

CHAPTER TWO: PROJECT DESCRIPTION

2.1 INTRODUCTION

The applicant, Ikamva Lethu Farms (Pty) Ltd, proposes to establish an agricultural development on the Remainder of Farm 653 (hereafter referred to as '**Farm 653**'), which measures ~1163ha in extent. It is proposed that an area of ~650ha be transformed on Farm 653, to establish ~586ha of citrus orchards and install associated infrastructure (~64ha). Associated infrastructure includes, internal roads, access roads and access points, low-level gabion crossing, laydown areas, windbreaks (if required) and dams. Existing infrastructure on Farm 653 is proposed to be renovated and used for the storage of vehicles, pesticides, herbicides and to provide administrative support to the agricultural development, as well as accommodation for five individuals. Farm 653 is currently zoned Agriculture 1.

In order to provide irrigation water to the proposed agricultural development, the applicant proposes to expand an existing dam on the site, as well as construct three new irrigation dams. In addition, an area of ~5.6ha will be disturbed to accommodate the installation of irrigation pipelines (2 x 450mm diameter) and one single pipe crossing of the Sundays River (1 x 630mm diameter), over a length of ~8km, across the following properties, not located on Farm 653:

- Remainder of Farm 714
- Portion 3 of Farm 558
- Portion 39 of Farm 558
- Portion 6 of Farm 558

The proposed pipelines are also required to be installed in the reserve of a proclaimed public road (MR00470). The farm portions included in this assessment fall within the Sundays River Valley Municipal (SRVM) area and the nearest town is Sunland, which is located ~3.5km northeast of Farm 653. The nearest boundary of the Addo Elephant National Park is located ~9.7km east of Farm 653 and 8.2km east of the proposed pipeline route.

As per the requirements of the NEMA EIA Regulations, 2014 (as amended), GN R326, Appendix 3, Section 3. (1) (b), (c) and (d), this chapter of the report provides the following information, where relevant:

3. (1) (b) *the location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including-*
 - (i) *the 21-digit Surveyor General code of each cadastral land parcel;*
 - (ii) *where available, the physical address and farm name;*
 - (iii) *where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;*
3. (1) (c) *a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is-*
 - (i) *a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or*
 - (ii) *on land where the property has not been defined, the coordinates within which the activity is to be undertaken;*
3. (1) (d) *a description of the scope of the proposed activity, including-*
 - (i) *all listed and specified activities triggered¹;*
 - (ii) *a description of the activities to be undertaken, including associated structures and infrastructure;*

¹ Listed activities requiring Environmental Authorisation in terms of the NEMA EIA Regulations, 2014 (as amended) are contained in Chapter Four of this report.

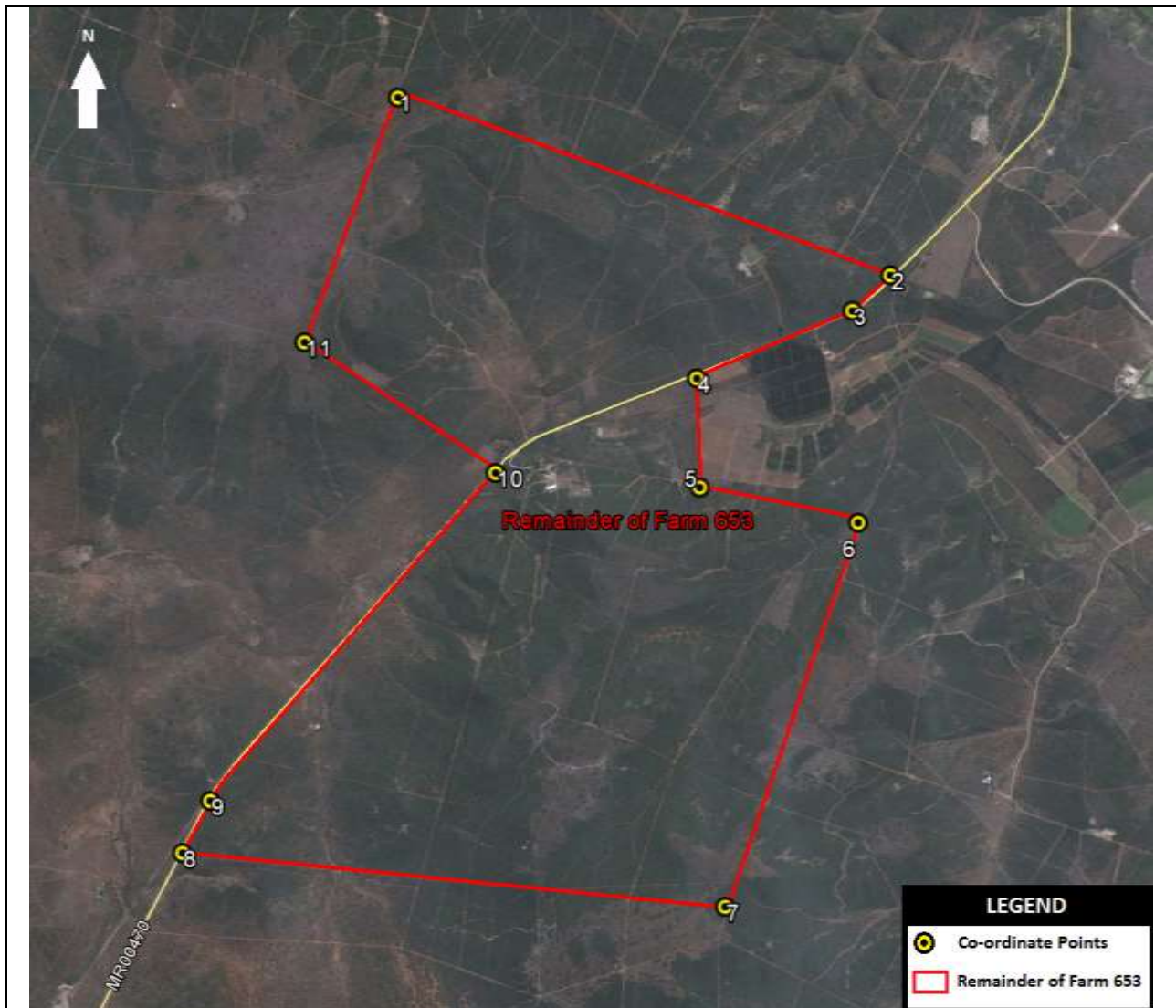
2.1.1 Proposed Project Location

Map 1.1 in Chapter One of this report, includes a locality map indicating the location of Farm 653, as well as the properties that will be affected by the proposed irrigation pipeline corridor, in relation to the nearest town and main roads. The cadastral information listed in Table 2.1 below is relevant to Farm 653. In addition, the project has a component which is a linear activity (irrigation pipeline) and thus, the cadastral information for the properties that will be affected by the irrigation pipeline, as well as the co-ordinates of the triggering sections are provided.

