

ANNEXURE 1: SETTLEMENT BASELINE ANALYSIS

1. CALEDON

1.1 BIOPHYSICAL AND AGRICULTURAL ANALYSIS

1.1.1 Environmental Status Quo

The Baths River and its tributaries flow through Caledon and function as an ecological corridor within the town and contribute to the town's physical structure.

Biophysical and ecological constraints include steep slopes, valuable agricultural land and critically endangered vegetation species, which limit the expansion of the town.

Other than the protected areas north of the N2, only limited core biodiversity areas (CBA1 and ESA1 areas) remain in and around Caledon and has been lost to agriculture.

The Riemvasmaak informal settlement is located between two biodiversity corridors and has already impacted on the wetland system, which is under threat of further degradation. This area is also prone to flooding.

The abovementioned situation requires careful planning to both manage the need to protect these assets and the need to provide for opportunities for development. It is likely that either agricultural or biophysical assets will have to be offset in order to accommodate areas for urban expansion.

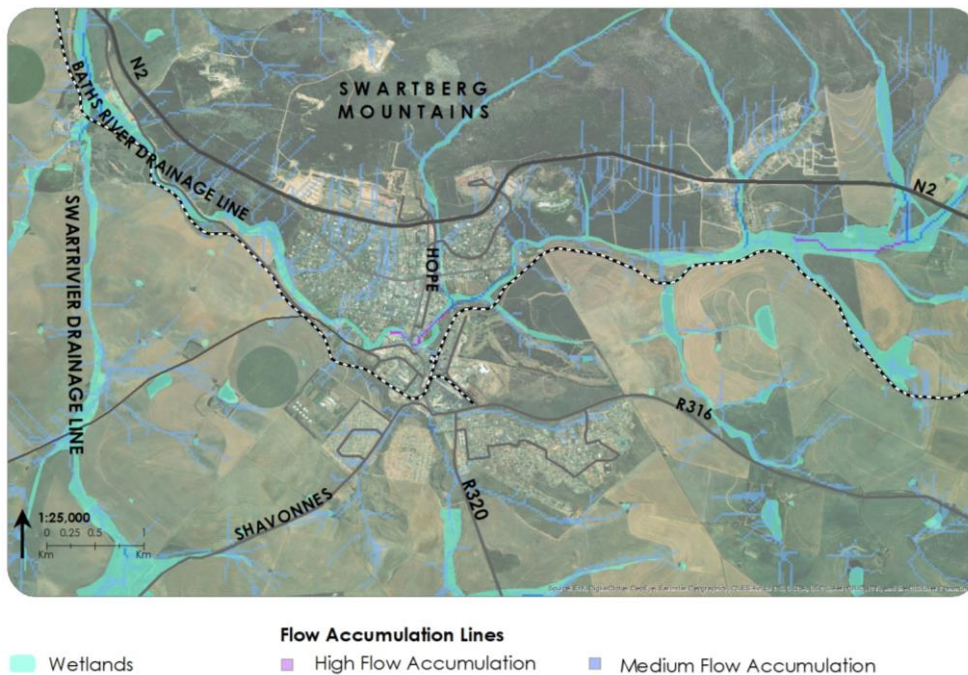


Figure A1.1.1: Caledon: River Corridors and Wetlands

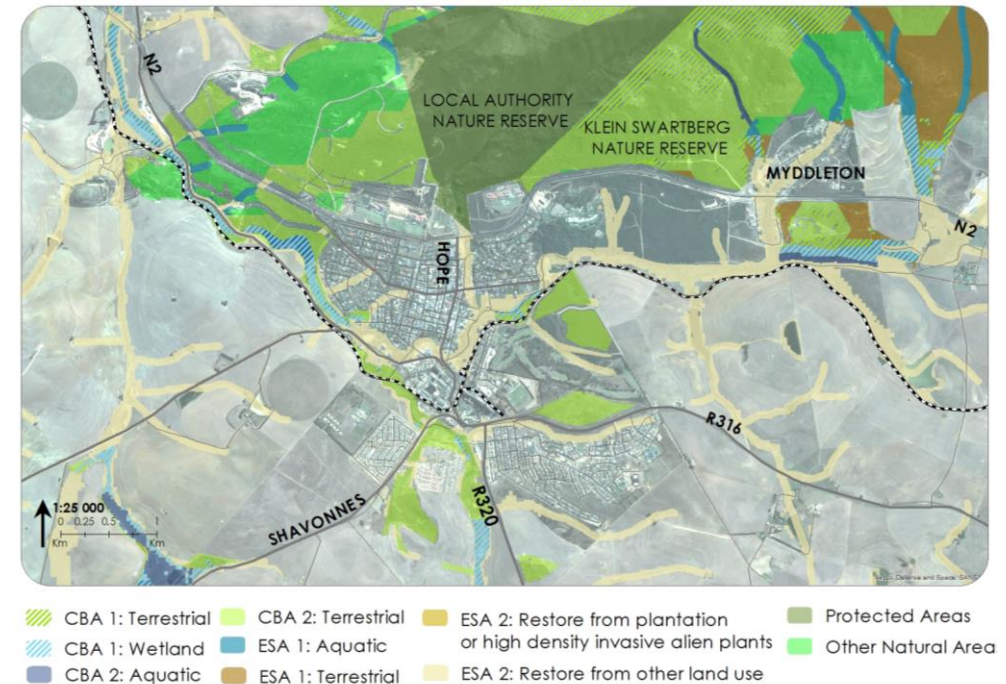


Figure A1.1.2: Caledon: Core Biodiversity Areas and Ecological Support Areas

1.1.2 Environmental Risks

Figure A1.1.3 illustrates the identified wetland areas and flood prone areas within the urban edge. Development in and near these areas are limited and stormwater mitigation measures would need to be applied.

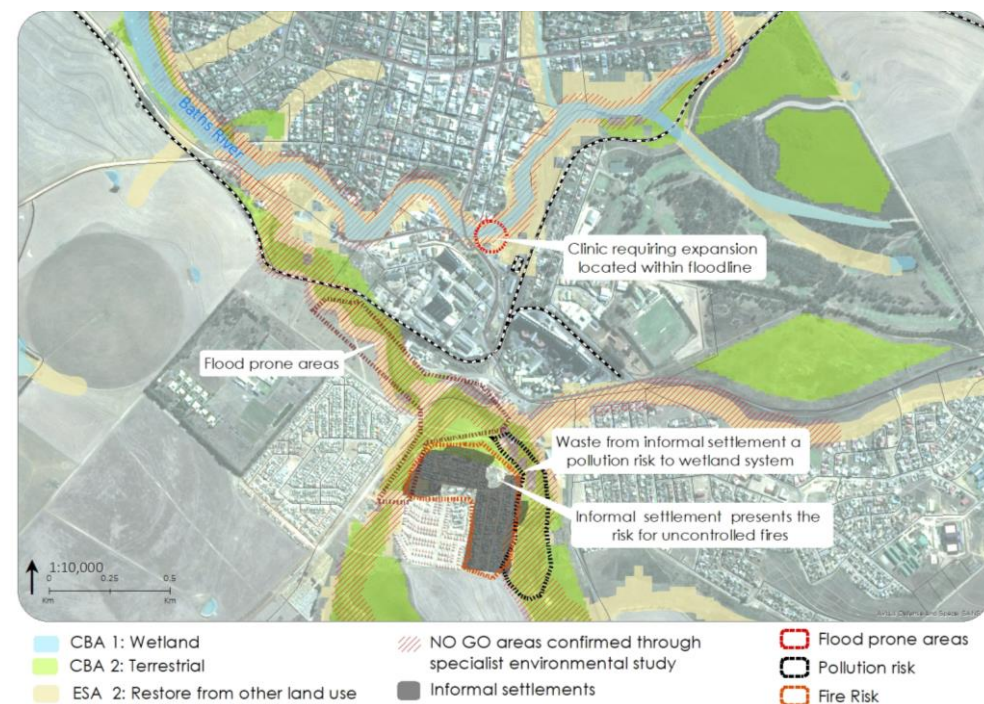


Figure A1.1.3: Caledon: Summary of Environmental Risks

1.1.3 Agricultural Status Quo

The town fulfils the role of an agricultural service centre supporting the local farmers, of which wheat and canola being the predominant crops. Businesses linked to the processing of these crops are based in Caledon's industrial area, the largest being the South African Breweries (SAB) brewery and malt factory.

The Riemvasmaak informal settlement was established on agricultural land and the need to upgrade civil services for this community continues to impact on agricultural land.

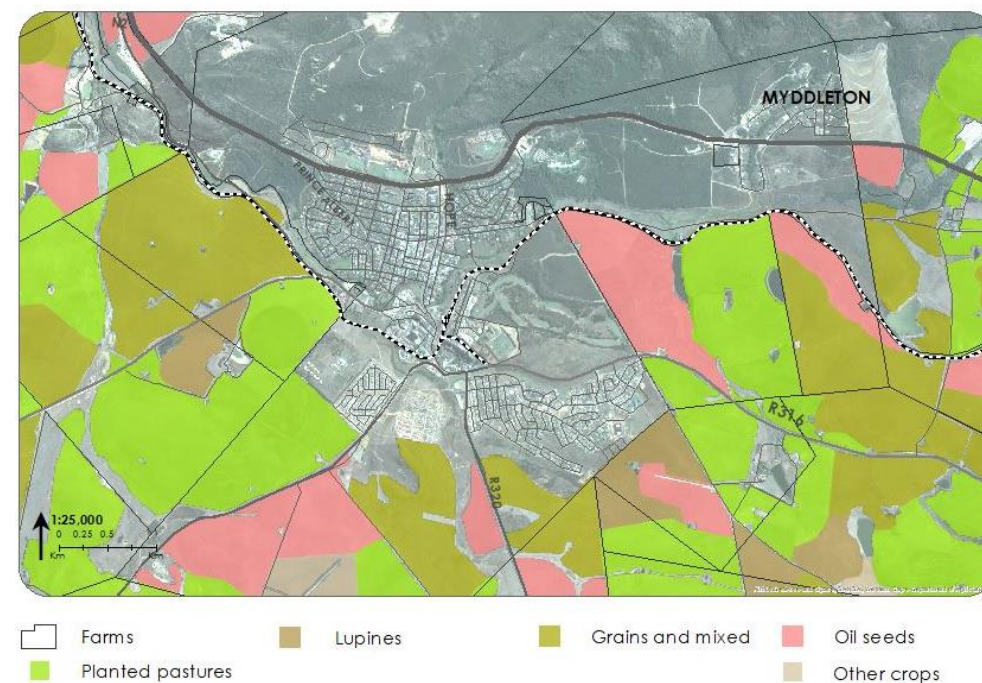


Figure A1.1.4: Caledon: Main Locally Produced Crops

1.2 SOCIO-ECONOMIC ANALYSIS

1.2.1 Economic Systems

Caledon functions as the administrative hub of TWKM and accommodates significant contributors to the economy of the Municipality, e.g. the processing of grain and malt for brewing purposes.

Business activity is primarily located in the central business district and the more recently established shopping centre at the entrance to the town at the

intersection of the N2 and Hope Street. The municipal offices are also located in the main business area. Another key contributor to the economy is the Casino Precinct, which includes the casino, hotel and spa. The precinct is however disconnected from the town.

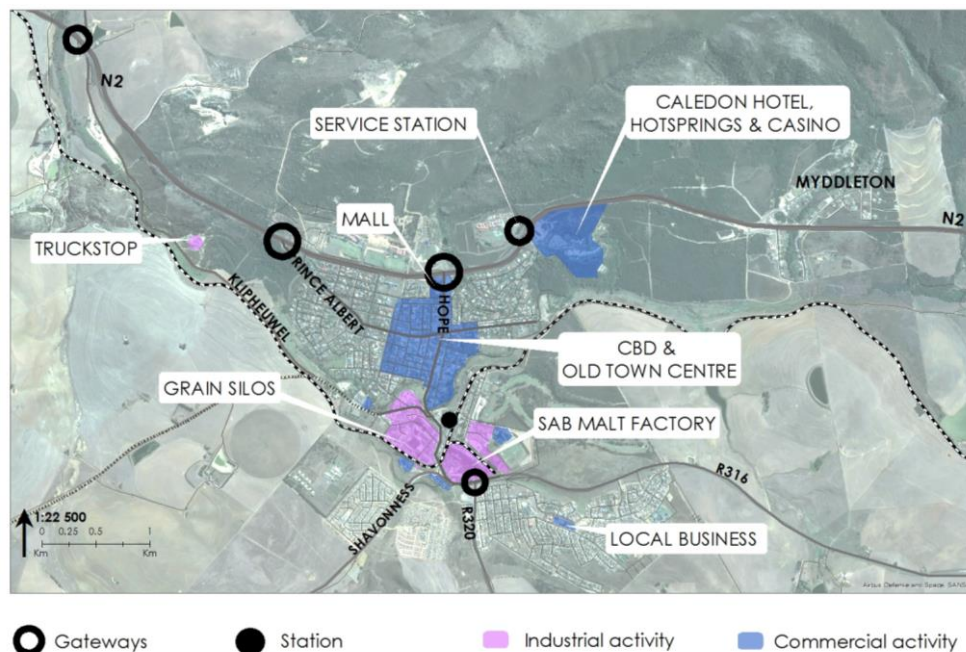


Figure A1.1.5: Caledon: Concentration of Economic and Industrial Activity

The existing industrial area in Caledon is located adjacent to the station in the southern part of town. The town is a major link in the grain processing industry within the OBD. Malt processed at the malt factory is transported via the railway line directly to SAB in Newlands, Cape Town. Existing industrial activities relate mainly to the agricultural sector and include industries linked to SAB malting, grain storage facilities and other light industrial uses. Only a few vacant erven remain in the area and to facilitate industrial growth, sufficient industrial land needs to be allocated for future development.

The low and medium income communities from Bergsig, Uitsig and Riemvasmaak are the least accessible to the main business area. However, access to employment opportunities in the industrial area (e.g. Prestige Clothing, Grain Silos, Malt Factory, light service industry) is good.

For the most part, the central town is accessed by low income residents on foot. Limited economic opportunities south of the railway line are available to disadvantaged communities, while most of the human settlement projects, according to the Municipality's pipeline, are concentrated in this area.

Although the industrial sector is well-established, given the perception that this sector offers a stable work force, there are insufficient opportunities for expansion of the industrial footprint. Although future industrial growth was identified to the south in the previous SDF (2012), the private sector has not responded to this proposal. A possible reason could be the required upgrades to Chavoness Road to service this area.

1.2.2 Residential Patterns

As previously stated, the Caledon's spatial form has been influenced by biophysical features and natural systems, as well as physical infrastructure such as the N2 and railway line. These factors resulted in socio-economic segregation, with the affluent communities located to the north of the railway line and less affluent communities to the south of the railway line.

Caledon's informal settlement, Riemvasmaak, is located to the south and disconnected from the economic centre. Responses to the need for low income housing has been concentrated at nearby Uitsig and plans to accommodate future housing need illustrates the segregated spatial form, with low income communities being accommodated further south of town.

