

CHAPTER FIVE: IDENTIFICATION AND ASSESSMENT OF ALTERNATIVES

5.1 APPROACH TO THE ASSESSMENT OF ALTERNATIVES

Chapter One of the EIA Regulations 2014 (as amended), GN R326, provides the context for the “*Interpretation and Purpose of Regulations*”, and with regards to “*alternatives*” (page 217), the following is provided:

““**alternatives**”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which **may** include alternatives to the –

- (a) property on which or location where the activity is proposed to be undertaken;
 - (b) type of activity to be undertaken;
 - (c) design or layout of the activity;
 - (d) technology to be used in the activity; or
 - (e) operational aspects of the activity;
- and** includes the option of not implementing the activity;”

In line with the above and as a baseline, the assessment of alternatives must include the assessment of the no-go alternative (not implementing the activity).

The objectives of the Scoping Process are provided in GN R326, Appendix 2, Section 1. In relation to the assessment of alternatives the following, amongst others, are provided (page 260):

- “(c) identify and confirm the preferred activity and technology alternative through an identification of impacts and risks and ranking process of such impacts and risks;
- (d) identify and confirm the preferred site, through a detailed site selection process, which includes an identification of impacts and risks inclusive of identification of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;”

The content requirements for a Scoping Report is given in GN R326, Appendix 2, Section 2. In relation to the assessment of alternatives the following, amongst others, are provided (page 260):

- “(1) (g) a full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including-
 - (i) details of the alternatives considered; ...
 - (ix) the outcome of the site selection matrix;
 - (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such;
 - (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;”

The Scoping Report must, therefore, at a minimum provide a description of the process followed to reach an alternative and if no location alternatives were investigated, the reason for not considering such. On the 2 February 2018, acceptance of the Final Scoping Report (FSR) and approval of the Plan of Study for EIA was received from DEDEAT, which included as Chapter Five, the identification and assessment of alternatives, as well as the approach to the assessment of alternatives for the EIA phase of the assessment.

The NEMA (as amended) requires an Environmental Impact Assessment (EIA) Report to include the investigation and assessment of impacts associated with alternatives to the proposed project, including the option of not implementing the activity (Sections 24 (4)(b)(i) and 24(4A)).

GN R326, Appendix 3, 1 (h); (l); and (n), provides the scope of the assessment and content of EIA reports, which with regards to the assessment of alternatives includes the following, amongst others:

- “(h) (i) details of the development footprint alternatives considered;*
(h) (iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
(h) (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
(h) (ix) if no alternative development footprints for the activity were investigated, the motivation for not considering such; and
(h) (x) a concluding statement indicating the location of the preferred alternative development footprint within the approved site, as contemplated in the accepted scoping report;
(l) (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;
(n) the final proposed alternatives which respond to the impact management measures, avoidance and mitigation measures identified through the assessment;”

Section 24O (1)(b)(iv) of the NEMA (as amended), requires that the competent authority, when considering an application for Environmental Authorisation, considers: *“where appropriate, any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment”*.

Within the legislative context outlined above, the assessment of alternatives should at a minimum include the following:

- The assessment of the no-go alternative as a baseline scenario;
- The reasoning/ motivation for the elimination of an alternative; and
- The assessment of reasonable and feasible alternatives.

As is outlined below the following alternatives are being considered in this assessment process:

- Property/ Location alternatives
- No-go alternative
- Land-Use alternatives
 - Grazing/ game
 - Citrus orchard establishment
- Layout alternatives (development footprints)
 - Alternative 1
 - Alternative 2 (preferred layout)

5.2 PROPERTY/ LOCATION ALTERNATIVES

The EIA Regulations 2014, GN R326, Appendix 3 (h) (ix), requires that if no alternative development footprints for the activity were investigated, the motivation for not considering such is provided. In line with the requirements of the EIA Regulations, 2014 (as amended), alternative development footprints within the approved site as contemplated in the approved Scoping Report, have been considered as part of this EIA and the assessment of alternatives, as outlined in section 5.5 below. Alternative property/ locations were not assessed during the EIA phase and reasoning for such is given in section 5.2.1 below.