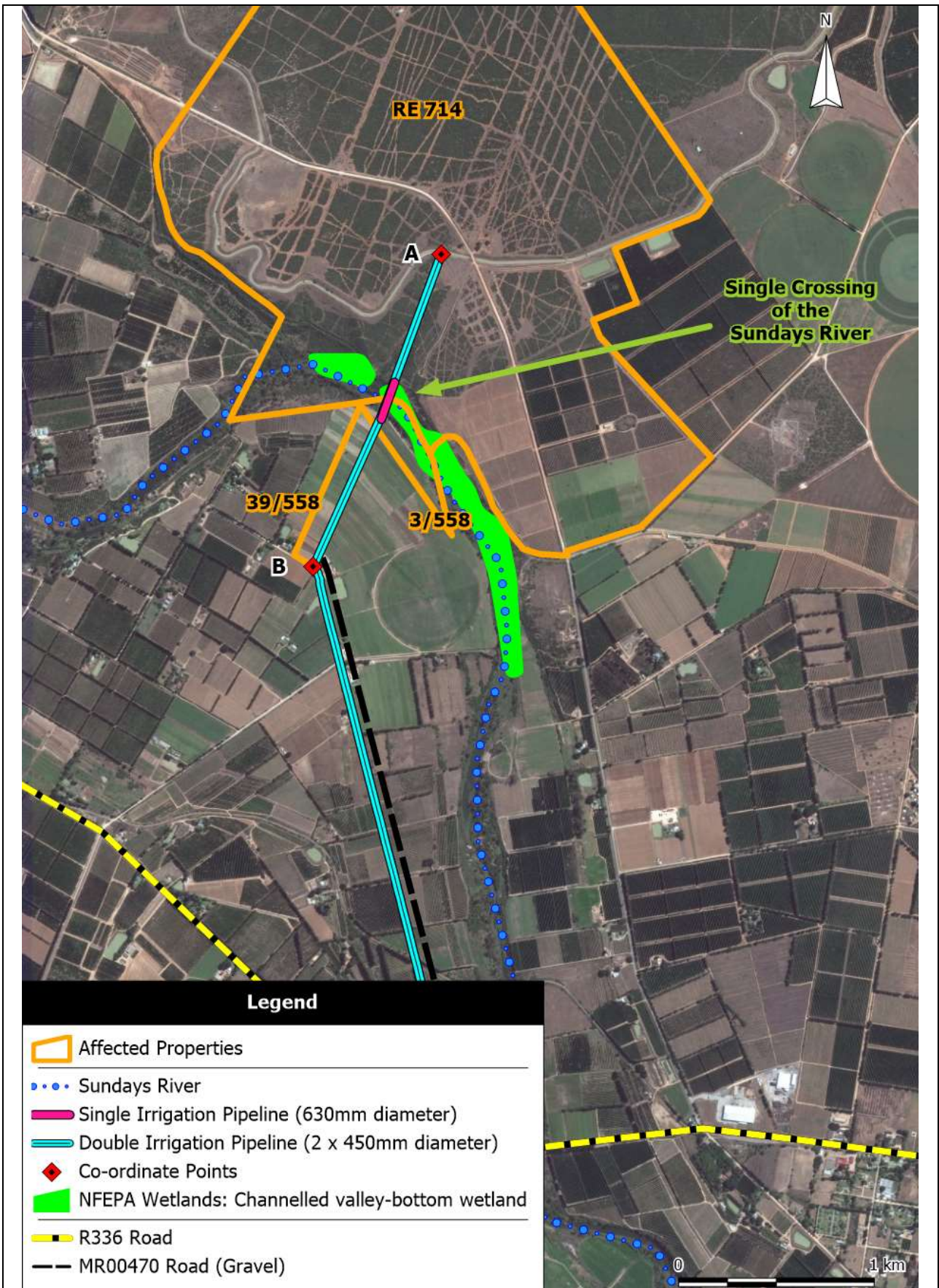
Table 2.1: Project cadastral information.

SURVEYOR GENERAL 21 DIGIT CODE: REMAINDER OF FARM 653																				
C	0	7	6	0	0	0	0	0	0	0	0	0	0	6	5	3	0	0	0	0
IRRIGATION PIPELINE CORRIDOR AFFECTED PROPERTIES																				
C	0	7	6	0	0	0	0	0	0	0	0	0	7	1	4	0	0	0	0	0
C	0	7	6	0	0	0	0	0	0	0	0	0	5	5	8	0	0	0	0	3
C	0	7	6	0	0	0	0	0	0	0	0	0	5	5	8	0	0	0	0	6
C	0	7	6	0	0	0	0	0	0	0	0	0	5	5	8	0	0	0	3	9
PHYSICAL ADDRESS AND FARM NAME: REMAINDER OF FARM 653																				
<ul style="list-style-type: none"> Remainder of Farm 653, Uitenhage Registration Division 																				
IRRIGATION PIPELINE CORRIDOR AFFECTED PROPERTIES																				
<ul style="list-style-type: none"> Remainder of Farm 714, Uitenhage Registration Division; Portion 3 of Farm 558, Uitenhage Registration Division; Portion 6 of Farm 558, Uitenhage Registration Division; and Portion 39 of Farm 558, Uitenhage Registration Division. 																				
SITE COORDINATES: REMAINDER OF FARM 653																				
Point Number	Latitude (S) (DDMMSS)						Longitude (E) (DDMMSS)													
1	33°	31'	0.24"S			25°	33'	49.13"E												
2	33°	31'	35.15"S			25°	35'	44.65"E												
3	33°	31'	42.11"S			25°	35'	35.72"E												
4	33°	31'	55.31"S			25°	34'	59.20"E												
5	33°	32'	16.59"S			25°	34'	59.83"E												
6	33°	32'	23.43"S			25°	35'	36.81"E												
7	33°	33'	37.68"S			25°	35'	5.50"E												
8	33°	33'	27.31"S			25°	32'	59.31"E												
9	33°	33'	17.28"S			25°	33'	5.73"E												
10	33°	32'	13.74"S			25°	34'	12.11"E												
11	33°	31'	48.25"S			25°	33'	27.33"E												
CO-ORDINATES OF TRIGGERING SECTIONS ALONG THE IRRIGATION PIPELINE CORRIDOR																				
Triggering Sections	Point Number	Latitude (S) (DDMMSS)						Longitude (E) (DDMMSS)												
Between A and B	A	33°	28'	6.22"S			25°	36'	25.75"E											
	B	33°	28'	49.33"S			25°	36'	4.42"E											
Between C and D	C	33°	30'	32.50"S			25°	36'	30.36"E											
	D	33°	30'	36.48"S			25°	36'	28.59"E											
Between E and F	E	33°	31'	35.20"S			25°	35'	44.59"E											
	F	33°	31'	26.93"S			25°	35'	17.21"E											