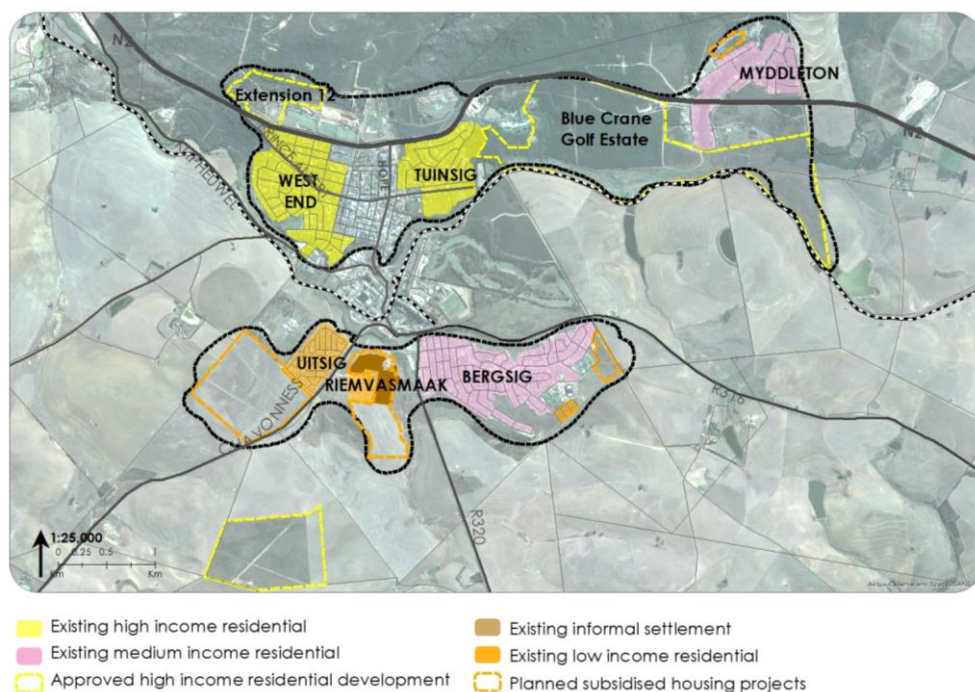


Figure A1.1.6: Caledon: Existing, Approved and Planned Residential Developments

1.2.3 Income Distribution

Figure A1.1.7 illustrates that the residential areas in the northern part of Caledon have the lowest residential densities and consists of households earning in the higher income brackets. In contrast, the highest residential densities are concentrated in the south. Income levels are segregated between north and south, but also between east and west, i.e. Uitsig/Riemvasmaak vs. Bergsig and Vleiview. Two higher income residential developments (Extension 12 and Blue Crane golf estate) have been approved and will continue to propagate this segregated spatial form. The Blue Crane development however, has the potential to result in creating a spatial connection with Myddleton.

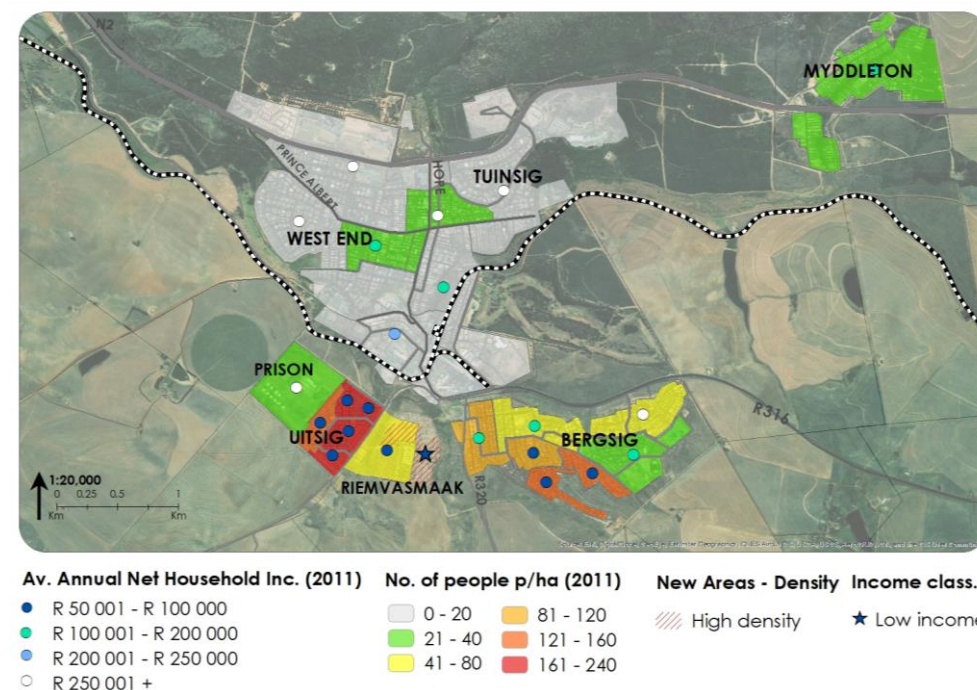


Figure A1.1.7: Caledon: Household Density versus Household Income

1.2.4 Demographics

Demographics, particularly accurate population projections, not only has a bearing on the provision of housing opportunities, but impact on the adequate provision of engineering infrastructure, transport infrastructure, social facilities e.g. education and health facilities, and sound financial planning to ensure the long term financial sustainability of municipalities.

According to the 2011 Census, Caledon's total population is estimated at 13 983. The 2018 Mid-Year Population Estimate (MYPE) population estimate for Caledon is 16 451. An annual population growth rate of 2.3% was recorded for Caledon between 2001 and 2011 and a 2.4% annual growth rate between 2011 and 2018. The estimated future per annum growth rate between 2018 and 2028 is $\pm 2.2\%$.

Based on the population projections for Caledon, the estimated total population by 2028 will be 20 410.

It was determined according to the Community Survey of 2016 that the average household size for Caledon was 3.4 persons per household. It is therefore estimated that approximately 6 003 households will reside in Caledon by 2028.

The number of households that fall within the subsidized housing category in Caledon is summarized in the following table (Source: WC: DoHS, July 2018):

Table A1.1.1: Caledon: Housing Need

NO. OF INFORMAL SETTLEMENTS	HOUSING BACKLOG	INFORMAL STRUCTURES	NO. OF BACKYARDERS REGISTERED	NO. OF FARM WORKERS REGISTERED
1	1 415	627 units 3 135 persons	700	88

1.3 BUILT ENVIRONMENT ANALYSIS

1.3.1 Movement Systems

The N2 Freeway and the railway line are key physical structuring elements aligned in an east-west direction through the town. The transportation routes facilitate key physical and economic linkages for the agricultural sector as well as linkages between other urban nodes and rural settlements within the Municipality and District.

In recent years the function of the Klipheuwel Road has become an important alternate route for freight trucks on-route to Bredasdorp, deviating congestion from the main thoroughfares within the town. The road needs upgrading. The local truck stop has been relocated westward to a site adjacent to the Klipheuwel Road in order to reduce the impact of traffic through the town.

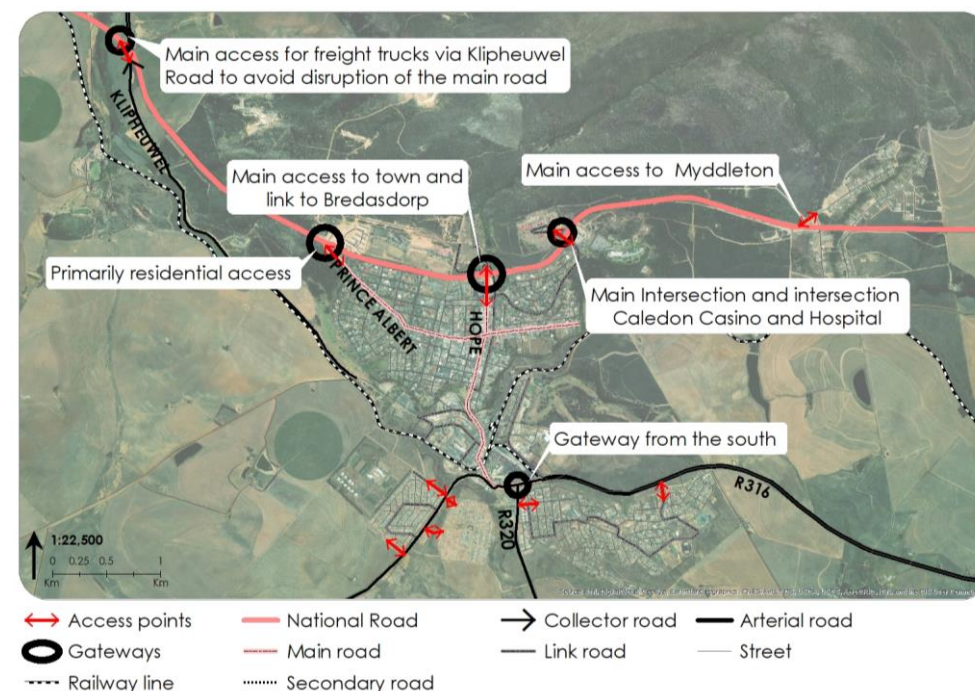


Figure A1.1.8: Caledon: Gateways and Access Points

The railway line and the N2 also serve as structuring elements defining the shape of the town into a clear north-south divide. These factors contribute to spatial inefficiencies within the town which impose spatial challenges that need to be resolved. These challenges include:

- Four entrances to the town off the N2 result in a muted sense of arrival and no defined 'gateway' to the town.
- The expansive spatial form of the town is informed by the N2, the railway line and Baths River, creating significant movement barriers and limited options to remedy the spatial disconnection between communities.
- There are not many options in Caledon for spatial growth, except for the

southern and eastern parts of the town, which also exacerbates the existing spatial patterns of segregation.

- Although classified as part of Caledon, the settlement of Myddleton is largely disconnected from Caledon.

Hope Street is the main road aligned through Caledon in a north-south direction. The road description changes to the R316 outside the town limits and continues onto Bredasdorp and Hermanus. The road is used primarily as a freight transport route, although it accommodates a large number of pedestrians, connecting low income communities in the south to social and economic opportunities in the north. Landscaping, such as tree planting and lighting could potentially improve the aesthetic and amenity of this pedestrian route. Caledon is reasonably well-served by taxi routes.



Figure A1.1.9: Caledon: Taxi Routes

1.3.2 Social Facilities Distribution

The following figure illustrates the distribution of existing social facilities. Caledon accommodates a range of social facilities, including the only provincial hospital in TWKM.

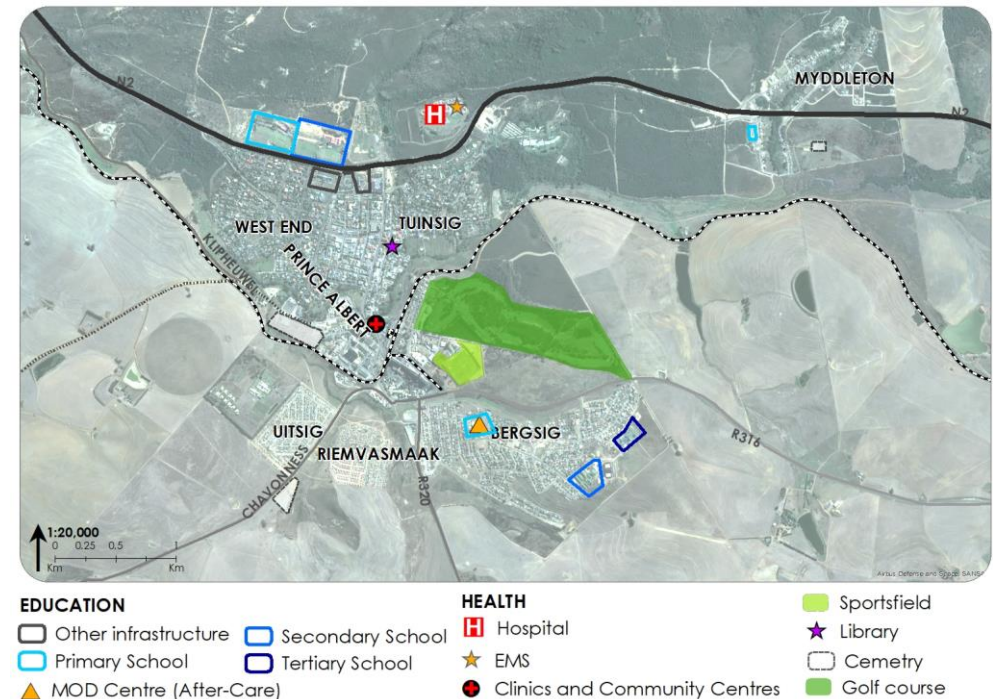


Figure A1.1.10: Caledon: Social Facilities

1.3.3 Access to Schools

The following two figures illustrate the walking distances to the existing schools within Caledon. It shows that most schools are within reasonable walking distance to communities dependent on NMT as a mode of transport, except for Myddleton that does not have a secondary school and require vehicle transport to and from secondary schools.

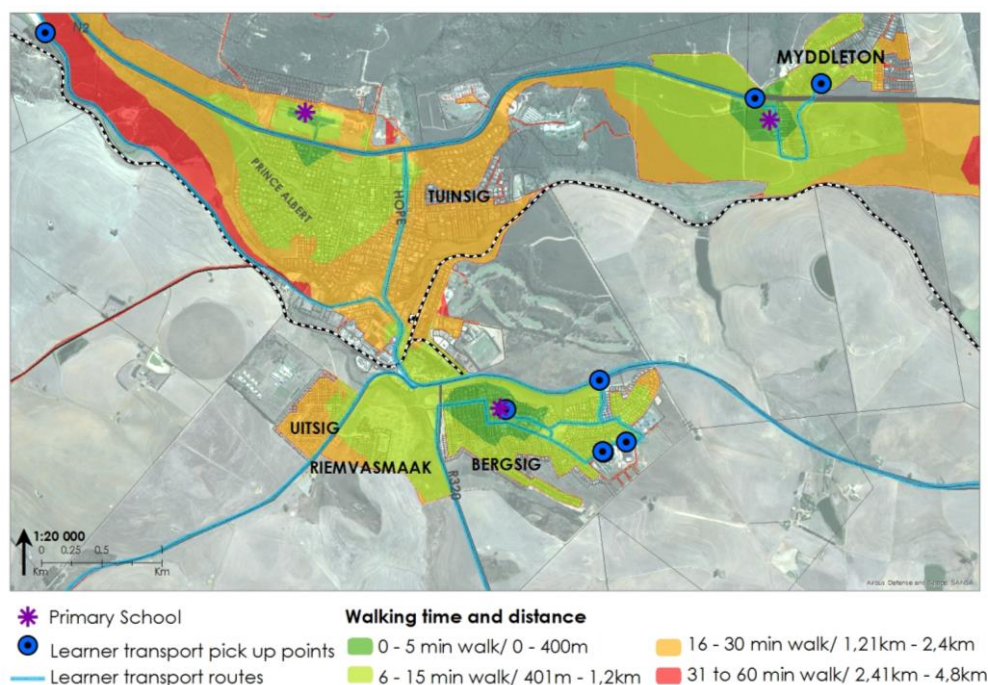


Figure A1.1.11: Caledon: Walking Distances to Primary Schools

It should be noted that the southwestern part of Uitsig is already located at the upper limit of a reasonable walking distance (less than 30 minutes) to a secondary school. The proposed expansion of Caledon in a southern direction would require future consideration of a secondary school within or near the new development areas.