5.2.1 Reasoning/ motivation for the elimination of an alternative

As indicated in the first paragraph of this chapter, Chapter One of the EIA Regulations 2014 (as amended), provides for the interpretation and purpose of the regulations, including, amongst others the assessment of alternatives, which **may** include the property or location upon which an activity is proposed to take place. This should not be confused with layout/ development footprint alternatives within a specific site, which have been included in this assessment process (see section 5.5 below). As a baseline, the no-go alternative has been assessed.

Portion 2 of Farm 92, known as Sylvania, is owned by the applicant, San Miguel Fruits SA (Pty) Ltd and is currently zoned for agricultural use. The area under assessment is bordered by existing agricultural development to the west and east. Approximately 49% (~120ha) of the farm (has been transformed for agriculture (i.e. existing citrus orchards). Therefore, ~51% (~123ha) of the farm is currently undeveloped, of which, ~115ha is the focus area for this assessment. The area proposed to be transformed within the ~115ha area under assessment, measures ~65ha in extent. Approximately 50ha of citrus is proposed to be established within the development footprint and an additional ~15ha is proposed to be cleared for associated infrastructure (roads, irrigation, dam etc.). The location of the area to be transformed has been informed by the various specialist assessments through the assessment process.

Based on the experience of the EAP, land available for cultivation, which is situated adjacent to existing agricultural areas and which is zoned for agricultural use, have existing water use rights, suitable soils, and is near the LSRWUA canal system, is becoming increasingly scarce in the Sundays River Valley. The area proposed for cultivation is located on the existing, working Sylvania Farm, which has sufficient facilities that meet the requirements previously mentioned, and which will be required to service the additional area proposed for cultivation.

For the reasons mentioned above, no other reasonable or feasible property/ location alternatives were assessed. Layout/ development footprint alternatives within Sylvania have, however, been assessed (see section 5.5 below).

5.3 NO-GO ALTERNATIVE

The option of not implementing the activity, the no-go option, must be assessed as a baseline. Based on site visits to Sylvania and preliminary specialist input (refer to Chapter Three of this report), the dominant vegetation type on the farm is Sundays Spekboom Thicket. An eastern section of the area under assessment (surrounding the Wit River) was recorded as Albany Alluvial Vegetation/ Sundays Doringveld. Portions of both vegetation types have, however, been transformed and degraded to varying degrees as a result of livestock grazing and browsing, as well as invasion by alien vegetation.

The no-go option would entail not clearing the site for the establishment of citrus and the subsequent retention of the Sundays Spekboom Thicket and Albany Alluvial Vegetation. This will include the continued encroachment of exotic and invasive vegetation, if not actively controlled, and the continued degradation of the vegetation over time, through unmanaged livestock grazing and browsing. Conversely the no-go option would result in several temporary construction, permanent, as well as seasonal employment phase opportunities not being realized. While the no-go option will have no significant negative biophysical environmental impacts, it will result in the loss of positive social and economic benefits which are associated with the go option. Finally, the no-go option will result in the farm not being optimally utilized for agriculture, for which it is zoned. Therefore, the **no-go option is not a preferred alternative**.

5.4 LAND USE/ ACTIVITY ALTERNATIVES

5.4.1 Grazing (not preferred)

As noted in Chapter Three of this report, the vegetation on the area under assessment is a combination of near-natural, degraded, reversibly and irreversibly modified vegetation cover, which includes a combination of Thicket on the higher contours and Azonal Vegetation on the lower floodplain areas. Irreversibly modified areas are largely due to a settlement area in the south-western corner which is comprised of existing houses surrounded by old cleared lands (with open bare soils and weedy, grassy areas), roads, old kraals, graves and derelict buildings. Some of the old cleared lands were possibly areas used for subsistence agriculture. Reversibly modified areas include some lands, particularly on the floodplain areas which have been used for livestock grazing (past and present).

Due to the species composition of Sundays Spekboom Thicket, the vegetation type is not conducive for the sustainable grazing of domestic cattle. Savannah type ecosystems are predominantly used for grazing purposes. Any sustainable grazing of cattle on this property would require that, in addition to the forage available on the farm, cattle fodder would need to be supplemented. Further, and in order to maintain a sustainable livestock enterprise, the farm would have to be divided into camps, to allow for resting periods for the veldt to recover. Alternatively, a portion of the site would be required to be cleared and irrigated to provide cattle fodder. The negative biophysical environmental impacts that could potentially arise from the continued grazing of cattle on the site are; decreased species composition of the Sundays Thicket vegetation type, soil erosion, continued alien invasion and transformation of the vegetation on the site.