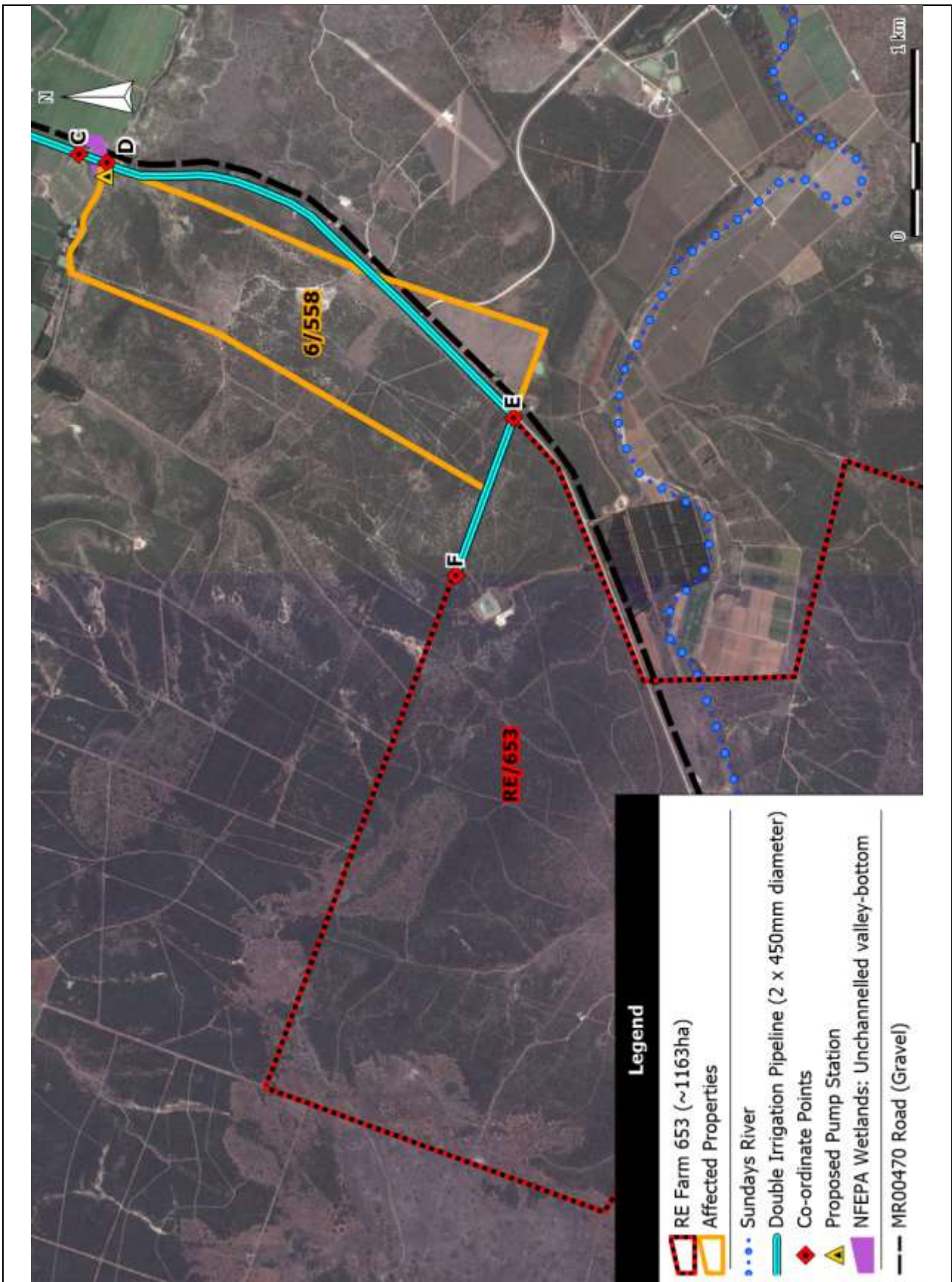
Map 2.1 below shows the boundary of Farm 653 which forms part of this Scoping and EIA process and upon which the agricultural development is proposed to take place. Map 2.2 and 2.3 below indicates the sections of the proposed irrigation pipeline corridor, which trigger listed activities in the NEMA EIA Regulations, 2014 (as amended), as indicated in table 2.1 above.



Map 2.1: A plan indicating the coordinates of the boundary of the Remainder of Farm 653 upon which the agricultural development is proposed to take place.



Map 2.2: A plan indicating the northern (north of the R336 road) portion of the pipeline corridor and the coordinates of the sections thereof which trigger listed activities.



Map 2.3: A plan indicating the southern (south of the R336 road) portion of the pipeline corridor and the coordinates of the sections thereof which trigger listed activities.

The preferred development footprint for the proposed agricultural development has been determined through the assessment process, which included a consultation process, specialist assessments and technical input. The listed activities which require Environmental Authorisation are included in Chapter Four of this report. The specialist studies which have been undertaken for the proposed project are included in chapters Six to Thirteen of this report and the assessment of alternatives is outlined in Chapter Five.

2.2 PROPOSED PROJECT SCOPE AND ACTIVITIES

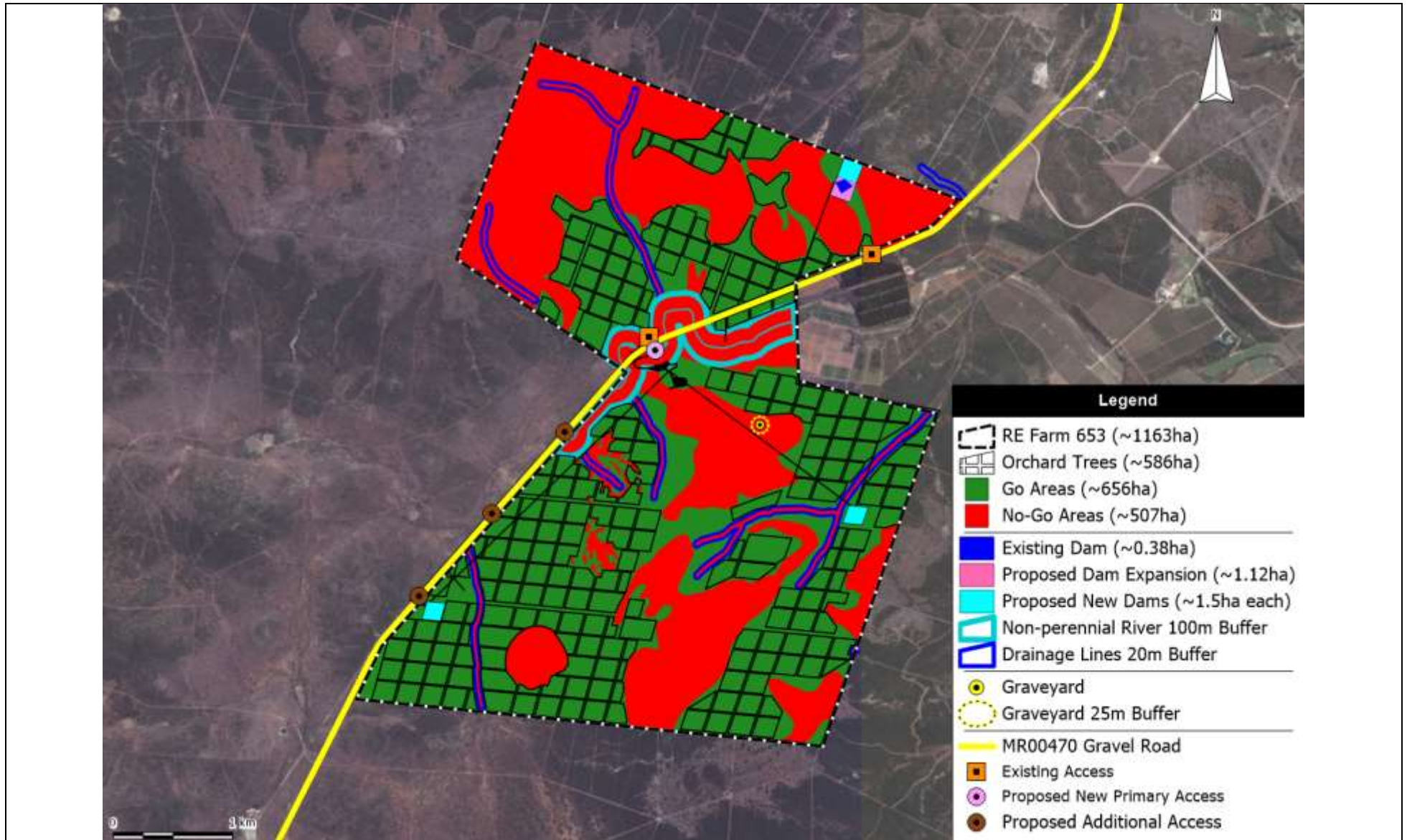
The Remainder of Farm 653 measures ~1163ha in extent. Based on the outcome of the various specialist assessments it is proposed that an area of ~650ha is cleared on Farm 653, as follows:

- Citrus Orchards: ~586ha
- Associated Infrastructure (~64ha) including:
 - Internal Roads – widths varying between 4m and 8m
 - New Primary Access Point – bellmouth radius ~30m
 - New Access Road - width varying between 4m and 8m
 - Three new additional secondary access points
 - Construction of a low-level gabion crossing – width of ~12m
 - New supporting infrastructure associated with the Logistical Services Area (e.g. water reticulation, stormwater management)
 - Laydown Areas
 - Windbreaks (if required)
 - Internal Irrigation Water Reticulation – varying capacities between 60mm to 315mm
 - Construction of three new dams - ~45 000 m³, respectively (~1.5ha footprint each)
 - Expansion of an existing dam – current capacity of ~17 000m³, final capacity of ~45 000 m³ (~1.5ha expanded footprint)

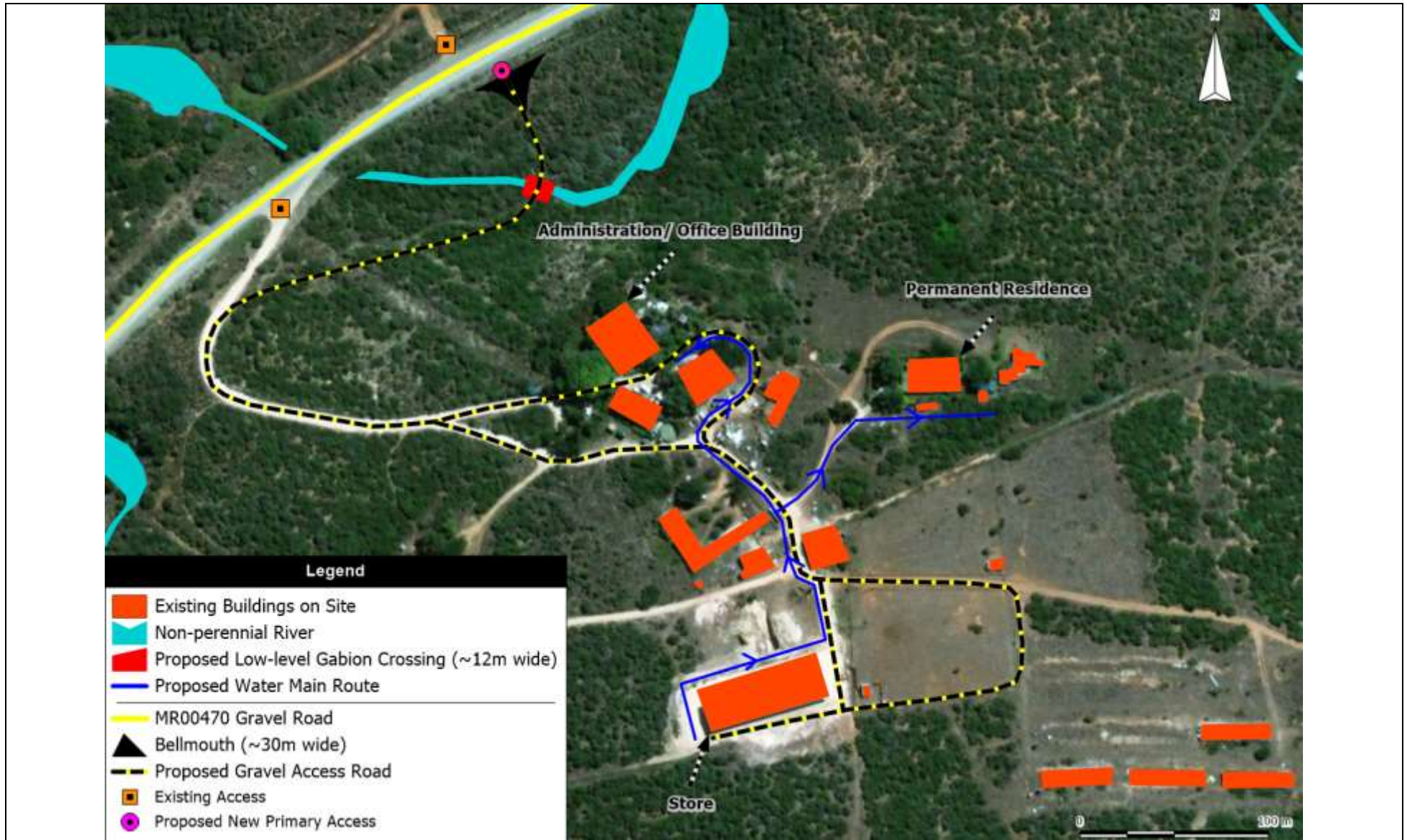
In addition, and in order to supply irrigation water to the proposed development, an area of ~5.6ha is proposed to be disturbed in order to install irrigation pipelines over private property, as well as in the road reserve, for a distance of ~8km:

- Two x 450mm (280 L/s throughput) uPVC pipes – over private land, as well as in road reserve
- One x 630mm (280 L/s throughput) uPVC pipe – across the Sundays River

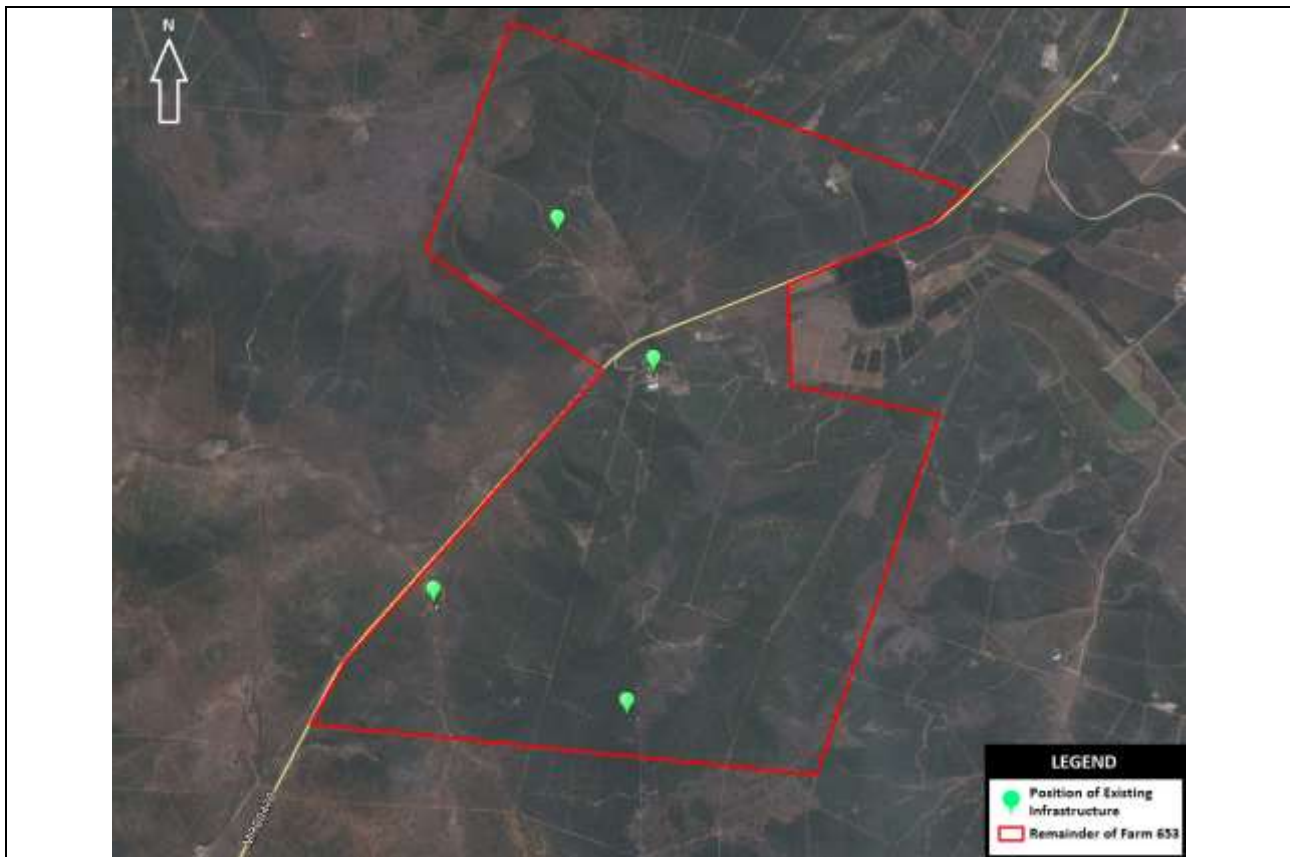
Map 2.4 and 2.5 below indicates the preferred development footprint, associated structures and infrastructure on Farm 653.