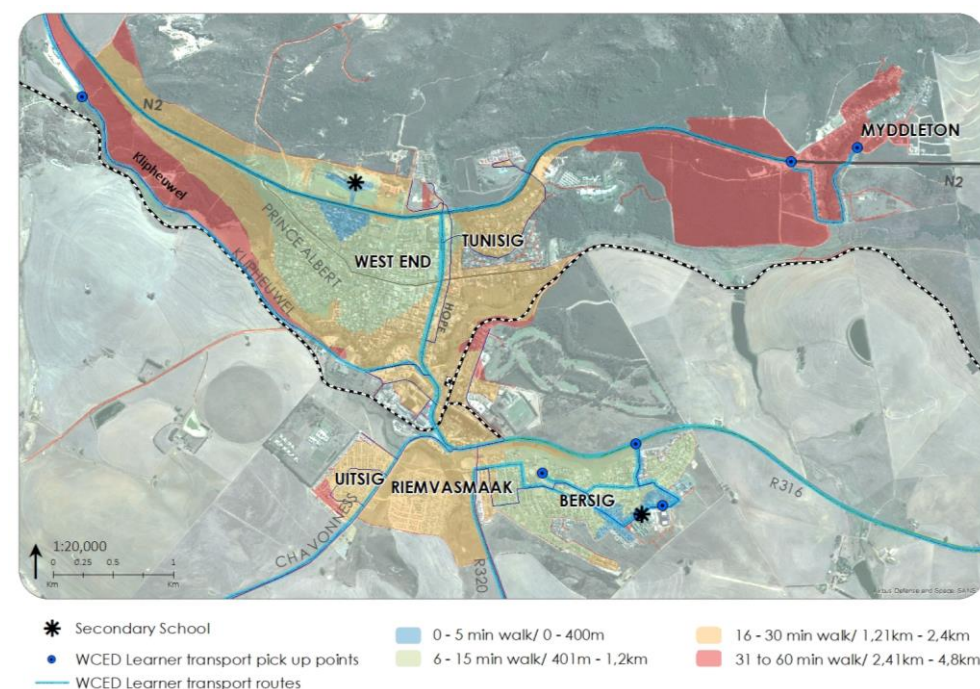


Figure A1.1.12: Caledon: Walking Distances to Secondary Schools

1.3.4 Access to Health Facilities

The following two figures illustrate the walking distances to the existing clinic and hospital in Caledon. It shows that the clinic is within reasonable walking distance to communities dependent on NMT as a mode of transport to these clinics. A clinic in Uitsig or Riemvasmaak could benefit these communities. The provincial hospital is not within walking distance to these communities and the communities are therefore dependent on public transport for access to the hospital.

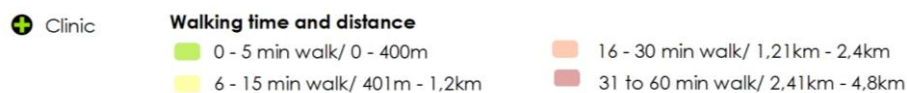
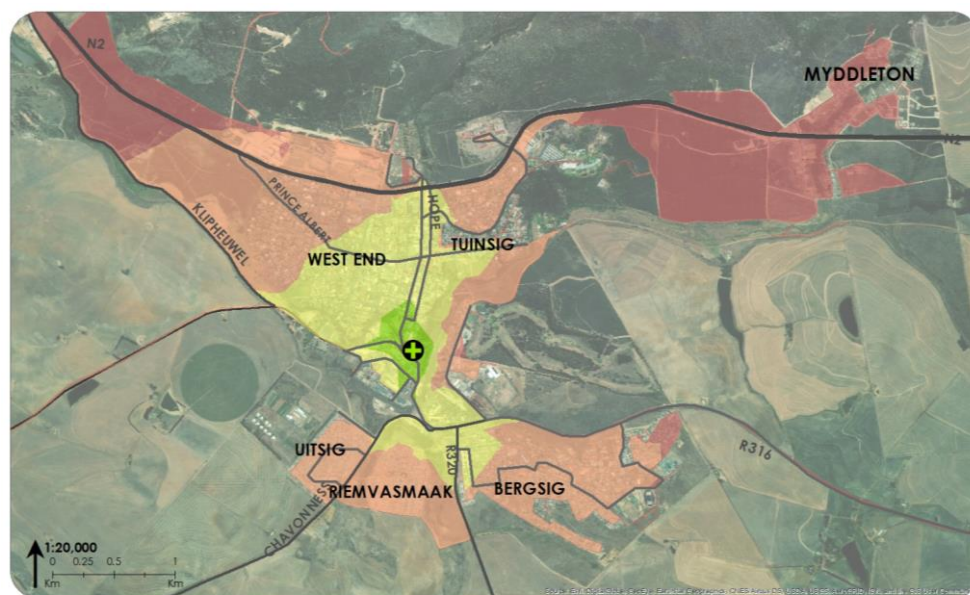


Figure A1.1.13: Caledon: Walking Distances to Clinic

1.3.5 Cemeteries

The existing cemeteries in Caledon and Myddleton are managed by TWKM, as well as by various Churches. Two additional cemetery expansion areas have been identified off Chavonness Road for which the necessary environmental authorisations have been obtained.

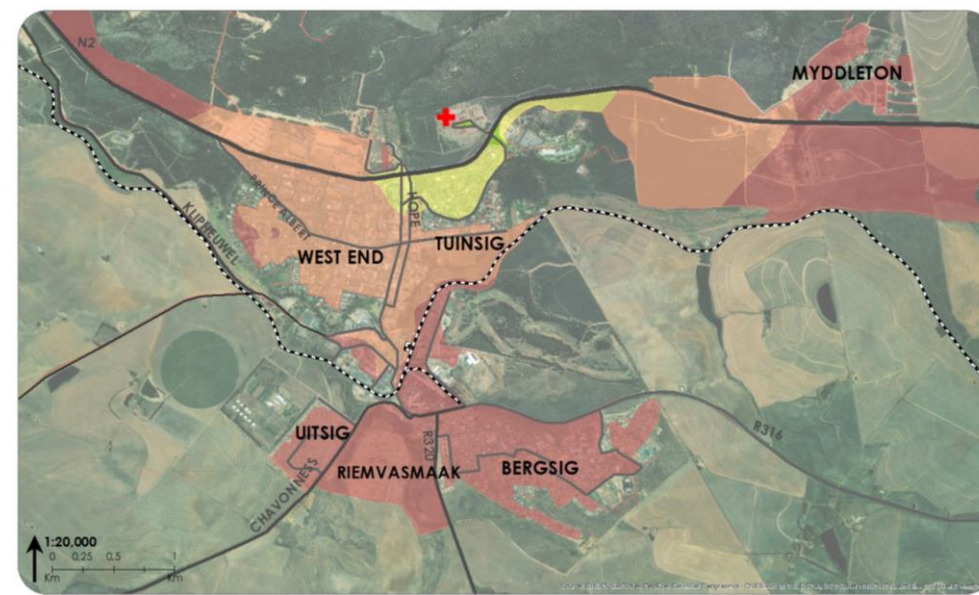


Figure A1.1.14: Caledon: Walking Distances to Hospital

1.3.6 Engineering Infrastructure

(i) Water Supply and Storage

The Overberg Water Board supplies potable water to Caledon through the Rûensveld West Water Supply System from the Theewaterskloof Dam.

There is no water treatment works (WTW) located in Caledon, as the water is treated at the Mariasdal WTW, which is located at the Theewaterskloof Dam.

Additional water is supplied from two production boreholes. The water is treated at the source via an ultrafiltration water treatment plant and stored in a 5 MI reservoir. Cooled water from the hot water spring at the casino is also pumped to the water treatment plant and stored in the Badskop reservoirs.

The ten reservoirs serving Caledon are all in good condition.

All settlements in Caledon and Myddleton have water meters except Riemvasmaak.

Groundwater should be considered as a future source of diversification in order to make the town more resilient to droughts and less vulnerable to water restrictions when sharing an irrigation resource. The TWKM aims to explore the possibility of drilling new boreholes in future.

Water could potentially be abstracted from the Basil Newmark Dam, which is located on the Diep River. The assured yield of the source is unknown and it is currently used to irrigate some of the municipal parks and supplies water to the golf course. The pipeline between the dam and the town is in poor condition and requires upgrading. General maintenance on the pipeline is currently underway.

A projection of the historical bulk supply indicates that the current resources will be adequate to meet the demands for another 10 years.

(ii) Wastewater

Caledon is served entirely by a water-borne sanitation system except for some homes at Riemvasmaak; the latter having shared services. There is no sewer pump station and the system is gravity fed. The WWTW is an activated sludge plant and upgrading has commenced to improve the performance of infrastructure within the plant to allow for better quality of water to be released into the river system. 30% of wastewater received is presently discharged to the WWTW without any form of pre-treatment.

Due to the existing asbestos sewer pipelines reaching capacity, failing and causing pollution, portions of the outfall sewer is currently being replaced (approximately 10 km of pipeline). The multi-year project has been registered in its entirety but work is being done in sections, with the second phase currently being implemented. This includes the link between Caledon and Myddleton and the WWTW.

The WWTW's design capacity is over 4.6 MI/day, but due to sludge, the actual capacity it is about 3.3 MI/day and operates above 100% of capacity. This part of the WWTW needs to be rehabilitated while a new plant with a capacity of 3 MI/day is also being considered.

The SA Maltsters plant is a major contributor to the sewage volume treated.

Caledon is licensed to discharge 4.8 MI/day of effluent into the Baths River. The license also makes provision to supply effluent for re-use to the casino.

(iii) Stormwater

All roads are served with stormwater infrastructure, except the gravel roads within the Riemvasmaak informal settlement. The upgrading of roads and services has been proposed, pending the outcome of environmental studies.

(iv) Roads

All roads are tarred, except within the Riemvasmaak informal settlement.

The Klipheuwel Road is a provincial road which carries a large volume of freight trucks. A new truck stop is located along this road and therefore tarring is required.

The approval of the Flight Park development was subject to the tarring of the Chavonness Road. However, the developer and the Municipality do not have the funds to do this at present. The upgrading of this road needs to be investigated to attract investment to this area.

An additional crossing underneath the N2 is needed to integrate the northern part of the town with the rest of Caledon. Road upgrades to the Provincial Hospital need to be implemented.

The recently upgraded interchange at Myddleton was a condition of approval of the approved Blue Crane golf estate.

(v) Solid Waste

The Caledon landfill site has reached capacity, but has not been closed. It will be closed once the transfer station has been constructed, which is planned for the 2020/2021 financial year. A landfill closure provisions report was done in 2018 and the site needs to be rehabilitated.

The construction of a new Transfer Station and Material Recovery Facility adjacent to the WWTW has commenced.

(vi) Electricity

TWKM supplies electricity to Caledon and Eskom supplies Myddleton. There are currently no network constraints, but future development may require additional capacity. The town receives its bulk supply from an Eskom 66/11kV substation on the western side of town.

The Caledon Eskom substation will be refurbished in the next two years. The infrastructure for the Blue Crane development will have to be upgraded and the construction of a substation may have to follow, depending on the demand stemming from the development which is currently being explored.

The feeder between the Genadendal and Caledon Eskom substations is very old and needs to be upgraded.

Green energy developed through the nine Dassiesklip wind turbines located close to Caledon generates approximately 27 MW per month. This energy capacity is then sold directly to ESKOM.

(vii) Summary of Infrastructure Constraints

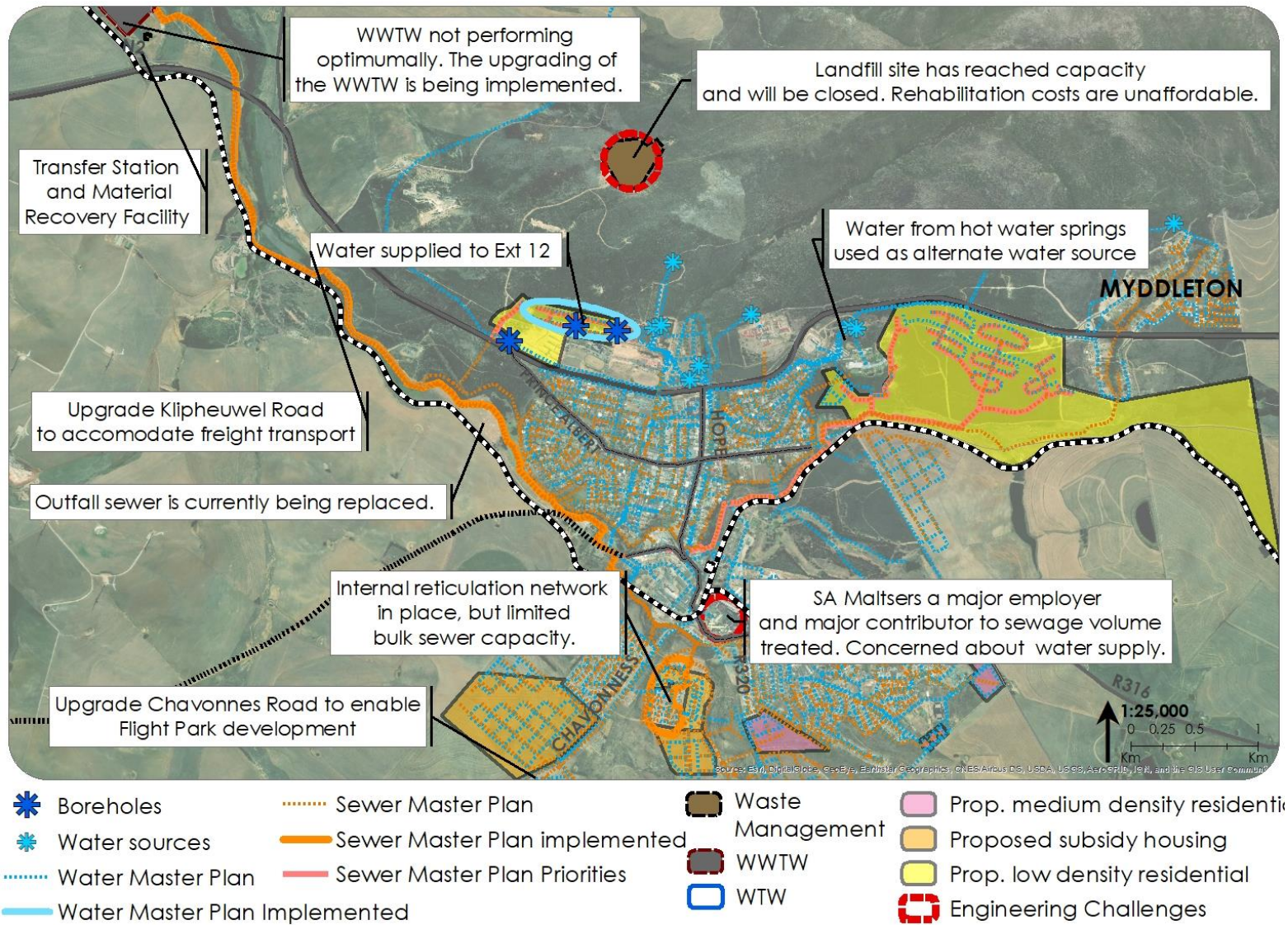


Figure A1.1.15: Caledon: Summary of Infrastructure Constraints

2. GRABOUW

2.1 BIOPHYSICAL AND AGRICULTURAL ANALYSIS

2.1.1 Environmental Status Quo

Geological, topographical, hydrological and vegetation systems structure the resultant local visual environment. Grabouw is located in the urban-related and industrial transition areas of the Kogelberg Biosphere Reserve.