Regarding grazing capacity for domestic stock and carrying capacity for game, PCV du Toit of the Grootfontein Agricultural Development Institute notes the following:

“However, there is a need to distinguish between domestic grazers and game animals. It has been advocated for some time that the term grazing capacity should be reserved to instances where the stocking rate grazing capacity relation of domestic stock is described. This relation is a simple question of the number of animals which can be accommodated sustainably on a given area without the deterioration of the natural resources.

The capacity of the land to carry game, should be referred to as carrying capacity. This stocking rate carrying capacity relation, should be reserved for the use of the land area to game relation. This carrying capacity is much more complex than the simple domestic stock: land area relation. Game, carrying capacity involves such factors as, inter alia: area of suitable habitat, sufficient foraging area, appropriate cover and a large enough area to cater for social needs (Furstenburg 2002). However, on account of the animal population growth rate, of the different species occupying the land at the same time, this capacity of the land to carry game often becomes overstocked, resulting in the eventual over-grazing of the vegetation. When the area can no longer support the animal population, it crashes, leading to the inevitable, massive die-off of large numbers of game animals. The remainder starts to recover slowly at first on account of the poor vegetative cover and low available plant production resulting in the extremely low carrying capacity. Once the vegetation has recovered to such an extent that it attains its previous carrying capacity, animal numbers start building up again. The whole cycle of animal number build-up and the consequent overgrazing resumes. In order to combat over-grazing of the veld by game, expensive animal control measures have been instituted and such operations as culling and relocation of game are required, however, these practices seldom prove popular.”

In addition to the above, it is important to note that the applicant's core business is citrus production, not cattle or wildlife production. The applicant, not having sufficient expertise in this regard, could potentially face the problems outlined in the reference above i.e. overgrazing, deterioration of the natural resources etc., if this activity were to be undertaken on the farm. The applicant's experience in citrus production, however, will positively benefit the sustainable and optimal use of Sylvania, as it is zoned for agriculture. Thus, for the reasons outlined above, utilization of the farm for grazing by cattle and game is **not considered a feasible alternative and is, therefore, not the preferred land-use alternative** and has not been assessed in this assessment process.

5.4.2 Citrus production (preferred)

As outlined in Chapter One of this report, the area under assessment is located in the SRVM and is zoned for agriculture. In terms of the Section 8 Zoning Scheme Regulations this "*means the cultivation of land for crops and plants or the breeding of animals, or the operation of a game farm on an extensive basis on the natural veld or land, and includes only such activities and buildings as are reasonably connected with the main farming activities of the farm, but does not include the consent uses applicable to agriculture zone 1.*"

Sylvania is a working farm, which is currently utilized for the commercial production of citrus for the local and international markets. The applicant has existing water use rights for irrigation purposes from the Lower Sundays River Water Users Association (LSRWUA). Micro or drip irrigation is proposed to supply water within the orchards.

Aside from the existing agricultural operations on Sylvania, its western, southern and south-eastern boundaries are adjacent to existing agricultural areas. In addition, Bersheba is located to the north of the farm and therefore, the land adjacent to the northern boundary has been largely modified by livestock grazing and browsing. Based on the surrounding land uses, which are discussed in detail in Chapter Three of this report, the proposed agricultural expansion on Sylvania is not likely to cause a significant change in character of the surrounding landscape, as the surrounding area is currently predominantly agricultural in nature.

Some of the key elements contributing to the sustainability of the agricultural potential of the farm is access to arable land, suitable soils, the topography of the site and the availability of water. Based on the experience of the independent EAP in the area, access to such land in the Sundays River Valley, which meet the abovementioned requirements, is becoming increasingly scarce. The reason being that, suitable land with sufficient access to water is already being utilized for commercial citrus and crop production. Potentially suitable land parcels do not always have ready access to canal water from the LSRWUA. As a result of the distance to water, development often requires a larger capital investment, to ensure a reliable irrigation water supply. At present, Sylvania meets the abovementioned criteria and is, therefore, considered to have a high agricultural potential and is potentially suitable for the proposed development.

