>BENCHMARK</b>
3.1	<b>Water abstraction &amp; use is within legal limitations and is as efficient as it can be.</b>	<p><i>a. Evidence is available to show registration papers of all water sources (dam, river, borehole, waste water etc.).</i></p> <p><i>a. Evidence of registration papers of water allocation for ground and surface water abstraction.</i></p> <p><i>b. Water consumption is measured (meter records) for major water consumption points for different farming activities (orchards/vineyards, packhouse, infrastructure etc.) and do not exceed water allocation figures.</i></p> <p><i>c. Water Use Efficiency (WUE) per crop (L/kg) is measured.</i></p> <p><i>d. The water efficiency targets per crop and per site are monitored and reviewed on an annual basis and fed in to the water management plan to drive continuous improvement.</i></p> <p><i>e. There is evidence of the use of technologies or water conservation practices as part of the water management plan.</i></p> <p><b>Legal reference:</b> The National Water Act 36 of 1998.</p>

**GUIDANCE NOTES:**

Evidence is available to show all water sources and can include a map of the farm with all water sources indicated (dam, borehole, streams, rivers, wetlands) as well as waste water treatment facilities.

Water use efficiency (WUE) per crop: There are some industry norms on WUE per crop as a starting point, available from your grower group or commodity organization. If those are unknown the calculation is usually done using soil water probes and an understanding of the water requirements of the crop and the environmental conditions (wind, heat etc.)

The [Fruitlook tool](#) is a freely available online tool that uses satellite imagery to assist farms in practicing precision farming practices (both at water and agrochemical/fertilizer input level) at a crop and production block level. Soil moisture content should be measured and the requirement should match the WUE of crop.

**Water use efficiency techniques include:**

- Precision irrigation usage (i.e. only when absolutely necessary to enhance the yield/quality of the crops) with the timing and amount of irrigation used tailored to the crop requirements)
- Ensuring the irrigation system is monitored to minimize leakage/water wastage.
- Irrigation scheduling must take in account the prediction rainfall and evaporation (Fruitlook)

**Measuring Ground Water abstraction**

Understanding and unlocking South Africa’s groundwater potential is crucial to addressing the national water security challenges. Currently only [15%](#) of the country’s total water consumption is obtained from groundwater sources such as boreholes and aquifers. And yet, this abstraction is not always accurately measured, but if effectively managed and replenished, groundwater can serve as a potential buffer during droughts, because the volume of water stored in underground aquifers can be significant. Consider that the storage volume of surface water dams is generally equivalent to a few times greater than the volume of the mean annual runoff in the catchment, whereas an aquifer can have a storage volume several thousand times greater than the annual recharge. This stored volume is also not subject to the water evaporation losses of dams.

**Become an active member of your area’s Irrigation Board and/or Water User Association (WUA).**

Irrigation boards were established for stock watering purposes, as per the Water Act of 1956, and are recognised until they are re-structured as WUAs.

Water User Associations exercise its delegated management powers, including protecting water resources; preventing unlawful water use and unlawful acts likely to reduce the quality of water; regulating the flow of any watercourse.

For more information on joining a Water User Association: [http://www.dwa.gov.za/iwqs/nwa/tmp\\_Chapter\\_8.html](http://www.dwa.gov.za/iwqs/nwa/tmp_Chapter_8.html)

<b>3.2</b>	<b>Energy-use is measured and efficient</b>	<p><i>a. A data collection tool is in place as the start of an annual record keeping process for all direct energy usage.</i></p> <p><i>b. The carbon footprint calculator as published on <a href="http://www.climatefruitandwine.co.za">http://www.climatefruitandwine.co.za</a> is completed and report provided as evidence.</i></p> <p><i>c. Energy efficiency targets should be put in place and monitored annually against baseline to ensure maximum efficiency.</i></p> <p><b>Legal reference:</b></p> <p>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.</p>
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**GUIDANCE NOTES:**

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 **a carbon tax**. 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 is yet to be implemented in 2017. 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. There are expectations that the second phase of

the carbon tax, coming in to affect from 2021, will affect agriculture sector and those implications could be very costly, especially for larger production facilities that have high Eskom electricity bills.