Grabouw is situated within the greater watershed of the Palmiet River. The localised drainage basin is dominated by the steep mountain ranges to the west and north, which feed directly into the Eikenhof Dam and the upper reaches of the Palmiet River. The presence of numerous small wetlands situated in the sands trapped between the rock ridges perform a vital function for water storage and gradually releasing it into the streams over the summer season.

Grabouw originated at the vehicular crossing at the narrowest point of the Palmiet River. The present informal settlements established near these water systems and the settlements in the southwest of the town are subject to flooding due to the encroachment on watercourses. As a result of the close proximity of the settlement to the various watercourses, encroachment, littering and pollution of the water systems exist. In addition, the river is encroached upon by agricultural and industrial development and invasive alien plants.

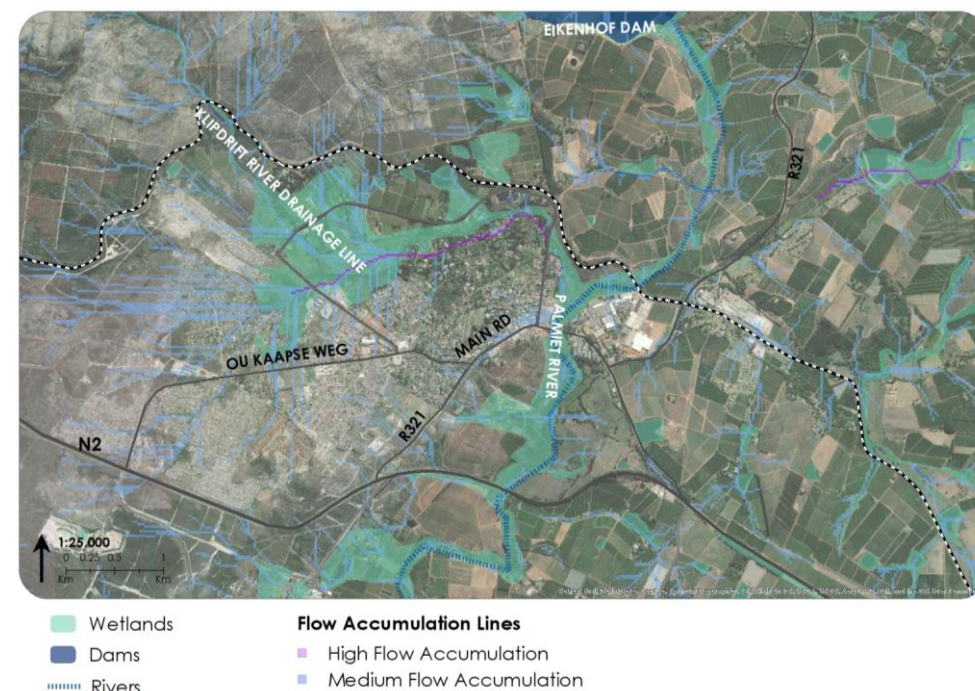


Figure A1.2.1: Grabouw: River Corridors and Wetlands

All of the declared provincial nature reserves to the northeast and southwest is located within the Biosphere Reserve's Core Area, while the surrounding mountain catchment areas is located within Buffer Areas. The recent high levels of population immigration to Grabouw have significantly degraded CBAs and pose a significant threat to the survival of ecological corridors and support areas. This is illustrated in **Figure A1.2.2**, which illustrates the presence of CBA areas in the western area of Grabouw where informal settlements have formed and is continuing to expand.

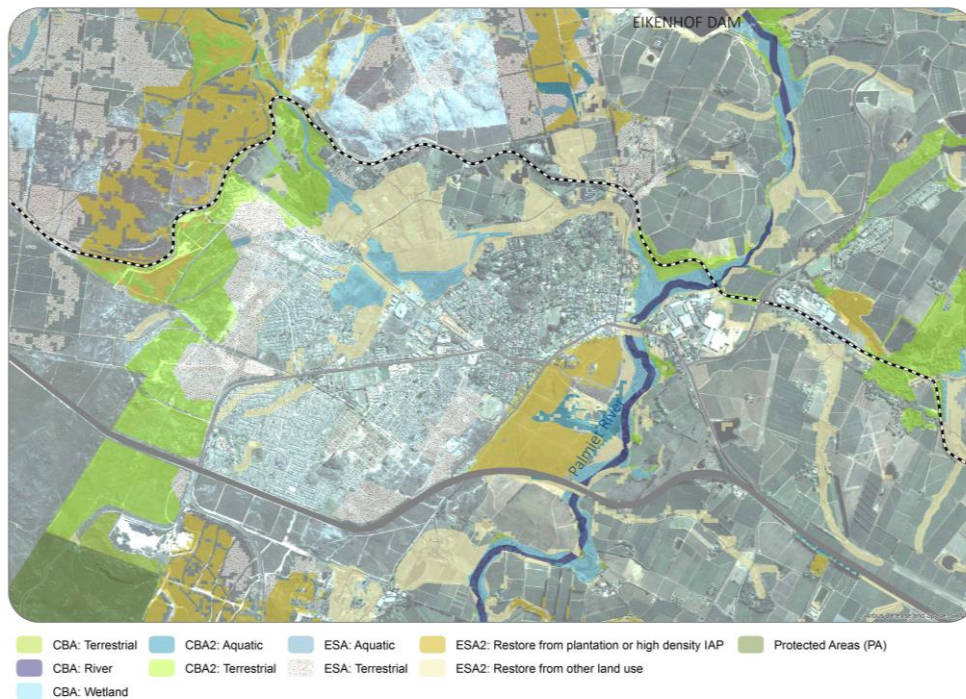


Figure A1.2.2: Grabouw: Core Biodiversity Areas and Ecological Support Areas

2.1.2 Environmental Risks

Figure A1.2.3 illustrates the identified environmental risks which limit the development potential of land in and around Grabouw. Risks include predominantly flood prone areas within the central and northern parts of Grabouw and environmentally and fire prone areas within the western parts.

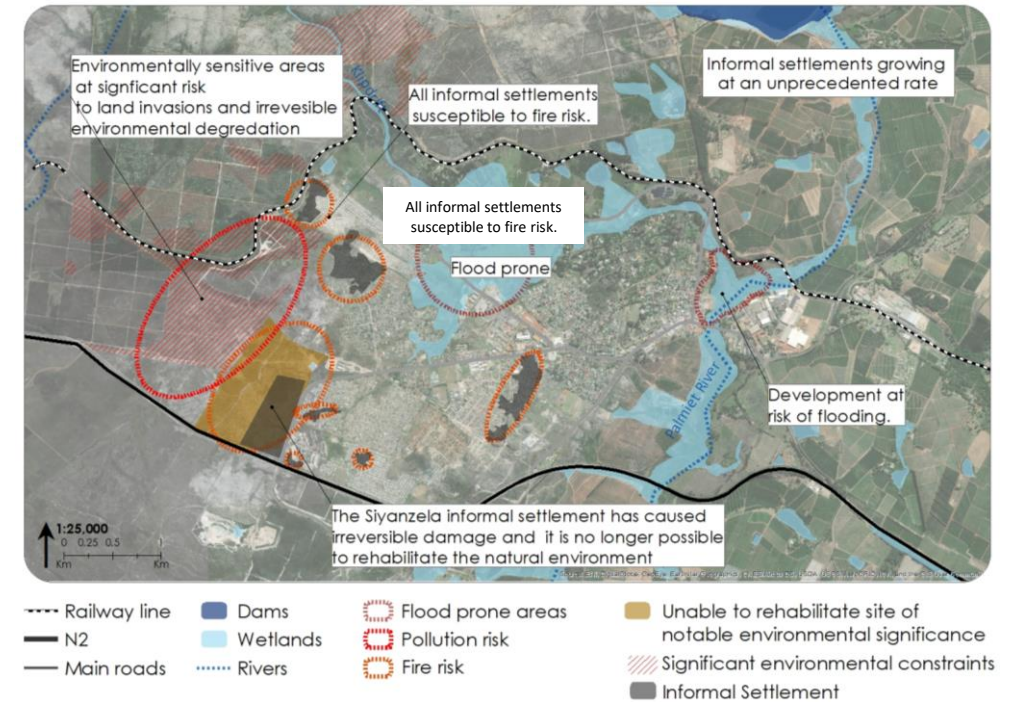


Figure A1.2.3: Grabouw: Summary of Environmental Risks

2.1.3 Agricultural Status Quo

Grabouw is home to an intensive agricultural sector and is well-known for the growing and processing of apples and other pome fruit with smaller concentrations of grapes and stone fruit. The agricultural sector of Grabouw is an attractive destination for seasonal farm workers, which adds pressure on housing delivery.

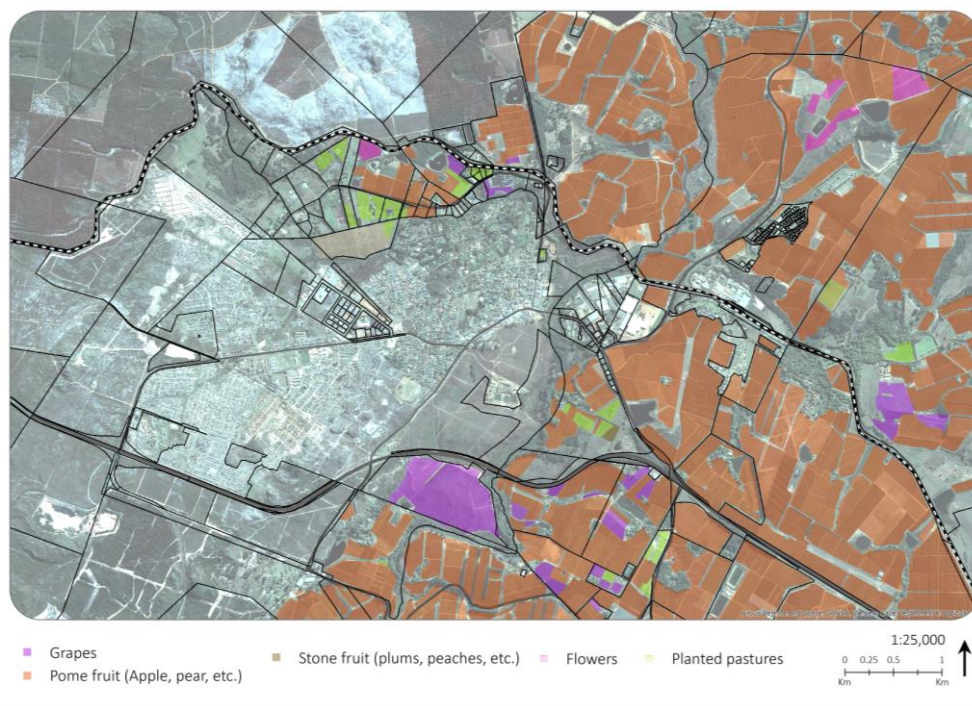


Figure A1.2.4: Grabouw: Main Locally Produced Crops

2.2 SOCIO-ECONOMIC ANALYSIS

2.2.1 Economic Systems

Grabouw is categorized as the TWKM area's largest economic centre. The economy of Grabouw and the broader Elgin Valley is underpinned by agricultural production and agri-industries. Economic development in Grabouw is primarily driven by agriculture, agri-industrial, light industrial development and tourism.

There is limited economic activity in the southwestern part of Grabouw, the area where most of the low income communities are concentrated. The town centre is visibly neglected, with a significant number of buildings used for purposes other than what it is zoned for, which has in turn, impacted on its commercial

character. In general, the Primary Economic Area of Grabouw is characterized by a poor sense of place and poor quality streetscapes.

A space for informal trading has been designated at the taxi rank in town. Other niche economic opportunities have been established far from the town centre, resulting in greater travel distances for employees.

The existing industrial area of Grabouw is located towards the northwestern end of the town. Limited expansion opportunities exist. Large industrial and agri-processing infrastructure exists within and on the outskirts of Grabouw. This infrastructure is predominantly related to the farming sector and therefore contributes to the attenuation of seasonal employment, which in turn, increases the housing demand within Grabouw.

Grabouw's strategic location in relation to the City of Cape Town, its location next to the N2 and existing railway infrastructure and a potential large workforce has not been optimised. Providing well located industrial land at this strategic location could attract investors requiring a decentralised location outside of Cape Town.

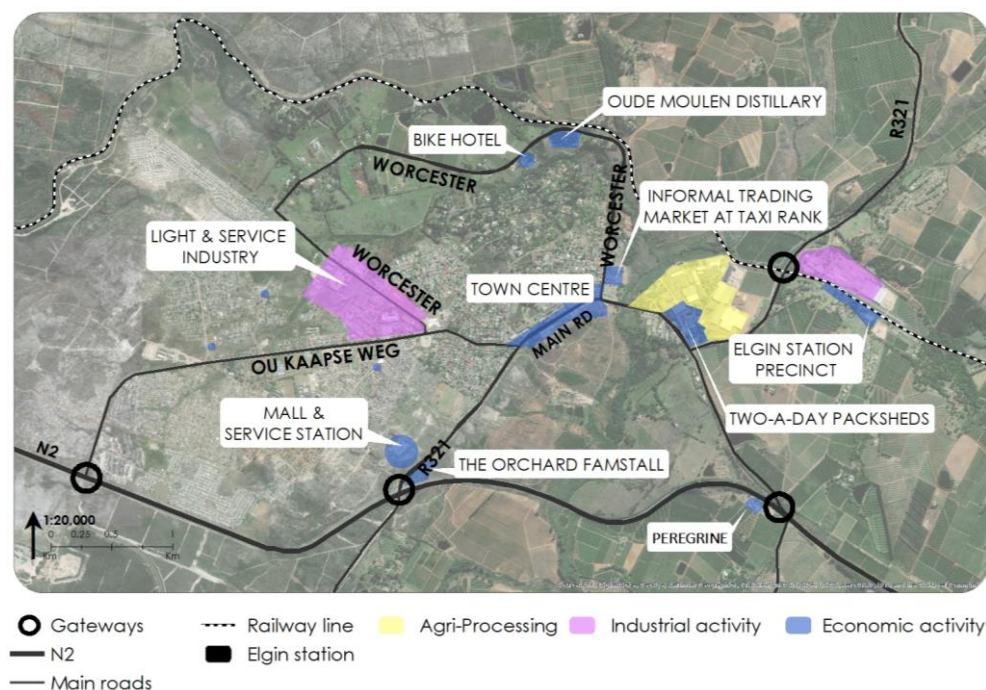


Figure A1.2.5: Grabouw: Concentration of Economic and Industrial Activity

2.2.2 Residential Patterns

As illustrated on **Figure A1.2.6**, Grabouw has a clear socio-economic segregated spatial structure, with the existing industrial area forming a physical barrier within the northern part of town, with lower income households to the west and higher income households to the east. Ou Kaapse Weg creates a loop through the town, intersecting at the N2 at two points. This looped road system further reinforces this separation, with two entrances as access points off the N2 to two distinctly different parts of town, creating the sense of 'two towns within a town'.

Varying housing types are present within the town, including small holdings, well located large single and double story houses, a small number of flats located

around the town centre, council and parastatal rental housing, subsidy housing, single storey hostel blocks, special housing for the aged and informal settlements.

Bona fide farm workers are housed on farms surrounding Grabouw, while the majority of seasonal workers live in Grabouw.