Map 2.4: The preferred development footprint, indicating the proposed orchard layout and associated infrastructure, on Farm 653.



Map 2.5: The preferred Logistical Services layout including associated infrastructure, on Farm 653.



Map 2.6: Location of existing infrastructure on the Remainder of Farm 653.

Existing infrastructure on site is proposed to be renovated and used for the storage of vehicles, machinery, pesticides, herbicides and to provide administrative support to the agricultural development, as well as accommodation for five individuals. Map 2.6 above indicates the location of existing infrastructure on the site, which will be utilised for the proposed agricultural development.

Plastic crates and wooden pallets required during harvesting seasons are to be hired from the Sundays River Citrus Company (SRCC) and transported via truck to delivery and collection areas within the orchards. During harvesting, once a crate is full, it is transported directly to a local packhouse for processing and ultimately transported to local markets or for export. The citrus is not stored in bulk on site nor is it processed on site. The fruit needs to be transported for processing in as short a time as possible to prevent degradation of the product. The now, empty plastic crates and wooden pallets are returned to the designated areas within the orchards, to be refilled with fruit for processing. At the end of the harvest season the crates and pallets that have been hired are returned to the SRCC. Thus, no additional storage areas are required for wooden pallets and plastic crates. Where required, transport companies are hired on a needs basis to transport fruit to the preferred packhouses.

Based on market conditions, Ikamva Lethu Farms (Pty) Ltd proposes to send a large portion of the fruit produced on Farm 653 to a local juicing factory and the remainder will be sent to existing packhouses in the Sundays River Valley, which are owned and operated by the SRCC, for the preparation of the product for fresh export or sale at local markets. The fruit produced on site will, therefore, be sold as processed (juiced) and fresh fruit to local and international markets, dependent on market demand.

During harvesting, portable toilets are placed within the cultivated areas to provide sanitation facilities for workers. Existing buildings (residential homes, sheds) on site are proposed to be renovated in order to provide the necessary administrative and logistical support for the proposed citrus development. While the footprints of the existing buildings are not proposed to be expanded, existing infrastructure associated with these facilities will require upgrading and expansion, including the installation of new supporting infrastructure e.g. water reticulation, internal roads and access roads.

The proposed agricultural development on Farm 653 can be divided into the following phases, which are outlined in more detail in the sections below:

- Preconstruction;
- Construction; and
- Operational

At this stage of the assessment process decommissioning is not proposed and would be subject to the regulations applicable at the time.

2.2.1 Preconstruction

Prior to the commencement of construction activities on the site a preconstruction phase (planning) is required. For the planting of citrus, seed used in production of crops must be booked in advance and is then imported to a certified nursery for a grow-out period, during which the seeds are germinated, and the seedlings grown to sapling stage. Thereafter, saplings must be planted annually in the last quarter of the year, between September to December. Thus, site preparation (outlined in the section below) needs to be complete prior to the planting of the saplings in the last quarter of the year.

The preconstruction phase for securing the block seed and growing of the saplings occurs in parallel to site preparation which is outlined below. Site preparation needs to be completed to coincide with the planting of the saplings. Thus, the timing between the purchase of the seed, the grow-out period, preparation of the site and establishment of the orchards, is critical.

2.2.2 Construction

The project will entail the clearing of vegetation, levelling of the site, and the installation of the drip/micro irrigation system, prior to the planting of the saplings. Once the site is prepared, citrus orchards will be established (refer to the operational phase of the development). It is anticipated that vegetation clearing, landscaping, site preparation and planting will be done both by hand and with the aid of suitable earth moving equipment (excavators, bulldozers, TLBs). No workers' accommodation will be provided on site during the construction phase.

Site preparation will entail the following activities on site:

- Clearing of indigenous vegetation;
- Landscaping and levelling the site for citrus orchards;
- Securing the site (e.g. erecting appropriate fencing);
- Establishment of internal unpaved service roads and new access points;
- Construction of a low-level gabion crossing over the non-perennial drainage line on Farm 653;
- Installation of irrigation pipelines (~8km) from the canal, across the Sundays River to Farm 653;
- Construction of three new irrigation dams and expansion of an existing dam;
- Installation of internal water reticulation and irrigation infrastructure;
- Planting of orchards and windbreaks (if required);

- Renovation of existing structures to be utilised for administrative purposes; and
- Installation of new supporting infrastructure (e.g. water reticulation, stormwater management).

The applicant has obtained a water use licence for the taking of water from a water resource in terms of section 21 (a) of the National Water Act which entitles them to utilise 675ha of water from the LSRWUA canal system. The applicant, therefore, has sufficient irrigation water for the proposed development of ~586ha of citrus. Additional information on the applicant's water use entitlements is provided in section 2.2.3 below.

2.2.2.1 *Vegetation Clearing and Landscaping*

Based on the outcome of the detailed specialist assessments, technical input and consultation process, it is proposed that ~650ha (56%) of vegetation on Farm 653 be cleared in order to facilitate the establishment of ~586ha of citrus orchards and ~64ha of associated infrastructure.

In addition, an area of ~5.6ha will be disturbed to accommodate the installation of the irrigation pipeline for a distance of ~8km in the road reserve of a proclaimed municipal road (MR00470) and across the following properties:

- Remainder of Farm 714;
- Portion 3 of Farm 558;
- Portion 39 of Farm 558; and
- Portion 6 of Farm 558.

Vegetation clearing will commence with the aid of both mechanised plant equipment and by hand. Once vegetation has been removed from the development footprint, the area will be landscaped to provide for the establishment of internal service roads, water reticulation, as well as the orchards; and to facilitate stormwater management.

The development will commence with the expansion of an existing dam and construction of one of the proposed new dams, as well as the installation of the irrigation pipelines from the canal offtake point to Farm 653. Thereafter, it is proposed that vegetation clearing, subsequent infrastructure installation and orchard establishment will be undertaken in phases over a seven-year period. See section 2.4 below for details regarding the proposed project schedule.

Portions of the area under assessment have been excluded from development due to certain constraints. Chapter Five of this report outlines the assessment of alternatives and provides more detail on the methodology adopted for the identification of the preferred area proposed for development, which has been assessed in full in the EIA phase of the assessment.

The applicant does not own any other properties/ land. Therefore, the applicant's overall contribution to conservation of vegetation (as contained in Chapter Six) relates to the property that forms part of this assessment only (Farm 653).