Understanding the implications of the carbon tax requires an accurate system for monitoring, reporting and verifying emissions (MRV). The [CCC carbon calculator](#) provides a mechanism for monitoring and reporting in the agricultural sector. For more information see summary for the fruit and wine sector [here](#) written by [Blue North sustainability consultants](#).

Good Practice measures that can be taken to maximize energy efficiency include:

Optimizing the use of energy-intensive inputs, such as inorganic fertilizers and plant protection products.

All equipment, machinery and infrastructure is maintained at a level to ensure proper and efficient functioning

The results of the CCC carbon footprint report should be used to develop an energy and emission management plan that outlines efficiency options with specific targets that are monitored and annually updated. This information can be externally disclosed (as part of the Carbon Disclosure Project for listed companies) or used as an internal improvement process.

Ideally, over time the tools used should indicate CO<sub>2</sub> footprint (tCO<sub>2</sub>e/kg fruit) is reducing from baseline.

3.3	<b>Nutrient management, crop protection and agro-chemical usage is as efficient &amp; effective as it can be.</b>	<ul style="list-style-type: none"> <li>a. <i>All record keeping in place as evidence of annual fertilizer and agrochemical usage.</i></li> <li>b. <i>All equipment used in nutrient management, crop protection and agro-chemical practices are annually calibrated and maintained at a level to ensure efficiency of application.</i></li> <li>c. <i>Relevant staff are have received training and implement precision practices when applying products so as to ensure efficiency and avoid wastage/pollution.</i></li> <li>d. <i>A holistic fertilizer programme is in place that is suitable for the crop &amp; conditions and is reviewed annually and adjusted for improvements.</i></li> <li>e. <i>There is evidence of an IPM -based approach in fertilizer and agro-chemical spray programme in place that is adapted based on seasonal analyses (leaf &amp; soil nutrient levels and weather conditions).</i></li> <li>f. <i>There is record keeping in place to control any pest infestations or disease outbreaks effectively and monitor progress.</i></li> <li>g. <i>Measures are taken to only apply chemical crop protection products when absolutely necessary and use non-chemical pesticides instead of chemical pesticides where possible.</i></li> </ul>
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		<p><b>Legal reference:</b></p> <p>NEMA – the National Environmental Management Act 107 of 1998  NEM:BA – the National Environmental Management: Biodiversity Act 10 of 2004  Fertilizers, 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)</p>
<p><b>GUIDANCE NOTES:</b></p> <p>Record keeping should include:</p> <ul style="list-style-type: none"> <li>- Type of product &amp; target crop</li> <li>- Quantity applied and area</li> <li>- Date applied and harvest interval</li> </ul> <p>The decision in choice of product (for both inorganic and organic), application quantity and method is based on sound technical advice aimed at improving input efficiency and evidence of what is required for optimal crop and soil health. Choice of product is also based on selecting high quality and from reputable sources that are in line with leading industry norms/standards</p> <ul style="list-style-type: none"> <li>- Appropriate training can include:</li> <li>- Appropriate pre-harvest intervals and re-entry times per product &amp; crop</li> <li>- Correct interpretation of label recommendations &amp; maximum authorized doses</li> <li>- IPM principles and methods</li> </ul> <p>The holistic fertilizer plan can include the following:</p> <ul style="list-style-type: none"> <li>- Crop and product specific applications rates</li> <li>- Nutrient content of manure and/or compost</li> <li>- Nutrient input/output balance</li> <li>- Nutritional requirements of cultivated crops</li> <li>- Soil type(s)/sample analysis</li> <li>- Only applying chemical crop protection products when absolutely necessary</li> <li>- Leaf samples are taken regularly to assess chemical crop protection product levels</li> <li>- The use of non-chemical crop protection products is recommended wherever possible.</li> </ul>		
3.4	<p><b>The management of materials and wastes is monitored and in line with reduce, reuse, recycle best-practices.</b></p>	<ul style="list-style-type: none"> <li>a. <i>There is record keeping in place to measure all waste streams (including what is recycled).</i></li> <li>b. <i>There is visual evidence of recycling in place (bins for collection of paper/carton, plastic, glass, metal, oil, fruit waste).</i></li> <li>c. <i>Storage facilities for waste are in line with legal requirements.</i></li> <li>d. <i>There is evidence of a waste management plan that covers waste generation, storage, transportation &amp; disposal and is in line with avoiding any risks to humans and the environment.</i></li> <li>e. <i>As part of the waste management plan, targets are set to minimize waste production &amp; increase re-use &amp; recycling.</i></li> <li>f. <i>There is evidence of a re-use, recycling system in</i></li> </ul>