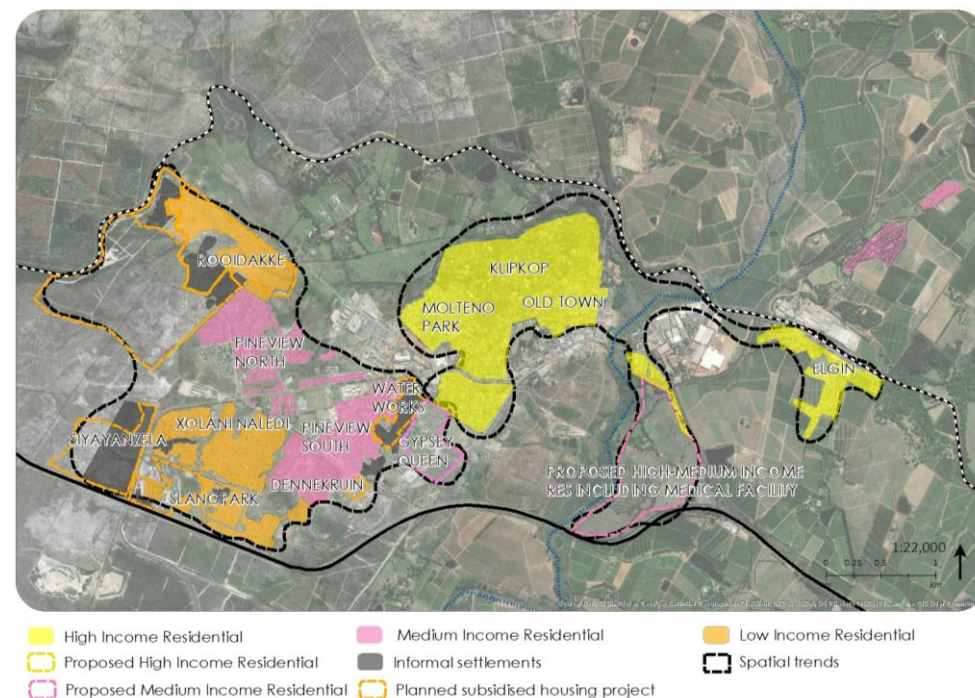


Figure A1.2.6: Grabouw: Existing, Approved and Planned Residential Developments

2.2.3 Income Distribution

The image below clearly illustrates the skewed distribution of income levels across the town, with higher densities prevalent in the west of Grabouw, in the same areas where households with the lowest incomes and informal settlements

are concentrated. The east of Grabouw is home to the more affluent residents with a density of between 0 and 20 people per hectare.

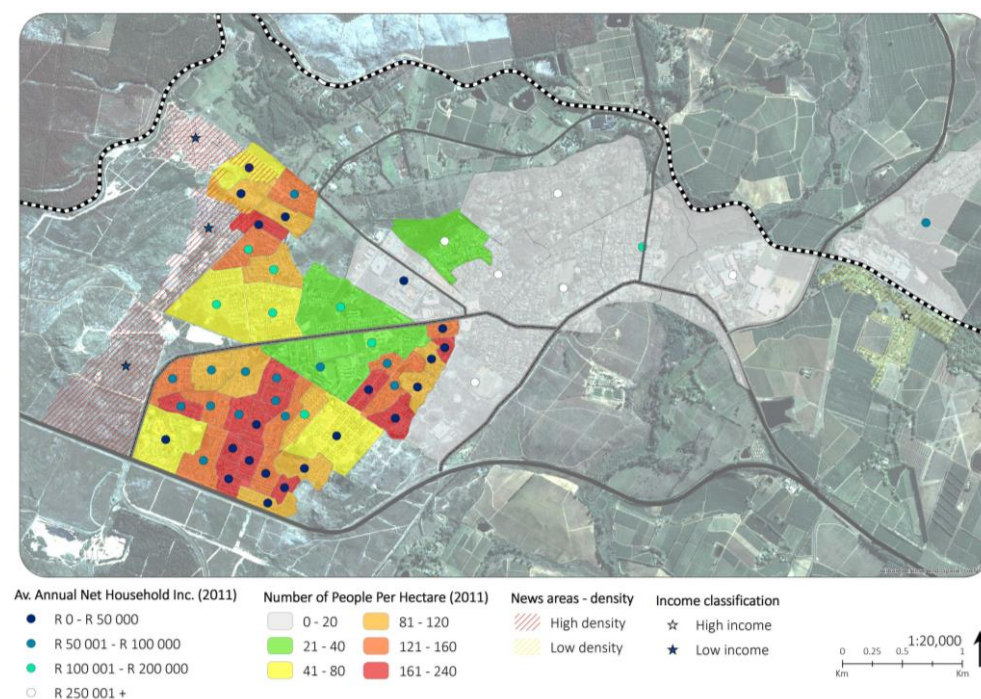


Figure A1.2.7: Grabouw: Household Density versus Household Income

2.2.4 Demographics

According to the 2011 Census, Grabouw's total population was recorded as 32 897. The 2018 Mid-Year Population Estimate (MYPE) population estimate for Grabouw is 38 703. The annual population growth rate of 3.9% was recorded between 2001 and 2011 and the annual growth rate was 2.4% between 2011 and 2018. As discussed in **subsection 4.4.3**, population growth projections for TWKM were undertaken by the D:EA&DP's Development Planning and Information Management Directorate, with the endorsement of the Western Cape:

Department of Social Development. The estimated future annual growth rate between 2018 and 2028 is 2.2%. Based on the population projections for Grabouw, the estimated total population by 2028 will be 48 016.

According to the Community Survey of 2016, the average household size was 3.7 persons. It is therefore estimated that approximately 12 977 households will reside in Grabouw by 2028.

The subsidized housing need in Grabouw is summarized in the following table (Source: WC: DoHS, July 2018):

Table A1.2.1: Grabouw: Housing Need

NO. OF INFORMAL SETTLEMENTS	HOUSING BACKLOG	INFORMAL STRUCTURES	NO. OF BACKYARDERS REGISTERED	NO. OF FARM WORKERS REGISTERED
10	5 277	4 161 units or 20 805 persons	524	592

The Rooidakke housing project has been the most recent subsidized housing project, with future expansion planned in phases. However, major stormwater issues have reduced the developable extent of the initial site. This, together with the unprecedented growth of informal settlements resulted in pressures on housing delivery.

Grabouw has been subject to significant land invasions, with new informal structures being erected at a high rate, especially in Siyayanzela. This informal settlement has effectively wiped out key CBAs previously present on the invaded land. The growth of the informal settlement is illustrated through comparison of aerial imagery from 2003. As illustrated, the rate of informal settlements growth was the highest after March 2016.

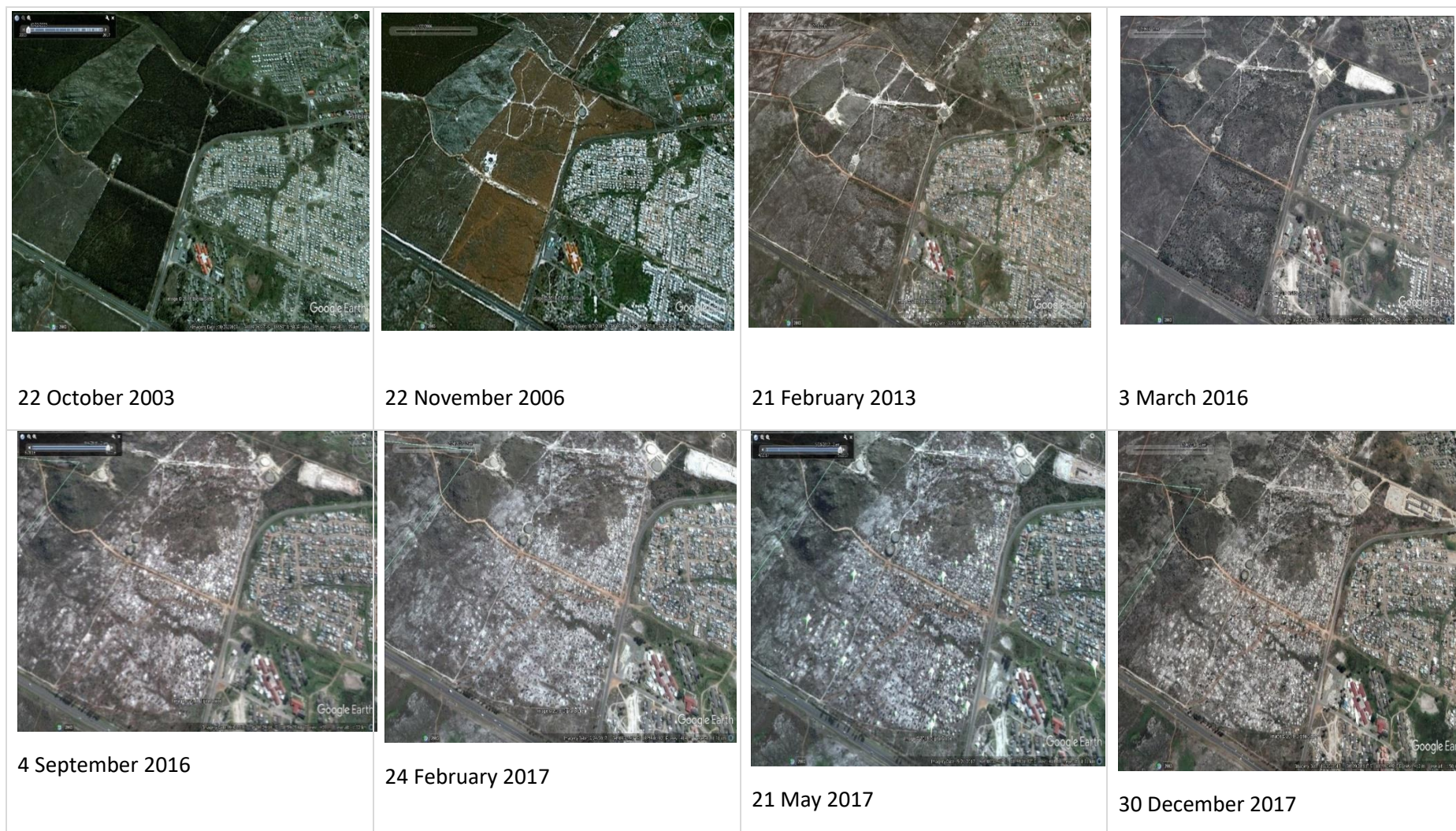


Figure A1.2.8: Grabouw: Aerial Photography illustrating the Growth of the Informal Settlements

2.3 BUILT ENVIRONMENT ANALYSIS

2.3.1 Movement Systems

There are three gateways to the town off the N2, each offering three distinctively different sense of place experiences. A fourth gateway off the R321 serves as the Franschhoek/ Villiersdorp entry point to the town. Ou Kaapse Weg creates a loop through the town, intersecting at the N2 at two points. The railway line runs through the town and the Elgin Station is located east of the R321.

SANRAL is planning to upgrade all three abovementioned access routes off the N2 as follows (Refer to **Plan 7.1**):

- The Oude Brug Road intersection (western access to Grabouw): Proposal to upgrade to a full diamond interchange with overpass road linking Grabouw with Rock View Dam Road;
- The Orchard Farmstall intersection (central access to Grabouw): Proposal to upgrade to a full diamond interchange with overpass road linking Grabouw with the Elgin Orchards agri-processing facility;
- The Peregrine Farmstall intersection (eastern access to Grabouw): Proposal for new off- and on-ramps and an overpass road linking Grabouw with Viljoenshoop Road.

These proposals by SANRAL will greatly improve accessibility to Grabouw and the areas to the south of the N2.

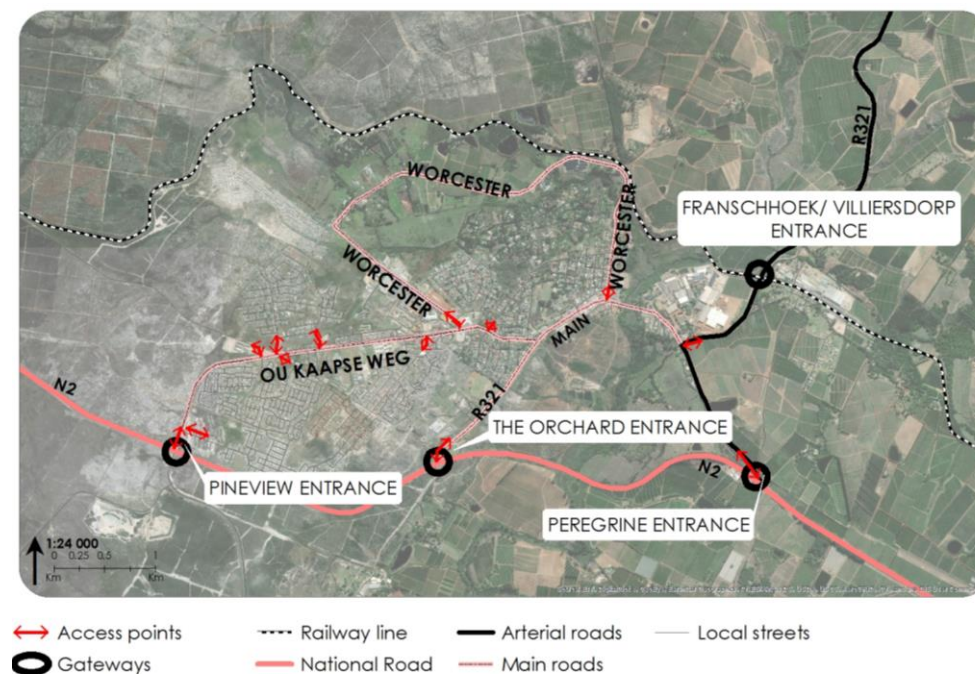


Figure A1.2.9: Grabouw: Gateways and Access Points

Grabouw is reasonably well served by taxi routes, both within the town and externally linking with Cape Town and surrounding towns.

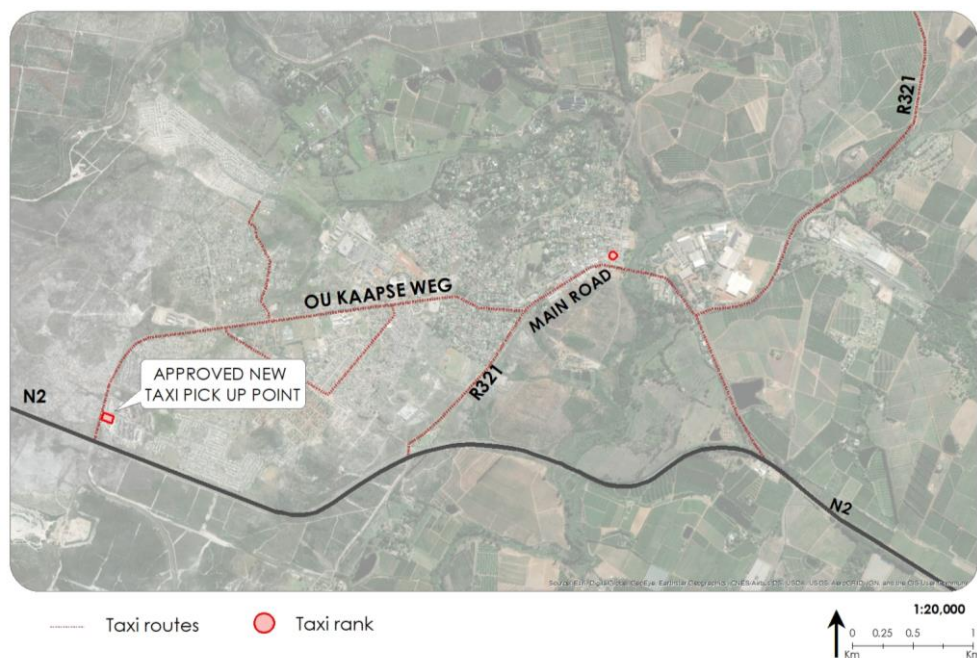


Figure A1.2.10: Grabouw: Taxi Routes

2.3.2 System of Social Facilities

Figure A1.2.11 illustrates the distribution of existing social facilities. Grabouw is reasonably well served by education facilities. However, only one clinic is situated in Grabouw, but as a result of the high population growth rate in the town, two additional clinics would be required by 2028. Provision for these facilities should be made near the future residential areas where people are dependent on NMT as a mode of transport.