The agricultural expansion on Sylvania will potentially create several temporary construction, as well as permanent, operational and seasonal employment opportunities. In addition to the direct employment opportunities related to the farming operations, a number of indirect jobs will also be created by the proposed development, particularly within the packaging and logistics industries, amongst others. The citrus to be produced within the proposed expansion area will be for the local, as well as international markets. International markets generate income from foreign currency,

thus, contributing to local economic growth. Some of the citrus produced will also be sold locally to vendors or juicing factories which will assist in stimulating local markets.

For the reasons outlined above **this is the preferred alternative**, which has been assessed in detail during the EIA phase of the assessment, and which includes preferred layout/ development footprint alternatives within the preferred site. Chapter Four of this report provides an overview of the methodology for the identification, rating and assessment of impacts (both positive and negative) and the specialist studies undertaken during the EIA phase of the assessment.

5.5 LAYOUT ALTERNATIVES

The EIA phase of the assessment has assessed layout/ development footprint alternatives on the site, based on the detailed specialist studies, as well as technical input, namely:

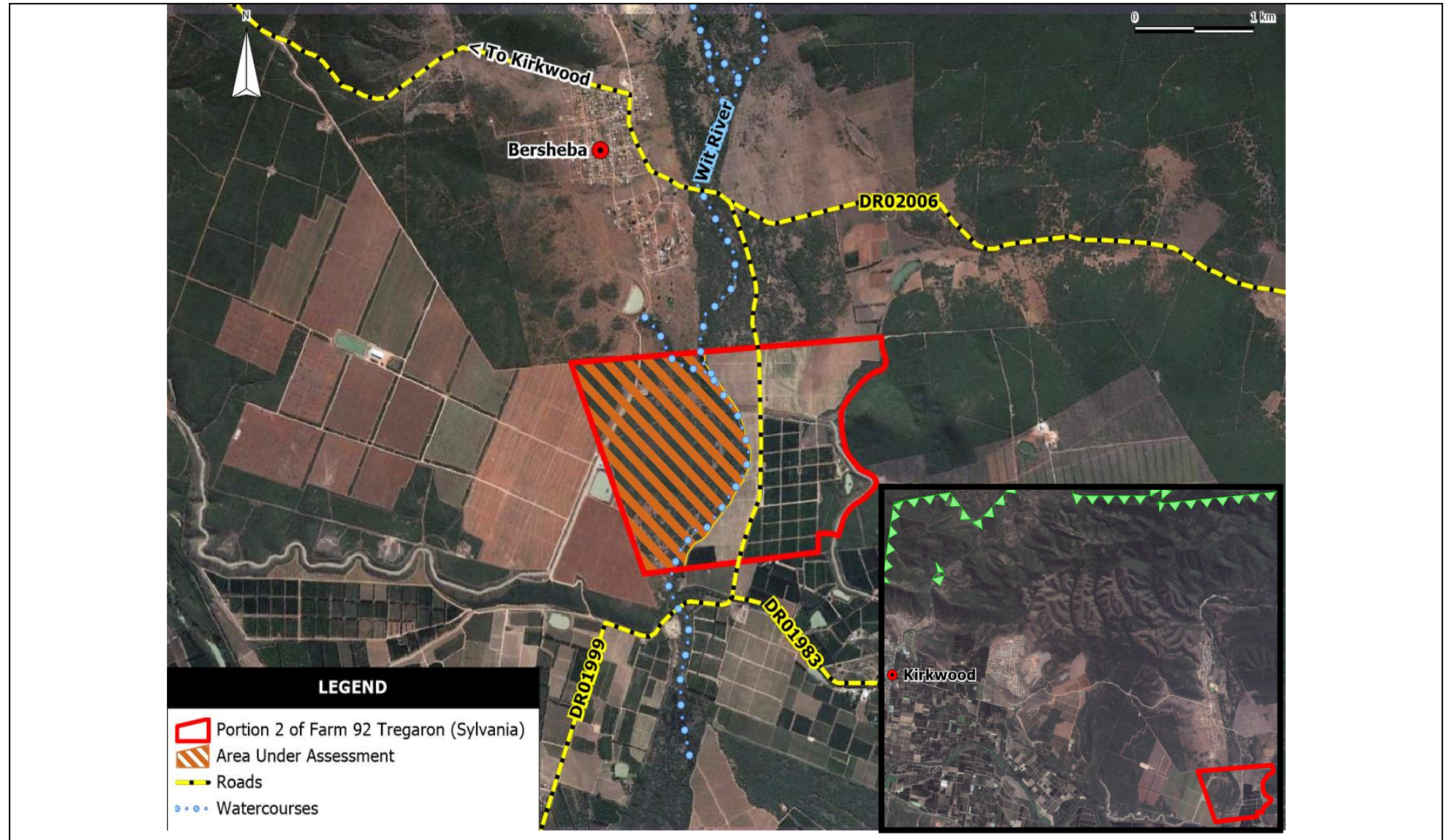
- Soil suitability
- Ecological – faunal and floral species of special concern, ecological corridors, vegetation conservation targets
- Aquatic – buffer zones
- Heritage features – including Archaeological and Paleontological features on the farm
- Traffic – access and egress from the farm on the DR01999 and DR02006