		<p><i>place that is annually reviewed and improved upon.</i></p> <p><i>g. There is an overall reduction in kg waste per kg fruit produced per year.</i></p> <p><b>Legal reference:</b></p> <p>NEM:WA - The National Environmental Management: Waste Act 59 of 2008</p>
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**GUIDANCE NOTES:**

Evidence of a waste management plan can include documentation, visuals of storage facilities and contracts with service providers who collect the recycling/waste.

For storage facilities storing more >100m<sup>3</sup> there should be proof of permits / compliance to legal requirements.

3.5	<p><b>Activities that result in any emissions or harmful pollutants or greenhouse gasses are measured &amp; monitored to reduce impacts</b></p>	<p><i>a. Data collection for direct farming activities (fuel usage, electricity usage, fertilizer/agrochemical usage) and a first level carbon emission calculation is in place.</i></p> <p><i>b. Evidence of carbon footprint calculation report as a baseline and a plan with realistic reduction targets is in place and monitored annually to track progress and drive continuous improvement.</i></p> <p><i>c. The carbon footprint calculation is expanded beyond (direct) farm-level activities to include priority supply chain activities relevant to the product such as logistics, transport, cold storage and packaging.</i></p> <p><b>Legal reference:</b></p> <p>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.</p>
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**GUIDANCE NOTES:**

See above point 3.2 for reference to Carbon Tax.

Best practice indicator is that the carbon footprint (tCO<sub>2</sub>e/kg fruit) is measured and is reducing from baseline.

#### 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/fertilizers) renewable and biological-based alternatives.

	CODE REQUIREMENT	BENCHMARK
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4.1	<b>Meeting of direct energy needs (electricity and fuel) is not dependent on non-renewable energy sources.</b>	<p><i>a. The results of the carbon footprint assessment are incorporated in to energy management plan which includes realistic goals to shift high-emission activities to renewable energy sources.</i></p> <p><i>b. A % of total energy usage that is from renewable energy sources or evidence of investment in renewable energy solutions.</i></p> <p><b>Legal reference:</b></p> <p>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.</p>
<p><b>GUIDANCE NOTES:</b></p> <p>A non-renewable energy source is coal-based electricity, such as that which is provided to most South Africans through the Eskom grid. Alternatively, renewable energy sources include solar power, biogas, wind, hydro or biomass (wood chips) – many of which are used on farms across the country to reduce the Eskom energy usage.</p> <p><u>A breakdown of the main energy-users in the fruit supply chain:</u> The <a href="#">CCC carbon calculator</a> and several other energy-research reports have indicated the following trends of high energy activities within the fresh produce industry:</p> <ul style="list-style-type: none"> <li>• The biggest energy user at farm level is irrigation pumping, followed by fuel used in on-site transport &amp; farm machinery. Many farms have installed solar powered irrigation pumps at relatively low investment which has significantly reduced their monthly energy bills – particularly in the summer months. In addition, the installation of variable speed drives at the pumping stations have seen as much as a 40% reduction in energy usage on some farms.</li> <li>• Synthetic agrochemical applications, particular nitrogen based fertilizers, are particular high in GHG emissions and should therefore be managed efficiently and suitable biological farming practices should be encouraged to reduce the need for synthetic soil additions.</li> <li>• At a post-production level, the energy used in cooling is a significant source of GHG emissions, particularly when the energy source is Eskom which is coal-based. Packaging materials is also a great source of energy usage in the production of the material and especially if it is virgin material (i.e. with no recycled content) or not able to be recycled after use.</li> </ul>		
4.2	<b>Crop nutrition and crop protection needs are not reliant on inorganic products.</b>	<p><i>a. Crop nutrition &amp; 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.</i></p> <p><i>b. Targets are set to reduce the usage of high-impact products (glyphosate etc.) to zero in short term.</i></p> <p><i>c. Accurate fertilizer programme shows decline in synthetic product usage.</i></p> <p><i>d. There is evidence of soil health improving practices integrated within the soil management plan as part of the plan to reduce synthetic products.</i></p>
<p><b>GUIDANCE NOTES:</b></p>		