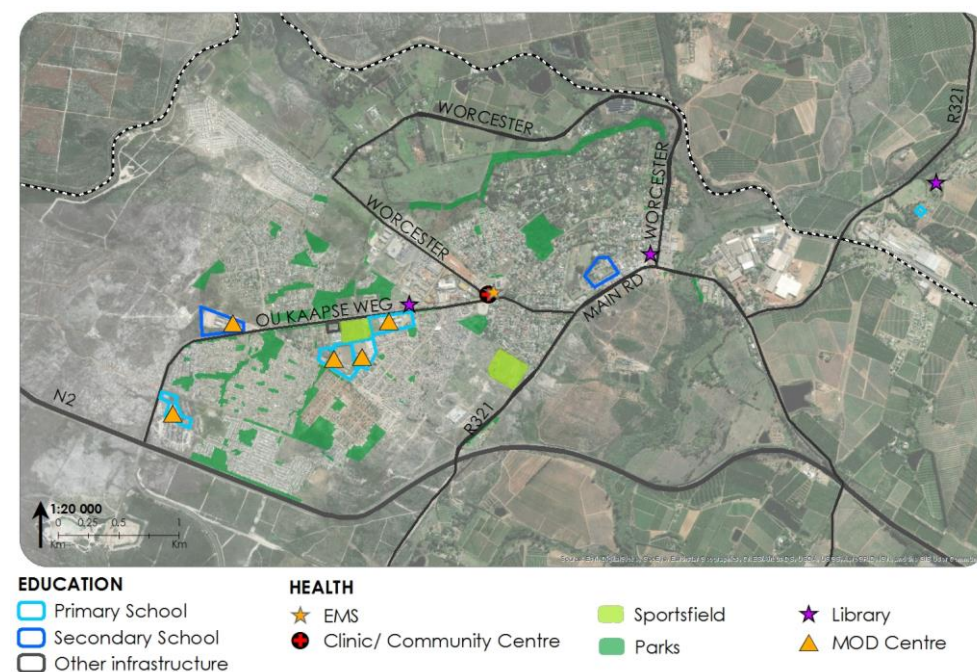


Figure A1.2.11: Grabouw: Social Facilities

2.3.3 Access to Schools

Figures A1.2.12 and A1.2.13 illustrate the walking distances to the existing schools within Grabouw. It shows that most schools are within reasonable walking distance to communities dependent on NMT as a mode of transport. Future residential areas proposed to the north and west of Rooidakke would be located outside of acceptable waking distances to existing schools (more than 30 minutes). The high population growth rate recorded for Grabouw would necessitate the need for another primary school. Provision for this space extensive use should be made near the future growth areas.

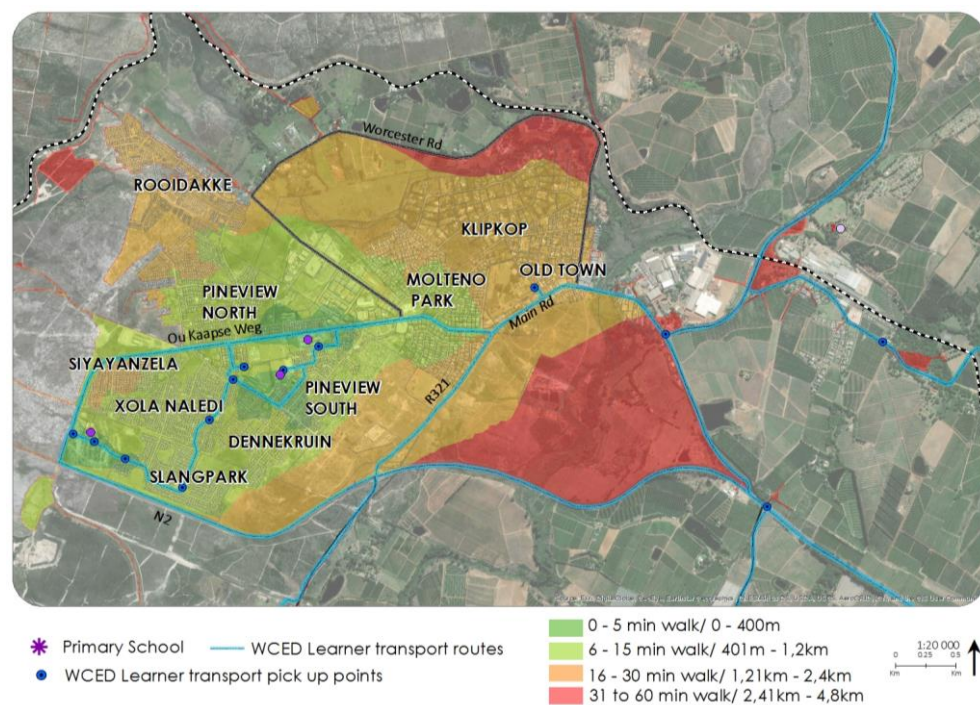


Figure A1.2.12: Grabouw: Walking Distances to Primary Schools

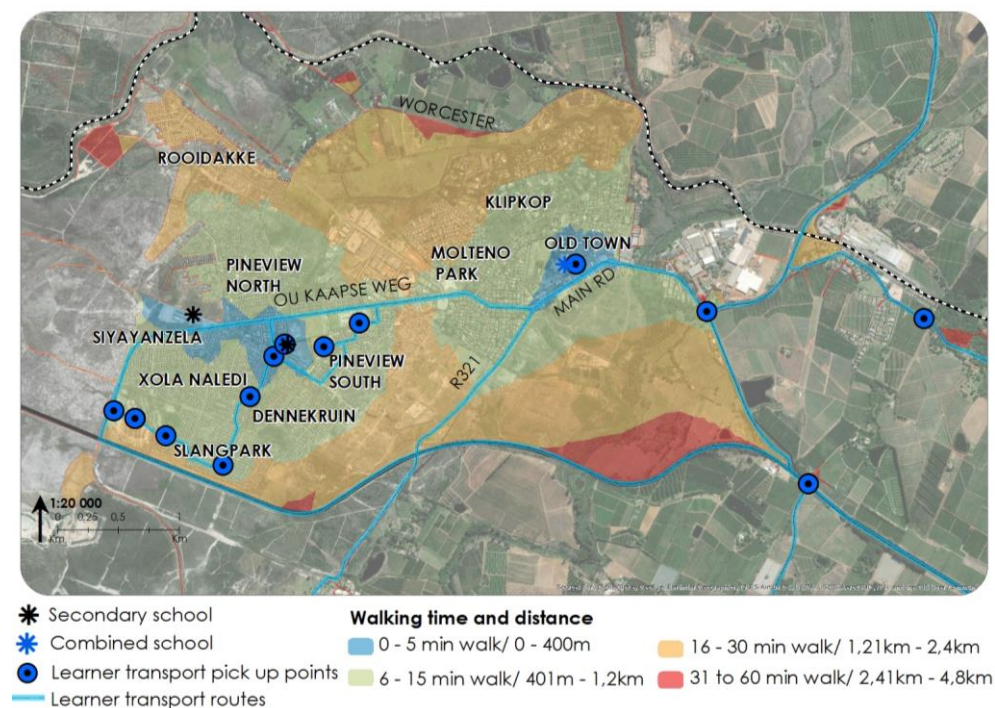


Figure A1.2.13: Grabouw: Walking Distances to Secondary Schools

2.3.4 Access to Health Facilities

Only one community day clinic is located in Grabouw, on the corner of Ou Kaapse Weg and Industrial Street. Even though the clinic is located in a central location within the town, it is not within reasonable walking distance to most communities dependent on NMT as a mode of transport. Future healthcare facilities should be located in the proximity of these communities, preferably clustered with other community facilities.

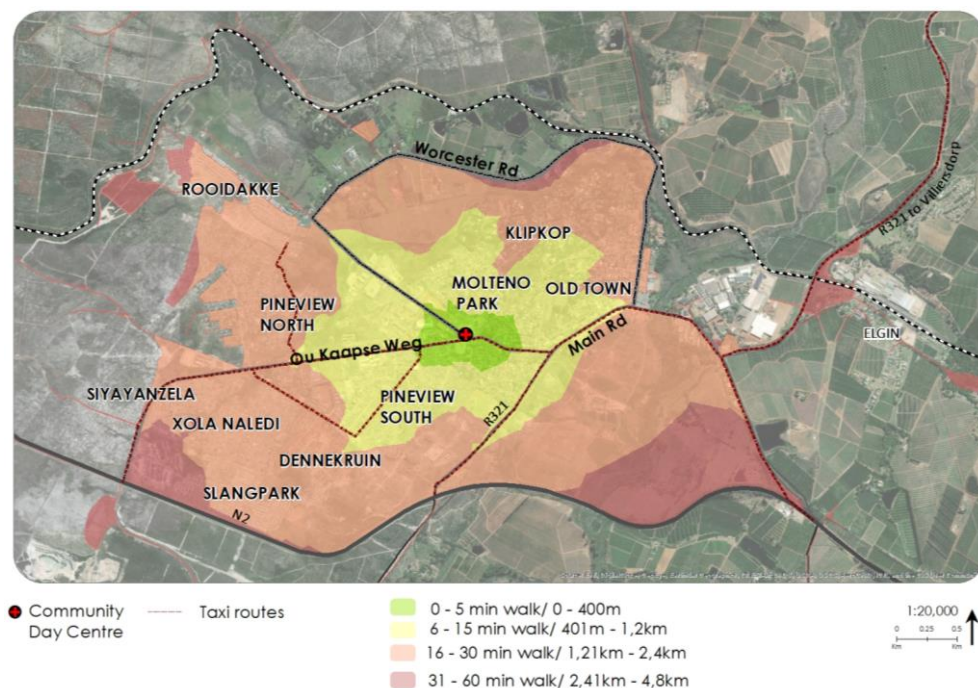


Figure A1.2.14: Walking Distances to Clinic

2.3.5 Cemeteries

The existing cemetery which serves all communities of all faiths is located outside of Grabouw, diagonally across from the Kromco Packaging Plant. As a result of restricted cemetery expansion areas, a severe crisis of land is expected. The high population growth in the west of Grabouw has led to the critical need for cemetery space. Areas need to be identified for this purpose, which will be dependent on detailed soil and environmental studies.

2.3.6 Engineering Infrastructure

(i) Water Supply and Storage

All bulk water is currently being pumped from the Eikenhof Dam via the new

Eikenhof pipeline. Water is purchased from the Groenland Irrigation Board. There is sufficient supply for the short to long term.

One water treatment works (WTW) has been upgraded with sufficient capacity.

There are seven bulk water supply reservoirs in Grabouw. Another reservoir has been built, but is not in a usable state.

The bulk water supply of Grabouw has been upgraded extensively before 2015 with a view to accommodate Rooidakke and Iraq (4 000 – 5 000 units), including a WTW, bulk water infrastructure and link to the treatment plant. The area, now occupied by Siyanzela, was previously proposed for high density residential and mixed use developments.

The rising main pipeline, linking treated water to the reservoir has not been completed according to the water upgrade programme. This facility is located in the heart of the Siyanzela settlement, although not restricting the supply to the pumping system for the immediate future. Siyanzela residents have direct access to potable water from the reservoir. This compromises the whole system significantly. Vandalism and the dumping of debris and waste in the reservoir and the pipeline cause the interruption of supply to other areas. As a result, more regular point treatment and water testing was done to ensure that the water supplied remains safe for consumption. This is a very serious potential health hazard to residents and essentially a stranglehold on the network. In addition, officials are not able to readily access the reservoirs for regular maintenance or to fix vandalised infrastructure due to safety concerns.

(ii) Wastewater

The wastewater treatment works (WWTW) have been upgraded and all areas, except informal areas, have water borne sewerage.

The sanitation system of Grabouw has been upgraded with a view to accommodate Rooidakke and Iraq (4 000 – 5 000 units), including a WWTW. However, the new informal settlement Siyanzela was not planned for and interim

services (40 chemical toilets) have been provided at Siyanzela and basic services will follow.

Capacity is currently sufficient, but there are constraints to implementing new services.

(iii) Stormwater

Grabouw is serviced by formal stormwater drainage systems. The town is serviced by two watercourses, namely the Palmiet River which drains along a corridor on the town's eastern boundary and the Klipdrift River wherein the majority of Grabouw's stormwater runoff is discharged.

Significant stormwater management constraints have been identified in Rooidakke. New detention ponds and a future stormwater drainage network are required to avoid downstream flooding. Downstream flooding may cause hydraulic failure of existing stormwater drainage systems or exacerbate existing flooding within Grabouw.

(iv) Roads

According to the TWKM Infrastructure Growth Plan (2019), the condition of roads within Grabouw ranges from average to very poor.

(v) Solid Waste

A new transfer station has been completed, located at the WWTW site. Composting is also done at this site.

(vi) Electricity

Electricity is provided exclusively by Eskom. There are two substations, with the larger substation being located at the Appletizer Factory. There is a high demand from pack sheds for electricity and the fruit industry. There are no network constraints, except where individuals at Siyayanzela are connected to the network illegally.