2.2.2.2 *Securing the Site*

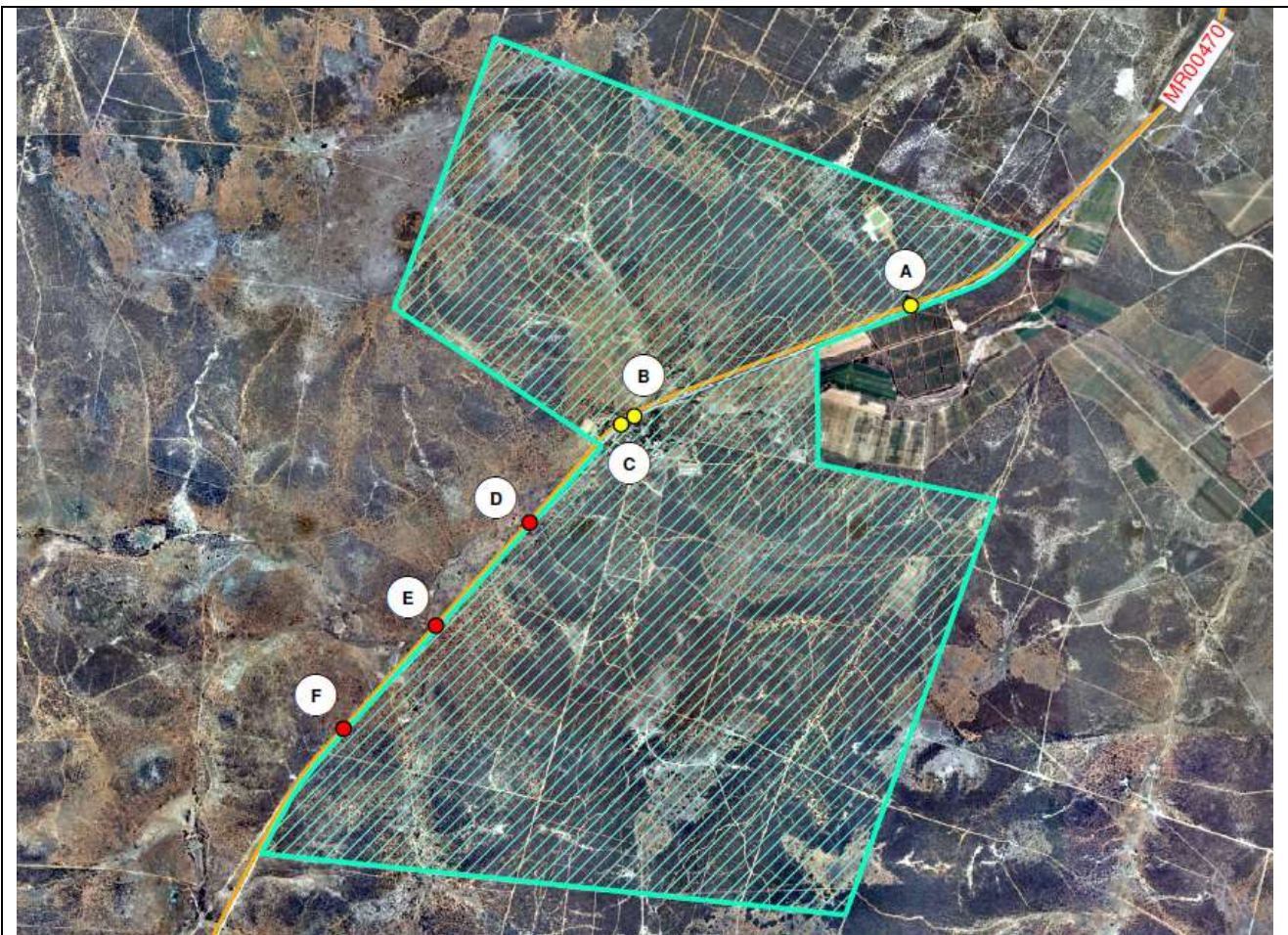
Prior to the phased establishment of the orchards and associated infrastructure on the site, the applicant will ensure the development footprint is appropriately secured in a phased manner. This will include the erection of a fence suitable for securing the citrus and associated infrastructure prior to the commencement of each phase of the proposed development. Access to the site will also be restricted to authorised personnel only. The Security Risk Assessment (Chapter Thirteen of this report) undertaken for the proposed development, provides additional information on the applicant's security strategy.

2.2.2.3 Internal Roads and Access

Access to the site is gained off the gravel MR00470 road (Sunland Road). There are numerous existing access points from the road which provide access to the northern and southern sections of Farm 653. However, the Traffic Specialist has indicated that the existing primary access is not be suitable for the proposed agricultural development. Thus, it is proposed that this access point be relocated to allow for better sight distances. This new access road is proposed ~95m east of the existing access point and will be utilized as the primary access to the logistical services area and the manager's residence (see map 2.5 above).

A portion of this access road will have to be constructed over the non-perennial watercourse which traverses Farm 653. To allow for natural flow and seepage of water during and after rainfall periods, it is proposed that a low-level gabion crossing be constructed over the non-perennial water course. The construction of the gabion crossing will further limit the transport of sediment during and after rainfall conditions.

Three additional minor access points are also proposed along the MR00470. The Traffic Impact Assessment (Chapter Eight of this report) has assessed the suitability of existing access points, proposed new access points as well as the impact on the MR00470 as a result of additional trip generation from the proposed development. Map 2.7 below indicates the existing and proposed access points on Farm 653.



Map 2.7: Existing (yellow dots) and proposed (red dots) access points as indicated by the Traffic Specialist.

Integral to the internal operations within the proposed orchards are a number of new internal service roads (See Photo 2.1). These internal service roads are proposed to vary in width between of 4m and 8m. It is anticipated the main internal roads will be provided with a gravel wearing course, while the vehicle tracks amongst the individual orchards will remain unpaved. All internal roads will be designed and constructed to accommodate stormwater runoff, e.g. avoid steep gradients, stormwater cut-off/diversion berms, and judicious use of erosion protection measures. See the Roads and Wet Services Report (Chapter Eleven of this report), for additional information regarding the design and construction of roads, as well as proposed stormwater management measures.



Photo 2.1: Example of internal service roads on an existing citrus farm in the Sundays River Valley.

2.2.2.4 Installation of Irrigation Infrastructure and Construction of Dams

The proposed orchards will be irrigated with water from the LSRWUA supply system. Irrigation water is extracted from the canal, under agreement with the LSRWUA. Individual farmers are permitted to extract water from the canal only at certain allocated pumping/ release times according to a predetermined schedule. Between the allocated pumping/ release times, the holder of water entitlements does not have access to the canal water. Therefore, since water is not continually available from the canal, the orchards cannot be irrigated directly from the canal and irrigation water is required to be stored in farm dams (balancing dams).

Irrigation water for the development will be provided from the Lower Sundays River Water Users Association (LSRWUA) canal system and will be reticulated from the canal offtake point located on the Remainder of Farm 714, to Farm 653, via two uPVC pipes ($\varnothing 450\text{mm}$; throughput 280 L/s) for a distance of $\sim 578\text{m}$. The two pipelines converge into a single uPVC pipe ($\varnothing 630\text{mm}$; throughput 280 L/s), for a distance of $\sim 137\text{m}$ across the Sundays River. It is proposed that the pipeline will be submerged through the Sundays River and anchored on either side by means of galvanised puddle pipes cast in concrete on the river banks. Following the crossing of the river, the reticulation again splits into two uPVC pipelines ($\varnothing 450\text{mm}$; throughput 280 L/s) for a distance of $\sim 7\text{km}$, where it terminates at the existing dam, proposed for expansion, on Farm 653. The pipeline will be installed within the road reserve and over private land for a total distance of $\sim 8\text{km}$'s. The following properties will be affected by the proposed pipeline route:

- Remainder of Farm 714;
- Portion 3 of Farm 558;
- Portion 39 of Farm 558;
- Portion 6 of Farm 558; and
- The proposed pipeline route is also required to be installed in the reserve of a proclaimed public road (MR00470).