The preferred layout/ development footprint for the project has been determined by specialist, as well as technical input in the EIA phase of the assessment. **Layout/ development footprint alternatives are feasible and are discussed in more detail below.**

5.5.1 Alternative 1 (not preferred)

Prior to specialist assessment and technical input, San Miguel Fruits SA (Pty) Ltd, proposed to expand citrus production at their existing operations on Portion 2 of Farm 92 (~243.82ha in extent), on a western section of the farm (~115ha in extent). The area was subsequently subject to assessment by the various specialists, as well as technical input in order to determine the suitability of the area for the establishment of citrus orchards and associated infrastructure (roads, irrigation, dam etc.) (Map 5.1). Based on the recommendations from the various specialists, a portion of the ~115ha area which was initially assessed was deemed unsuitable for the proposed development, due to a number of environmental constraints.

This alternative is therefore, **not the preferred layout alternative.**



Map 5.1: Alternative 1 showing the initial area under assessment (orange hatch) on Portion 2 of Farm 92 Tregaron, measuring ~115ha in extent, prior to specialist assessment and technical input.

5.5.2 Alternative 2 (preferred)

Based on the outcome of the specialist studies and technical input, and due to the environmental constraints that were identified through the assessment process, the initial area under assessment (~115ha) was amended in order to produce this preferred alternative.

This preferred alternative proposes to clear ~65ha of indigenous vegetation for the establishment of citrus orchards, as well as internal unpaved service roads, windbreaks (if needed), the construction of a new balancing dam, the installation of irrigation pipelines of varying capacities, the upgrading of an existing access road, and the upgrading of an existing low-level crossing of the Wit River and associated approach roads (Map 5.2 below).