(vii) Summary of Infrastructure Constraints

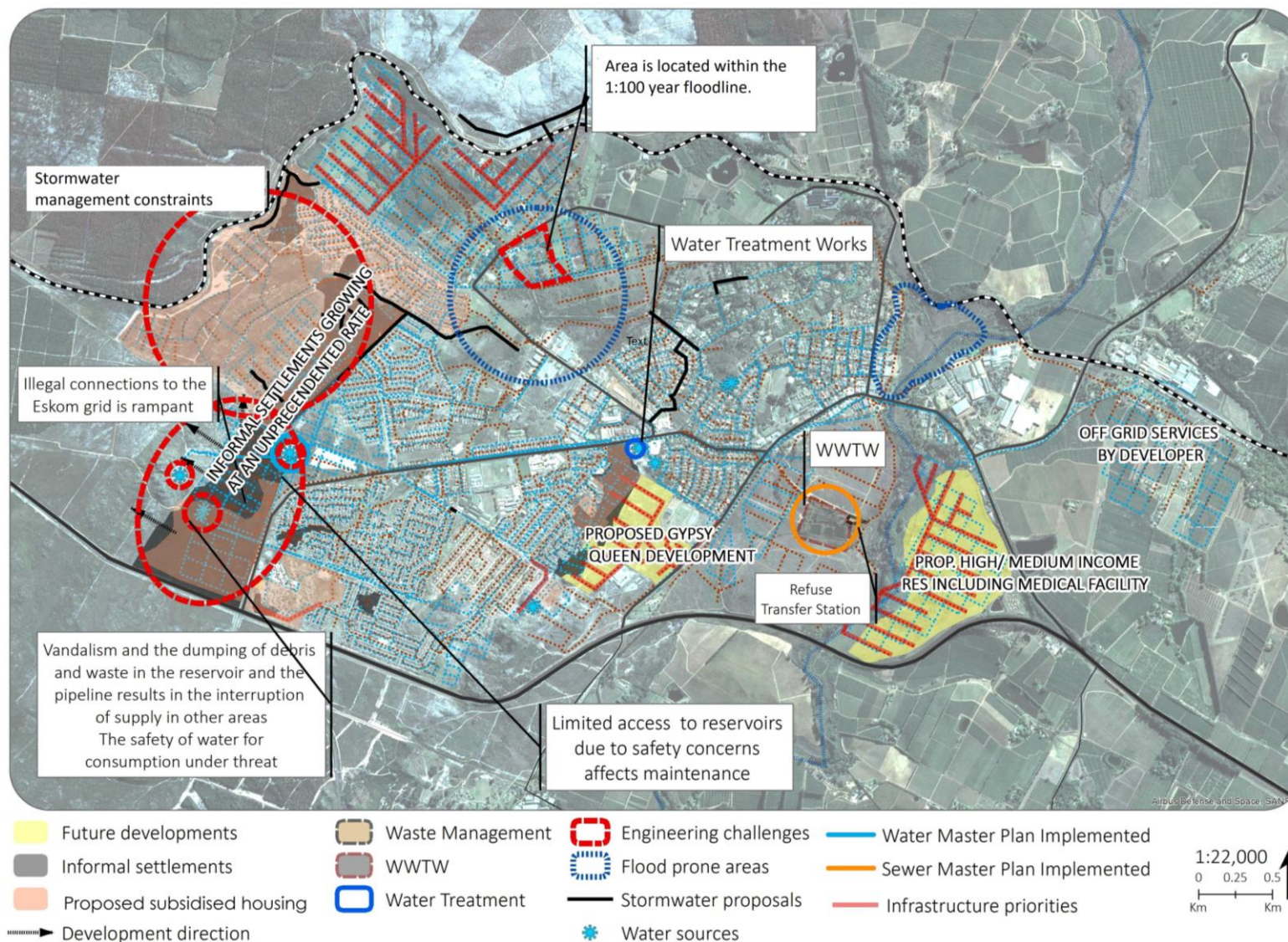


Figure A1.2.15: Grabouw: Summary of Infrastructure Constraints

3. VILLIERSDORP

3.1 BIOPHYSICAL AND AGRICULTURAL ANALYSIS

3.1.1 Environmental Status Quo

As mentioned previously, the town is developed at the foot of the Franschhoek Mountain Range. The Theewaterskloof and Villiersdorp Nature Reserves are located within this mountain range and form the northern and northeastern boundaries of the town. However, recent informal settlement invasion has made intrusion into the footprint of these nature reserves.

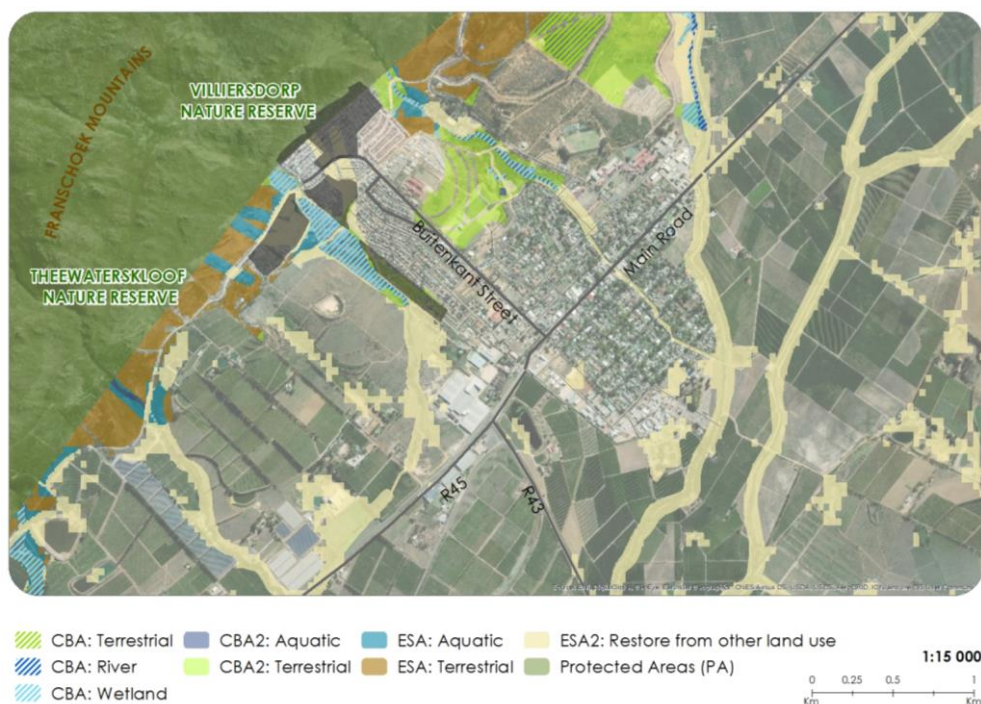


Figure A1.3.1: Villiersdorp: Core Biodiversity Areas and Ecological Support Areas

Sensitive areas of the biophysical environment within the urban edge should be conserved and should be protected from inappropriate urban development. Sensitive vegetation within the urban edge should be conserved where possible and should be incorporated into the open space system. The riverine environment of the Kommissiekraal and Elands River, as well as the wetlands and floodplains associated with these rivers, which function as ecological corridors and linear open space systems are of the utmost importance.

A number of watercourses drain from the mountains, through the settlement towards the Theewaterskloof Dam. Currently these watercourses are polluted by informal settlements located along the banks of the watercourses.

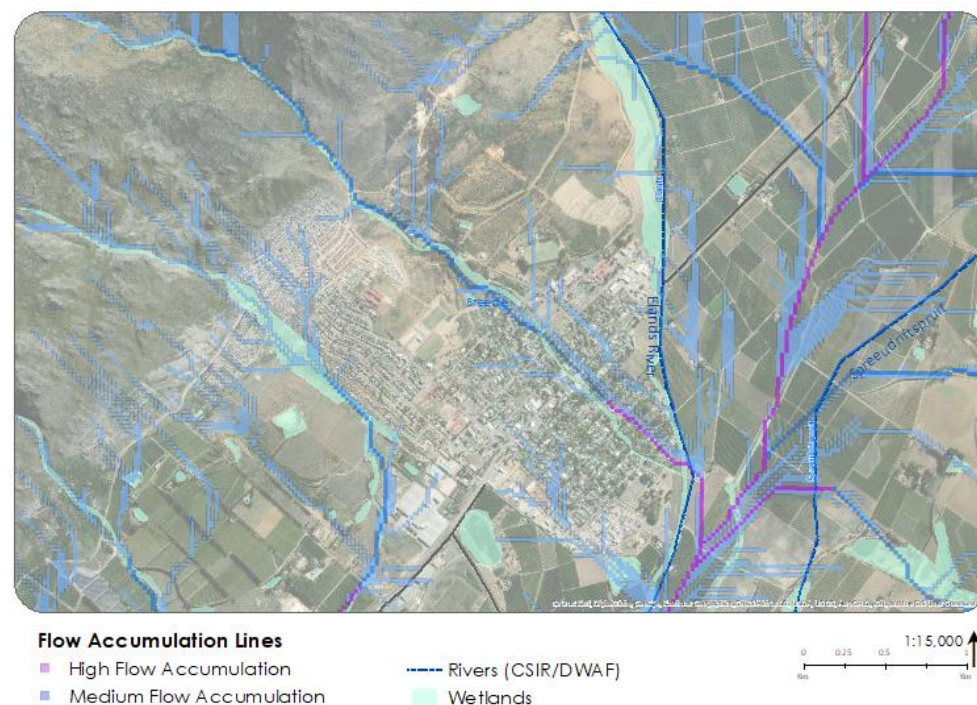


Figure A1.3.2: Villiersdorp: River Corridors and Wetlands

The surrounding area is intensively developed for agriculture. However, remnants of natural environments can be observed within the vicinity of the town. These natural areas are mainly limited to the foot of the mountains, as well as along watercourses that drain from the mountain areas, through the town and into the Theewaterskloof Dam. The Elandskloof River act as an ecological corridor and an ecological link between the mountain catchment area and the Theewaterskloof Dam.

3.1.2 Environmental Risks

The following figure illustrates the identified environmental risks which limit the development potential of the land.

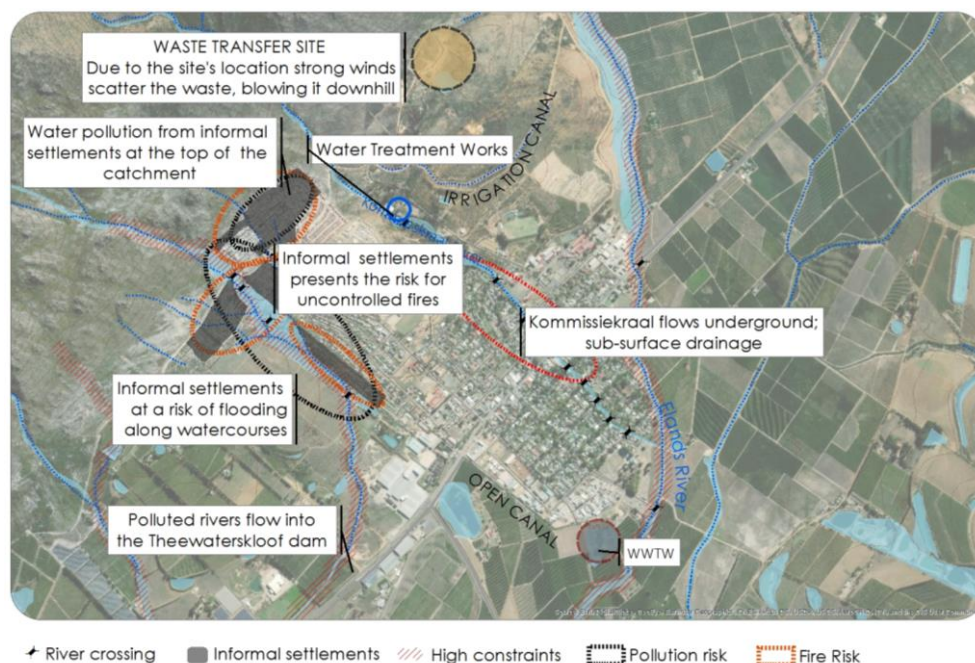


Figure A1.3.3: Villiersdorp: Summary of Environmental Risks

3.1.3 Agricultural Status Quo

The rural areas surrounding Villiersdorp are characterised by high potential and valuable agricultural land. This plays a crucial factor when considering the amendment of the town's urban boundaries. The area towards the northwestern boundary of the town is characterised by undevelopable slopes of 1:4 and steeper.

Agricultural development is focused on fruit production with pome fruit being the dominant products. Some grape and stone fruit are cultivated with limited areas developed for pastures.

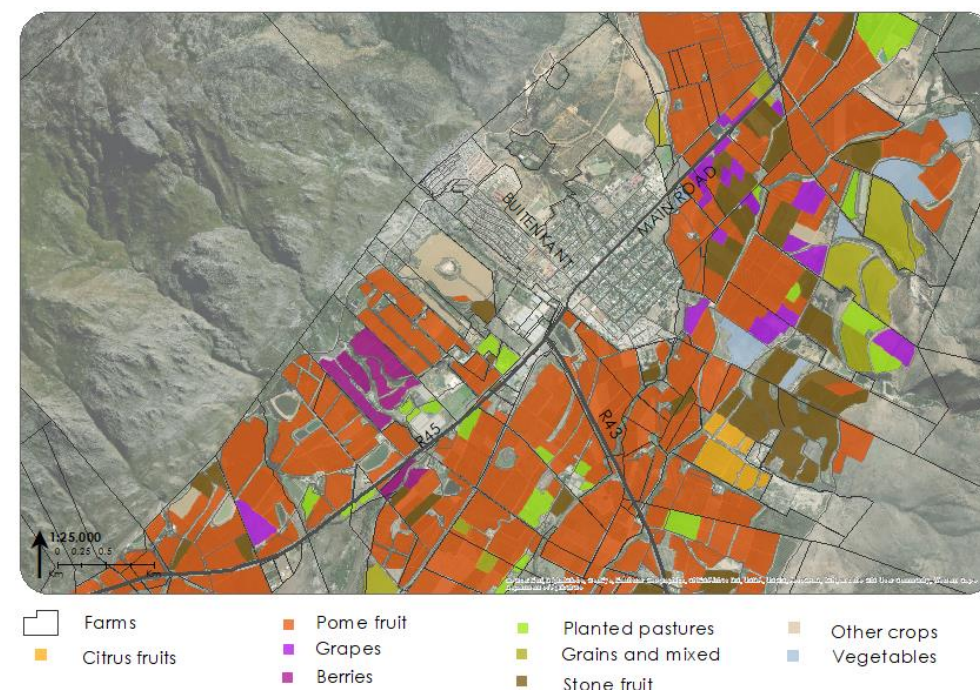


Figure A1.3.4: Villiersdorp: Main Locally Produced Crops

3.2 SOCIO-ECONOMIC ANALYSIS

3.2.1 Economic Systems

Economic activity in Villiersdorp is concentrated along the R45 Road. This creates challenges for lower income communities, given the fact that car ownership is limited and residents have to walk to commercial opportunities, mainly located along Main Road in town. Given the topography of the town, the commute from these residential areas to the economic corridor of the town cannot be regarded as pedestrian friendly.

Some house shops are located within informal settlements and subsidized housing developments. Products that can be bought from these shops are limited in range.

Limited industrial activities are located within the town, which are limited to mainly service orientated activities. Two large pack shed facilities are also located at the intersection of the R45 and R43 roads.

The economy of the town is heavily reliant on the agricultural sector. This poses the risk that the town's economy can cease, should the agricultural sector fail. This sector was severely affected with the recent drought in the Western Cape. It is therefore important that economic development opportunities be explored outside of the agricultural sector.