The total footprint area that will be disturbed by the installation of the pipeline is conservatively estimated at $\sim 5.6\text{ha}$ (7m width x 8000m length). A pump station will be constructed along the pipeline route, approximately 2.2km away from the boundary of Farm 653, on Portion 6 of Farm 558.

It is proposed that an existing dam (current capacity ~17 000m³) be expanded to a capacity of 45 000m³ and that three new dams, with a capacity of 45 000m³ each, be constructed in order to supply the required irrigation water for the proposed development. Therefore, the total capacity of the dams on site will be ~180 000m³. It is anticipated that the dams will have a footprint on average of ~1.5ha each and the wall heights will be ~4.5m.

Irrigation water will be reticulated within the orchards via a network of underground PVC irrigation pipes and valves, with varying internal diameters (315mm to 355mm). Water delivery to crops will be achieved with the aid of aboveground polypropylene pipes providing drip/ micro irrigation (varying between 60mm and 315mm internal diameter).

The applicant has obtained a water use licence for the taking of water from a water resource in terms of section 21 (a) of the National Water Act which entitles them to utilise 675ha of water from the LSRWUA canal system. More detail regarding the water use licence and the water to which the applicant is entitled is outlined below in the Operational Phase under section 2.2.3.2.

New electrical infrastructure will be required to assist in the distribution of the irrigation water into and out of dams. The proposed additional electrical infrastructure will comprise of transformers and line extensions with the following capacities:

- one (1) 500kVA at the pump station
- three (3) 150kVA at the dams

Eskom has provided confirmation that the existing network is capable of supplying the additional required load of 1MVA. Email confirmation is included in Appendix G (Supporting Documentation) of this report.

2.2.2.5 Renovation of Existing Structures

Existing buildings on site are proposed to be renovated in order to provide the necessary administrative and logistical support for the proposed citrus development. While the footprints of the existing buildings are not proposed to be expanded, existing infrastructure associated with these facilities will require upgrading and expansion, including the installation of new supporting infrastructure e.g. water reticulation, internal roads, access roads and access points.

There are currently four residential dwellings on Farm 653 which will be utilised to provide administrative support. The proposed office/ administration facility will be designed to accommodate 10 personnel members. In addition, one of the existing dwellings onsite will accommodate the manager and his household - a maximum of five permanent onsite individuals. Chapter Three of this report discusses in more detail the existing facilities on the site. A Roads and Wet Services Report (Chapter Eleven) has been prepared by a suitably qualified professional, in order to determine the capacity of the existing services to accommodate the administrative staff, as well as the residents associated with the proposed development.

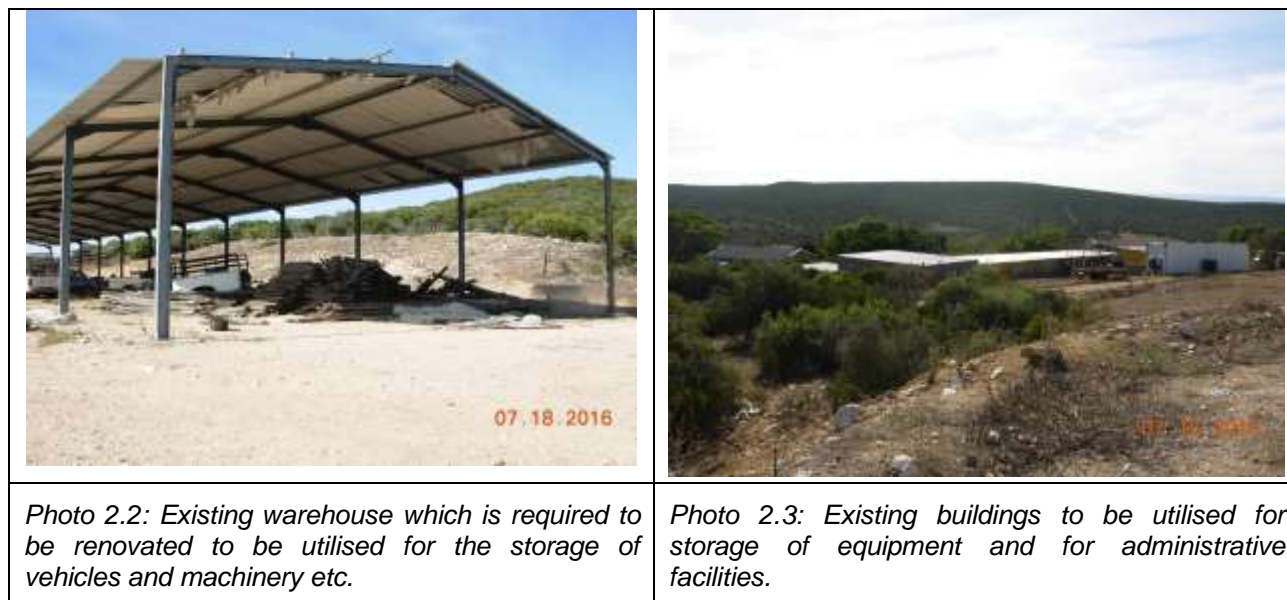


Photo 2.2: Existing warehouse which is required to be renovated to be utilised for the storage of vehicles and machinery etc.

Photo 2.3: Existing buildings to be utilised for storage of equipment and for administrative facilities.

One of the existing buildings on the farm will be renovated so as to accommodate a chemical store with a capacity to temporarily store 30m³ of chemicals. Based on the extent of Farm 653 (~1163ha), the proposed orchard area (~586ha), the preferred cultivar to be planted (lemons), and the treatments required, the maximum weekly volume of chemical product (using a worst-case scenario for the Sundays River Valley area), has been calculated, by the SRCC's Chief Agronomist, as 21 280L. Therefore, the proposed capacity (30m³) will be sufficient to store a full week's worth of chemical products on Farm 653. However, due to the presence of "The Co-Op" trading in Hermitage, which stocks the full range of chemical products recommended in SRCC Agronomy Department Programmes, it is highly unlikely that a full week's volume will be stored on Farm 653, at any given time. The table below indicates the chemical products which will be required, as well as their volumes.

Chemical Product	Weekly Volume Required (L)
Mancozeb (Pennfluid)	8400
Azoxystrobin (Fungaway)	1120
Mineral oil	8400
Abamectin	1120
Spirotetramat (Movento)	560
Buprofezin (Applaud)	1680
Total Weekly Volume (L)	21 280

Storage and handling of chemicals on site must comply with standard Material Safety Data Sheet control measures. It is recommended that any waste packaging must be disposed of at a suitably permitted landfill site and not buried or burnt on site. See Chapter Seven, Aquatic Specialist Assessment, for impacts related to the use and disposal of chemicals.

The chemical store should be designed in accordance with the following general design principles:

- The floor should be impervious.
- The store should be bunded to ensure that it can hold at least 110% of the liquid contents.
- The roof must not allow any moisture to enter the store.
- Flammables and oxidizers should be segregated.
- A means of ventilating the store should be installed (air bricks etc.)
- The store should be locked when not in use.

- g) The door and structure should have an appropriate fire rating.
- h) If decanting is conducted in the store, this should be done in a manner to prevent spillages.
- i) The signage inside the store should indicate what chemicals are being stored. If possible, a stock rotation system should also be used.

Further general guidance notes on chemical management are contained in Appendix G (Supporting Documentation) of this Report.

2.2.2.6 *Logistical Services Area – New Supporting Infrastructure*

While the footprints of the existing buildings are not proposed to be expanded, existing infrastructure associated with these facilities will require upgrading and expansion, including the installation of new supporting infrastructure e.g. water reticulation, stormwater management, internal roads, access roads and access points. See section 2.2.2.3 above regarding the proposed re-alignment of the primary access and associated access road as well as the proposed additional minor accesses.