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, there should be a plan in place to start reducing the quantity of chemical products used and shifting to alternative products with a lower or zero environmental impact.

Glyphosate is the world's best-selling chemical herbicide. Glyphosate-containing herbicides, such as Monsanto's Roundup, are the most widely used herbicides in Europe, applied in farming, forestry, parks, public spaces and gardens. Glyphosate-containing herbicides are also crucial to the production of genetically modified herbicide resistant crops. In recent years a number of scientific studies have raised concerns about glyphosate's safety and there have been calls for glyphosate-containing herbicides to be banned. Therefore, if glyphosate products are used, there should be targets set that reduce the usage of these high impact products to zero within a year.

Soil health improving practices should be measured and the results incorporated in to the soil management plan to enhance the soil health and thereby reduce the requirements for soil additions. This management plan will be updated annually and is part of the integrated environmental management plan and policy framework.

4.3	<b>The management of materials and wastes results in zero waste ending in landfill on or off the farm.</b>	<ul style="list-style-type: none"> <li>a. <i>Accurate record keeping of waste sources &amp; quantities going to landfill.</i></li> <li>b. <i>A waste management plan is in place with measurable targets that are annually updated and moving towards a zero-waste goal.</i></li> <li>c. <i>Evidence shows waste targets are being met to reduce/reuse/recycle on-site waste.</i></li> </ul>
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**GUIDANCE NOTES:**

A waste management plan should include accurate annual records indicating total quantity and different types of waste should be kept and used to identify waste reduction opportunities and to set realistic zero-waste goals over time.

4.5	<b>There are no emissions of harmful pollutants or net emissions of greenhouse gasses.</b>	<ul style="list-style-type: none"> <li>a. <i>A carbon footprint &amp; GHG emission assessment is completed for at least 3 years with evidence to show decline in all relevant GHG emissions related from on-site &amp; transport activities.</i></li> <li>b. <i>There is an emission reduction plan with zero emission targets set and reviewed annually.</i></li> <li>c. <i>Emissions that cannot be mitigated are offset to achieve zero emission rating.</i></li> </ul>
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**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 increase. 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 fertilizer and packaging to be used.

## 5. ENVIRONMENTAL PRINCIPLE 4: RESTORED & CONSERVE ECOSYSTEM SERVICES

### Principle Statement:

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

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

### GUIDANCE NOTES:

Soil carbon is one of the key indicators of a healthy soil life. If the soil carbon is increasing, and the microbial balance is in place, then the soil should require very little inputs to provide the necessary nutrients for crop production. For more information on soil health promotion practices see 2.3 & 4.2 above and the SIZA Library for the Soil Health booklet.

5.2	<b>The farms water management plan is integrated in to a regional scale assessment to ensure effective catchment level water management.</b>	<p>a. <i>A <a href="#">water risk assessment</a> is done for the catchment and results are used to start developing a collective plan for water management within the catchment.</i></p> <p>b. <i>There is evidence of active participation in regional groups such as a water user association (WUA), catchment management agency (CMA) or similar regional water stewardship initiatives.</i></p>
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### GUIDANCE NOTES:

The first step to collective regional water management is to be aware of the local Catchment Management Agency and to become an active member of your area's **Water User Association (WUA)** – see above notes under 3.1. Functioning Catchment Management Agencies (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.