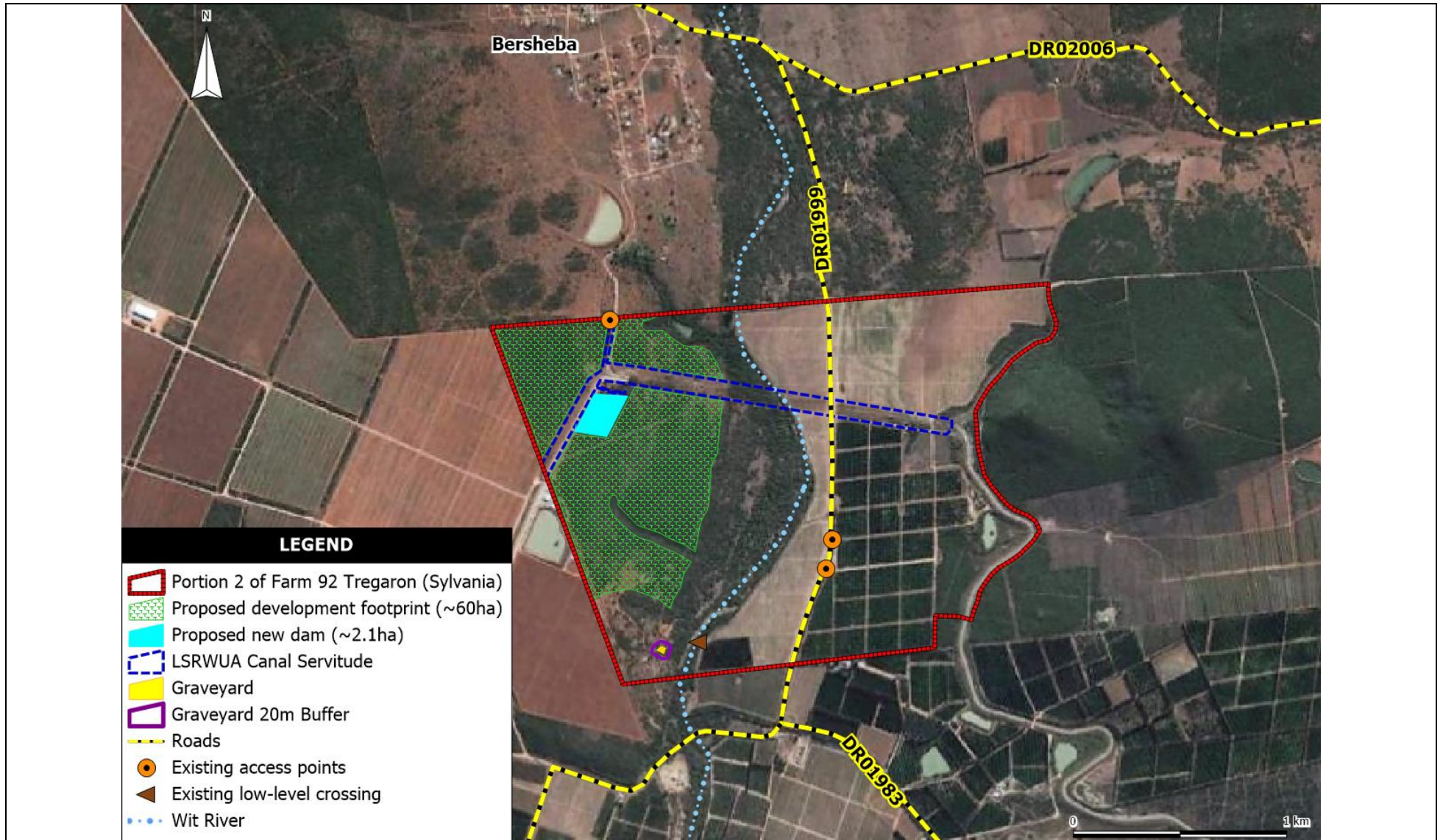
Portion 2 of Farm 92 Tregaron measures ~243.82ha in extent. Based on the outcome of the various specialist assessments it is proposed that an area of ~65ha is cleared, as follows:

- Citrus orchards: ~50ha
- Associated infrastructure (~15ha) including:
 - Internal unpaved service roads (widths varying between 4m and 10m) within the orchards;
 - Upgrading of an existing low-level crossing over the Wit River;
 - Upgrading of an existing access road;
 - Windbreaks (if required);
 - Irrigation pipelines of varying capacities (varying between 60mm to 355mm) and lengths (up to 200m).
- Construction of a new dam with a capacity to store ~30 000m³ (~2.1ha footprint) of water, with a maximum wall height of 5m.

Primary access to the farm is gained from two existing access points on the farm, along the gravel DR01999 road. During the wet season, when it is not possible to cross the Wit River via the existing low-level crossing, access will be gained from DR02006 via the municipal road network through Bersheba.

A full description of the preferred layout alternative which was assessed in full in this report has been included in Chapter Two.

Based on the information described above, **Alternative 2 is the preferred alternative.**



Map 5.2: Alternative 2 showing the preferred development footprint, of the orchards, associated structures and infrastructure on Portion 2 of Farm 92 Tregaron, based on specialist, as well as technical input.

5.6 CONCLUDING REMARKS

GN R326, Appendix 3, 3 (1) (h) (x) states the following: *“a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report;”*

On Sylvania, there are currently no other feasible or reasonable property or location alternatives which were assessed in the EIA phase. As a baseline, the no-go alternative has been assessed in full. The preferred activity alternative to be undertaken on the property is the expansion of agriculture for the establishment citrus orchards. Two layout/ development footprint alternatives have been assessed in the EIA phase of the assessment. Alternative 2, which entails the clearance of ~65ha, is the preferred layout/ development footprint alternative.