

Module 1.1 LAND USE PLAN		STATEMENT OF INTENT The agronomic and mechanisation practices of the sugarcane farm are integrated with the climate, soils, water and topography to obtain optimum and sustained economic crop production
Measures		Notes
Legal requirement	<p><b>A documented land-use plan or other maps exist, containing details and specifications with regard to:</b></p> <ul style="list-style-type: none"> <li>• Conservation terraces (indicating vertical intervals and height of terrace banks)</li> <li>• Waterways (indicating their location and waterway category)</li> <li>• Roads and cane extraction system (indicating the location and type of road i.e. diagonal, crest, access or district road)</li> <li>• Road drainage for all roads</li> <li>• Natural wetlands and watercourses (indicating their location)</li> <li>• Dams (indicating their location)</li> <li>• Quarries (indicating their location)</li> <li>• Rubbish dumps (indicating their location)</li> </ul>	<p><b><i>This section deals only with the existence of a Land Use Plan or detailed farm map. The implementation of various structures that are contained on this plan (or map) is addressed in Modules 3.10, 3.11 and 3.12.</i></b></p> <p>To obtain optimum economic crop production, it is necessary to integrate the agronomic and mechanisation practices with the climate, soils, water and topography of the farm unit. The grower has to recognise that different parts of the farm require different types of management and these must be integrated into a balanced working plan. It is vital to ensure that, while striving for optimum yields, protection of the environment is maintained.</p> <p>A land use plan (LUP) is a combination of a surface water management network, a cane extraction network and a production management programme. The LUP should be a Land Use Design for the entire farm area covering all commodities and not just cane.</p> <p>Surface water management structures provide the basis of all LUPs. Surface water management structures consist of mechanical conservation works such as storm drains, conservation terraces and waterways (refer to Module 3.10: Soil conservation: Layout).</p> <p>All land of slopes 2% and over require conservation terraces (refer to DAEA publication, Conservation of Farm Land in Kwazulu-Natal). For sugarcane, specific designs may apply for those slopes &lt;4% such as in the irrigated areas where parallel conservation terraces are used. Together with the crop, the construction of surface water management structures in the field ensures the protection of the most important resource on the farm - the soil.</p> <p>A LUP is not required by law, however, the Department of Agricultural Technical Services and the South African Sugar Association reached an agreement on procedures by which technical services for combating and preventing soil erosion on sugarcane lands in Natal were to be provided to canegrowers. Some of the conditions included the following:</p>

1. Each owner and occupier must comply with the Conservation of Agricultural Resources Act 43 of 1983, with particular regard to the cultivation of virgin soil and the Regulations pertaining to the Soil Conservation Scheme.
2. In the coastal areas where only sugarcane is grown, responsibility for technical planning and the provision of plans and specifications was vested in the South African Sugar Association Experiment Station (now SASRI).
3. In areas where sugarcane farming forms only part of a mixed farming enterprise (the midlands of KZN), the Department of Agriculture Technical Services and the South African Sugarcane Research Institute will jointly be responsible for providing these services. The choice of where to obtain these services was left to the individual canegrower.

On these grounds, it has been agreed that the possession of a Land Use Plan is a 'legal' requirement. LUPs should therefore be designed and drawn up according to the recommended standards of the South African Sugarcane Research Institute (SASRI) and the Department of Agriculture and Environment Affairs (DAEA).

For slopes greater than 4% an LUP must contain details and specifications regarding:

- Conservation terraces
- Waterways
- Roads and cane extraction system
- Types of road drainage systems
- Natural wetlands and watercourses
- Dams
- Quarries; and
- Rubbish dumps

<p><b>Better management practice</b></p>	<ul style="list-style-type: none"> <li>• Staff/labour housing and workshop</li> <li>• Soil Parent Material</li> <li>• Soil Form including depth, TAW (total available water) and erodibility</li> <li>• Non-arable and natural areas</li> <li>• Wet agricultural land (relic wetlands)</li> <li>• Fields including number and area in hectares</li> <li>• Minimum tillage fields</li> <li>• Fields suitable for green cane harvesting (trashing)</li> <li>• Fields suitable for mechanisation</li> <li>• Historically or culturally important sites</li> </ul>	<p>In addition, an LUP (or map) should contain details and specifications regarding:</p> <ul style="list-style-type: none"> <li>• The location of staff/labour housing and workshop</li> <li>• Soil Parent Material</li> <li>• Soil Form including depth, TAW (total available water) and erodibility</li> </ul> <p>Soil parent material, soil forms and soil erodibilities should be determined using the SASRI publication, "Identification and management of the soils of the South African Sugar Industry, 3<sup>rd</sup> edition, 1999". (Refer to Module 3.10 – Soil Conservation: Layout).</p> <p>Total available water (TAW) is the available water capacity (AWC) multiplied by the effective rooting depth (ERD) of a particular soil and is used to determine the irrigability of a soil.</p> <p>Other areas that should be shown on a map or plan include:</p> <ul style="list-style-type: none"> <li>• Non-arable and natural areas (Refer to Module 3.1: Threatened, critical and protected species and ecosystems).</li> <li>• Wet agricultural land (relic wetlands)</li> <li>• Fields including number and area in hectares</li> <li>• Minimum tillage fields</li> <li>• Fields suitable for green cane harvesting</li> <li>• Fields suitable for mechanisation</li> <li>• Historically or culturally important sites</li> </ul>
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<p><b>An LUP on irrigated farms should contain details and specifications regarding:</b></p> <ul style="list-style-type: none"> <li>• Bulk and in-field irrigation system design</li> <li>• Irrigation blocks</li> <li>• Irrigation types</li> <li>• Electric power supply system for irrigation</li> <li>• For irrigated fields, surface and subsurface water management structures i.e. drainage system network (dimensions stipulated in SABI norms) and waterways</li> <li>• Dams, dyke and canal network for irrigation</li> </ul>	<p>LUP requirements for dealing with irrigated farms, should address both surface and sub-surface water management (in addition to those detailed above). The LUP should therefore include the following:</p> <ul style="list-style-type: none"> <li>• Bulk water and in-field irrigation system design (permanent infrastructure)</li> <li>• Irrigation blocks (i.e. an area that is irrigated at one time)</li> <li>• Irrigate type (e.g. sprinkler, centre pivot, linear, drip, micro-jet)</li> <li>• Electric power supply from the on-farm transformer and pump station positioning for irrigation</li> <li>• Surface and subsurface water management structures i.e. drainage system network (dimensions stipulated in SABI norms) and waterways</li> <li>• Dams, dyke and canal network (include dam capacity and dyke dimensions as stipulated in SABI norms) for irrigation.</li> </ul> <p>The existence of a LUP does not necessarily imply that the grower has permission to cultivate new land. Only the DAEA can authorise the cultivation of new land. The implementation of waterways, conservation terraces and extraction roads must be done according to SASRI standards and in accordance with other applicable environmental, and if applicable, municipal law. In some cases, new extraction roads in sensitive areas may require authorisation (refer to Module 3.11: Soil conservation: Extraction).</p> <p>The LUP should be implemented over a period of ten years, or in a time frame that allows the farmer to maintain the economic viability of the crop - preferably a maximum of 10 years, based on a 10% replanting programme.</p> <p>Implementation of the LUP enables the conservation of soil and water, increases yield potential, the long term sustainability of the natural resources on the farm and profitability for the farmer.</p>
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