**Catchment Management Agencies (CMAs)** Investigate and advise on the protection, use, development, conservation, management and control of water resources in its water management area; co-ordinating activities of water users and water management institutions.

**Irrigation Boards** are established for stock watering purposes, as per the Water Act of 1956, are recognised until they are re-structured as WUAs.

**Water User Associations (WUAs)** Exercise its delegated management powers, including protecting water resources; preventing unlawful water use and unlawful acts likely to reduce the quality of water; regulating the flow of any watercourse.

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<sup>3</sup> 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](http://pmg-assets.s3-website-eu-west-1.amazonaws.com/130731appendix_3.pdf)

### Good water stewardship

The concept of good water stewardship serves to unite a wide set of stakeholders to: • Use water responsibly in-house, as well as throughout the wider catchment; and • Use and share water fairly, sustainably and in a manner that is economically beneficial. Due to the transient nature of water and the fact that it flows through large areas of land, its stewardship requires local and catchment-scale levels of interaction. Water stewardship is gaining increasing interest and attention in South Africa, and a wide variety of sectors (fruit, forestry, hops) and catchments (Breede, Gouritz, uMgeni) are currently engaging around water stewardship.

The [Water Risk Filter](#) is an online tool that allows users to assess their water risk at a catchment level based on the different levels of risk – physical, reputational and regulatory – and has recently been updated with all the relevant South African spatial data. It provides a good first step at assessing what the regional level risks might be which can then be expanded upon through an on-farm assessment.

### FURTHER INFORMATION

More about water stewardship in South Africa: <http://www.wwf.org.za/what-we-do/freshwater/water-stewardship-programme/>

5.3	<p><b>Commitment to conserving &amp; restoring all pristine natural ecosystem areas (including riparian areas, wetlands, seep-zones and all vegetation types) both currently and in future.</b></p>	<p><i>a. There is evidence of a biodiversity assessment undertaken for the farm that identifies the important water source areas, critical vegetation types, important flora and fauna species in the natural and productive areas.</i></p> <p><i>b. There is an Environmental management plan (EMP) which outlines how to manage the different areas (vegetation patches &amp; corridors) accordingly to ensure conservation of areas of critical ecosystem function &amp; works towards a goal of fully restored &amp; conserved biodiversity areas.</i></p> <p><i>c. There is a farm map that includes the information from the biodiversity assessment, areas of high risk and priority areas for restoration/conservation activities, both land and water areas.</i></p> <p><i>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 farming related activities, both currently, or in future.</i></p>
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### GUIDANCE NOTES:

Each natural area has a distinctive **conservation value**, as outlined in point 2.1. A biodiversity assessment can be undertaken at no cost through the regional conservation agency, such as CapeNature, KZN Wildlife etc. or suitably

qualified extension officers.

At the very least it needs to identify and qualify important water source areas (such as wetlands, rivers, seep-zones and riparian areas) as well as critical vegetation types. It must also include an inventory of all flora and fauna species found of the natural and productive areas, ideally undertaken at different times of year to account for different flowering and migratory patterns.

The Biodiversity assessment can then outline which areas are to be formally conserved due to the conservation status and ecosystem function as part of the property, and to what level of formal protection it qualifies, such as private nature reserve, which can have tax benefits for the landowner with the declaration.

The assessment will feed in to an integrated biodiversity management plan which will identify which activities need to be prioritized based on environmental risk factors. These activities will be implemented over a time period to restore and conserve the entire area of the property and annual progress needs to be monitored.

A formal contract or policy can be signed between the designated conservation agency (such as CapeNature) or relevant NGO partner (such as Birdlife or WWF SA) who is able to offer technical advice and support in implementing the effective managing activities within the conservation area on the property.

**For more information on biodiversity assessments and stewardship, contact:**

Contact your regional office of [CapeNature](#)

[WWF SA](#)

[Birdlife SA](#)

[SANBI](#)