The other new supporting infrastructure which is required in order to ensure that the Logistical Services area is adequately serviced is detailed in Chapter Eleven (Roads and Wet Services Report). In brief, the following water supply system is proposed on site in order to supply domestic water for the 10 administration personnel and 5 permanent residents:

- Roof rainwater harvesting will serve as the primary source of domestic water.
 - The gutter system of the existing store roof, office and permanent residence must be upgraded, in order to effectively intercept and convey the surface run-off of the rainwater to the proposed rainwater storage tanks to be erected adjacent to the buildings.
 - Tank storage capacity is recommended to be 10 000 litres each
 - To ensure adequate pressure the applicant must install a tank / pressure pump system near the office and permanent residence.
- Treated canal irrigation water will serve as a backup supply.
 - A water treatment plant is required to treat the irrigation water for domestic use.
 - The water treatment plant should be located near the store building to ensure a positive static pressure of 100kPa.
 - The water treatment plant should be designed to treat at least 2000 litres of irrigation water per day and should have the following components:
 - 5000 litre sedimentation and flocculation tank (canal irrigation water)
 - Dual media sand filter
 - A chlorinator
 - 5000 litre domestic water storage tank

The domestic effluent which will be generated by the admin personnel as well as the permanent residents will be managed by means of the existing septic tank system. For further details regarding the capacity of the existing effluent management system as well as the proposed stormwater management system for the logistical services area, refer to Chapter 11 of this report.

2.2.2.7 *Windbreaks*

The exotic *Cassuarina cunninghamiana* (Beefwood) is commonly used as a windbreak species in the Sundays River Valley. However, this tree is listed in Category 2 of CARA which requires that a permit be obtained prior to planting this species. There are also certain requirements/ conditions which need to be met in order to be able to plant Category 2 plants.

It is preferable that a tree species, which is not listed in terms of the CARA Regulations, is selected for planting as a windbreak. Hardly any information is available in the literature on indigenous species which would be potentially suitable as windbreaks. Indigenous Yellowwood trees (*Podocarpus* sp.) have been utilised by some farmers in the SRVM as windbreaks, however, they are known to be hosts to false codling moth (citrus pest). In addition, most of the indigenous species which have potential as windbreaks (e.g. *Ekebergia capensis*, *Pittosporum viridifolium*, *Ptaeroxylon obliquum*) tend to grow in moister regions and will likely require additional irrigation water to establish and reach the required height (~20m).

The applicant has indicated that it is likely that they will not use windbreaks for the proposed development, since a large portion of the fruit produced on site will be sent to a local juicing factory. These fruits, therefore, are not required to have the same appearance, or be of the same quality as those that are exported to international markets, which may require windbreaks.

2.2.3 Operational

Once the site is suitably prepared the area will be utilised for the establishment of citrus orchards. Equipment required for the new operations will be stored in the renovated storage sheds and workshop areas on site. The following operational phase activities are associated with the project:

- Water for the proposed agricultural development will be supplied from the LSRWUA canals which will be reticulated from the proposed three new dams, as well as the expanded balancing dam; and
- It is anticipated that a number of additional seasonal and permanent employment opportunities will be created by the project.

2.2.3.1 Orchard Establishment

The final size, layout and configuration of the orchards has been determined based on the following:

- Soil Suitability and Slope Analysis by a recognised soil specialist;
- Irrigation infrastructure and efficiency requirements;
- Technical requirements (runoff and stormwater management, accessibility, slope, existing infrastructure);
- Biophysical constraints (e.g. sensitive areas, drainage lines, wetlands, species of special concern, maintenance of ecological corridors, conservation of sensitive vegetation); and
- Heritage constraints.

2.2.3.2 Water Use Entitlements and Availability

Water entitlements from the LSRWUA provide for 900mm/ha/yr (9000m³/ha/yr). The drip/ micro irrigation water delivery system which will be used in the orchards enables farmers to utilise on average ~600mm/ha/yr (6000m³/ha/yr). With a proposed orchard area of ~586ha, this translates to an annual water requirement of 3 516 000m³ for the proposed agricultural development. Water for the proposed cultivation will be provided by the LSRWUA supply system.

The applicant has obtained a water use licence from the Department of Water and Sanitation (DWS) for the taking of water from a water resource in terms of section 21 (a) of the National Water Act. This licence entitles them to utilise 675ha (6 075 000m³) of water per annum from the LSRWUA canal system. The applicant, therefore, has sufficient irrigation water for the proposed agricultural development of ~586ha of citrus as well as to service the Logistical Services Area (see section 2.2.2.6 above). A copy of the water use licence granted by DWS is contained in Appendix G (Supporting Documentation) of this report.

2.3 CAPITAL INVESTMENT AND EMPLOYMENT GENERATION

It is estimated the capital investment of the development, upon completion of the construction phase, will be ~R225 million. It is estimated that the construction phase of the development will create ~66 new employment opportunities at a value of ~R21.4 million (over a five-year period).

Upon completion of construction and during the operational phase of the development, it is estimated that ~62 permanent employment opportunities will be created at a value of ~R2.2 million annually, and ~566 seasonal opportunities at an annual value of ~R6.8 million. Labour will be sourced locally from communities in the SRVM and Nelson Mandela Bay Municipality (NMBM). In addition to the direct employment opportunities that are created as part of the farming operations, a number of indirect jobs will also be created by the proposed development particularly within the packaging and logistics industries, as well as the processing (juicing) industry amongst others.

2.4 PROJECT SCHEDULE

The following table provides a preliminary overview of the proposed project schedule and an indication of the anticipated approvals process. Should Environmental Authorisation be positive, it is estimated that the project construction phase will take place over a period of seven years (84 months).

Table 2.2: Proposed project schedule.

PHASES	ACTIVITY	TIMEFRAME
PRE-CONSTRUCTION PERIOD		
Detailed Planning and Design Phase	Prepare final layouts/ development footprint Relevant permit & licence applications Pre-Construction Audit	12 months
CONSTRUCTION PERIOD		
PHASES	ACTIVITY	TIMEFRAME
1	<ul style="list-style-type: none"> • Pipeline installation (and disturbance of ~5.6ha of vegetation) • Expansion of dam 1 • Construction of dam 2 • Clearance of ~100ha of vegetation on Farm 653 • Establishment of ~80ha of orchards • Renovations of existing structures and installation of new supporting infrastructure 	24 months
2	<ul style="list-style-type: none"> • Clearance of ~110ha of vegetation • Establishment of ~105ha of orchards 	12 months
3	<ul style="list-style-type: none"> • Construction of dam 3 • Clearance of ~120ha of vegetation • Establishment of ~110ha of orchards 	12 months
4	<ul style="list-style-type: none"> • Clearance of ~120ha of vegetation • Establishment of ~110ha of orchards 	12 months
5	<ul style="list-style-type: none"> • Construction of dam 4 • Clearance of ~100ha of vegetation • Establishment of ~92ha of orchards 	12 months
6	<ul style="list-style-type: none"> • Clearance of ~100ha of vegetation • Establishment of ~90ha of orchards 	12 months
OPERATION PERIOD		
Farming Phase	Orchard operation and harvesting	Commence upon completion of the first phase of vegetation clearing and orchard establishment.

2.5 CONCLUDING REMARKS

Alternatives and the assessment thereof, are outlined in Chapter Five of this report. The specialist studies forming part of the EIA phase of the assessment, which have informed the preferred development footprint within the site, are included in Chapters Six to Thirteen of this report. Potential impacts associated with the proposed agricultural development and associated infrastructure are included in the respective specialist studies.