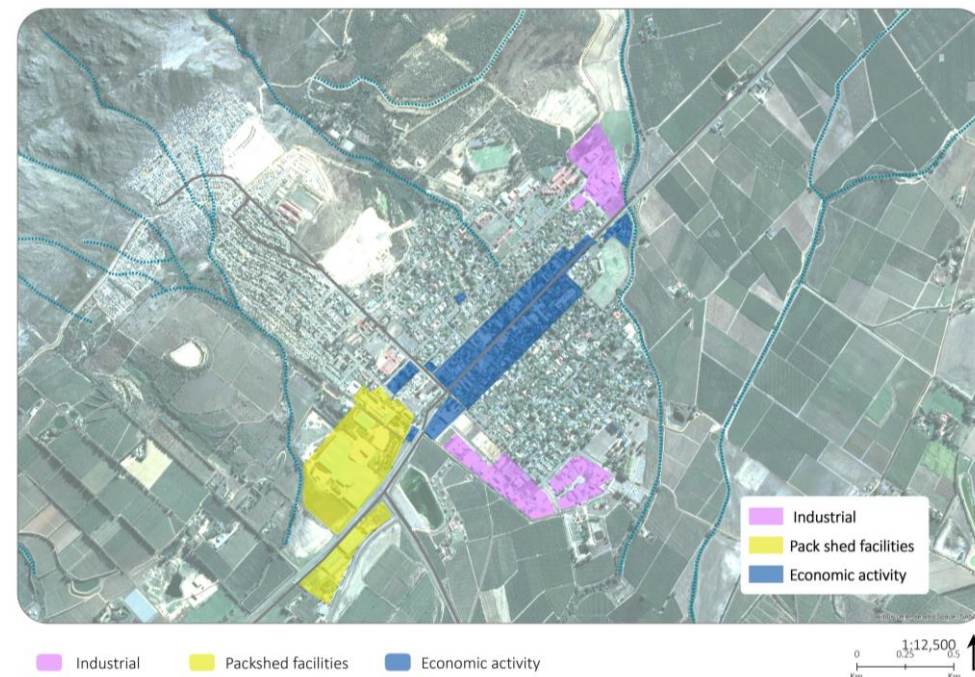


Figure A1.3.5: Villiersdorp: Concentration of Economic and Industrial Activity

3.2.2 Residential Patterns

As mentioned in previous sections, the topography of the surrounding environment, as well as intensively developed agricultural land dictates the spatial form of Villiersdorp. Subsidized housing developments and less affluent residential areas, as well as the informal settlements are all located north of the R45. These areas are also in the steepest developed areas within the town. The higher income residential areas are mainly located south of the R45, towards the Elandsloof River.

Other than subsidized housing development, very little residential development has taken place in Villiersdorp over the last decade. A large scale subsidized human settlement development is earmarked to the west of the town, known as

the Destiny Farm development. The planning for this development is currently in process. Development of this area will not be limited to housing opportunities alone. A full range of social facilities will be accommodated, as well as areas for commercial development.

Informal residential development has encroached on the Theewaterskloof and Villiersdorp Nature Reserves. Many of these informal structures are located on steep slopes that are not conducive for development or allows for the provision of affordable services. More suitable sites for residential development should be provided.

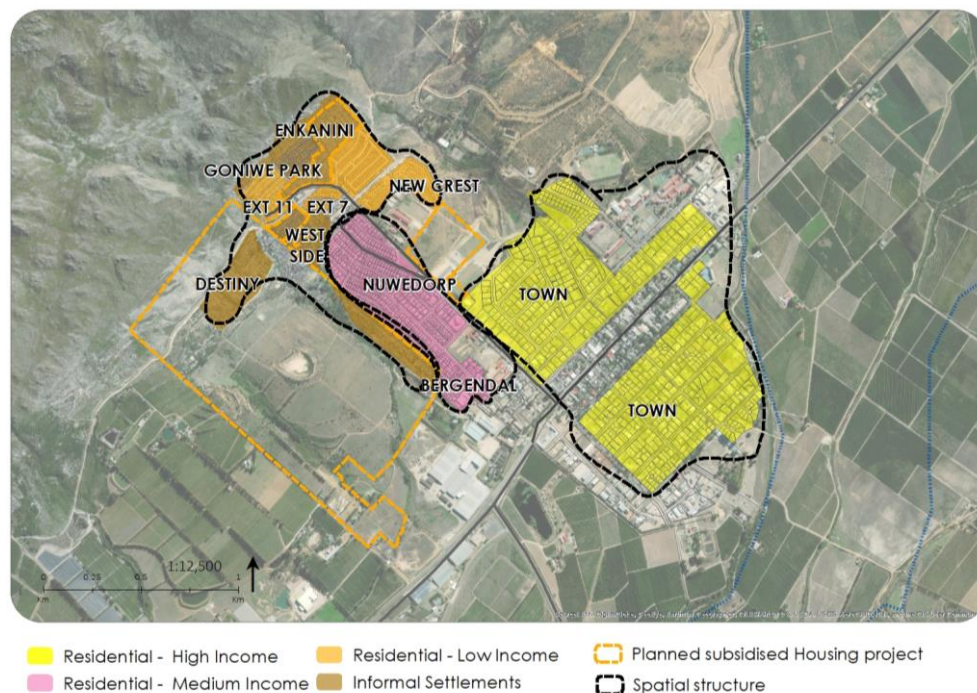


Figure A1.3.6: Villiersdorp: Existing, Approved and Planned Residential Developments

3.2.3 Income Distribution

The image below clearly illustrates the skewed distribution of household densities and income levels across the town, with higher densities prevalent in the north of Villiersdorp, in the same areas where households with the lowest incomes and informal settlements are concentrated. The southern part of Villiersdorp consists of more affluent residents with a density of between 0 and 20 people per hectare.

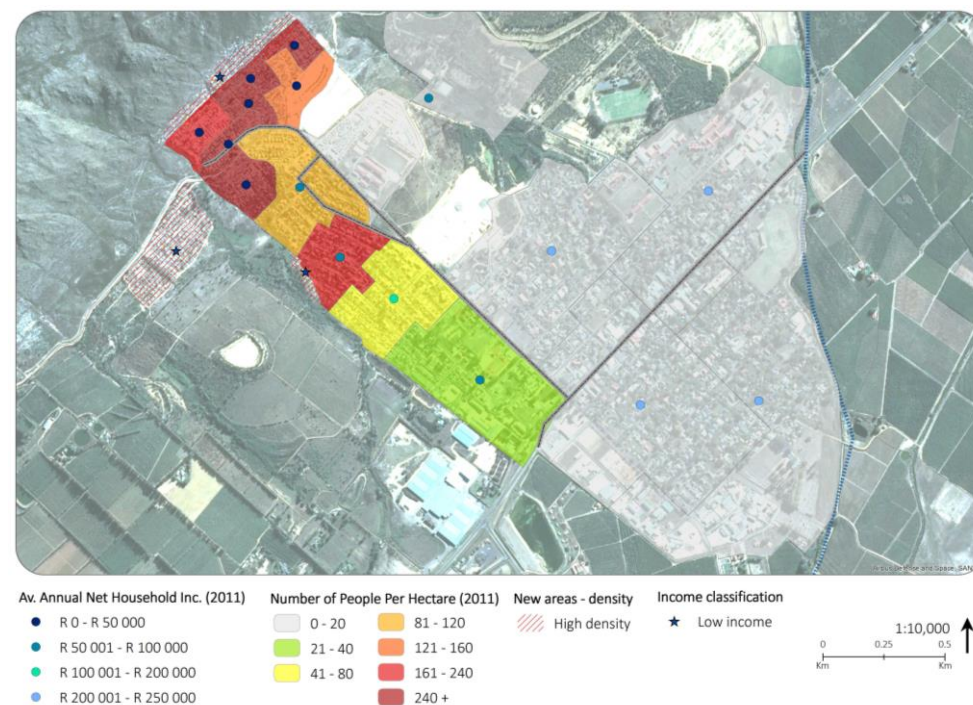


Figure A1.3.7: Villiersdorp: Household Density versus Household Income

3.2.4 Demographics

Based on the population projections for Villiersdorp, the estimated total population by 2028 will be 15 431. The Community Survey of 2016 recorded that

the average household size for Villiersdorp is 2.5 persons per household. It is therefore estimated that approximately 6 172 households will reside in the town by 2028. In order to accommodate the population growth projections, ± 34 ha of land will be required.

The number of households that fall within the subsidized housing category in Villiersdorp is summarized as follows:

Table A1.3.1: Villiersdorp: Housing Need

NO. OF INFORMAL SETTLEMENTS	HOUSING BACKLOG	INFORMAL STRUCTURES	NO. OF BACKYARDERS REGISTERED	NO. OF FARM WORKERS REGISTERED
8	3 644	2 315 units 11 575 persons	706	623

3.3 BUILT ENVIRONMENT ANALYSIS

3.3.1 Movement Systems

The R43, which is an important link between Grabouw and Worcester, runs through the town and links with the R45 to the west. The R43 creates a link between Worcester and the N2. Economic development in the town is concentrated along the R45 route in order to capitalize on the traffic moving through the town.

The town is characterized by a grid type road layout aligned parallel and perpendicular to the R43. Due to the nature of the topography, roads located north of the R43 have steep gradients, with roads located to the south of the R43 having more gradual gradients.

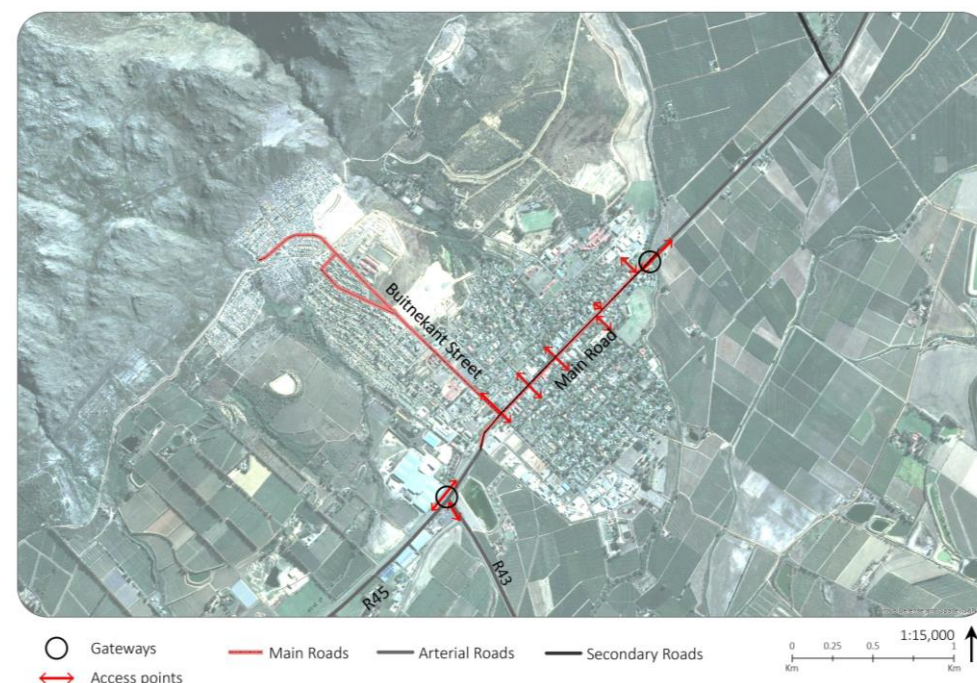


Figure A1.3.8: Villiersdorp: Gateways and Access Points

The lower income areas of Villiersdorp are reasonably well served by minibus taxis. Two taxi ranks are also located at strategic locations in the town.



Figure A1.3.9: Villiersdorp: Taxi Routes

3.3.2 System of Social Facilities

The following figure illustrates the distribution of existing social facilities. Villiersdorp accommodates a range of social facilities, predominantly located near the lower income areas in the northwestern part of town.

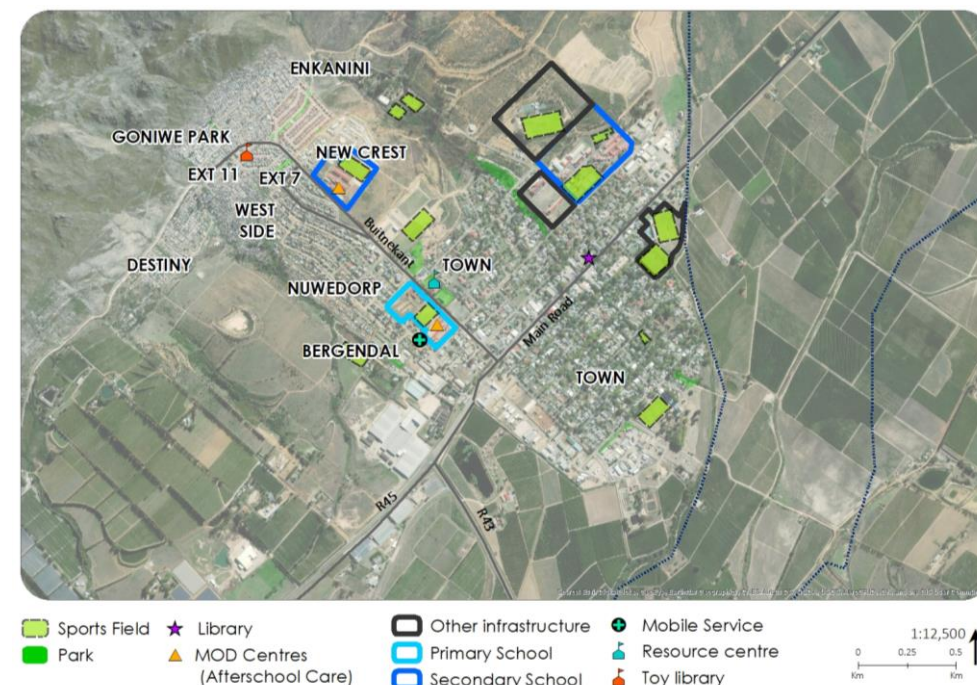


Figure A1.3.10: Villiersdorp: Social Facilities

3.3.3 Access to Schools

The following two figures illustrate the walking distance to the existing schools within Villiersdorp. It shows that the primary school and secondary schools are located within reasonable walking distance to communities dependent on NMT as a mode of transport.

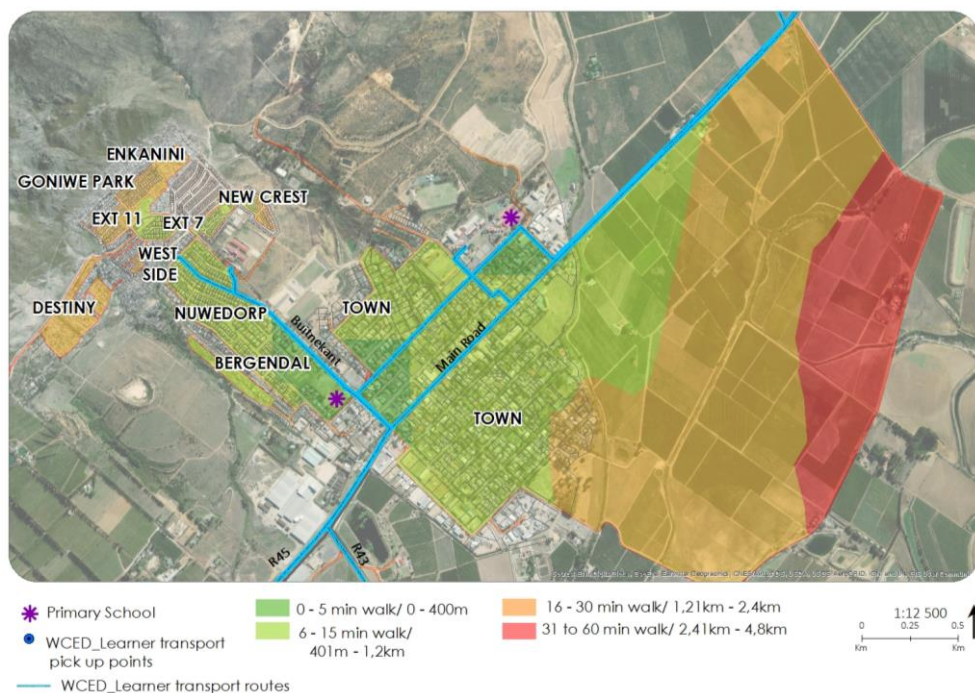


Figure A1.3.11: Villiersdorp: Walking Distances to Primary Schools

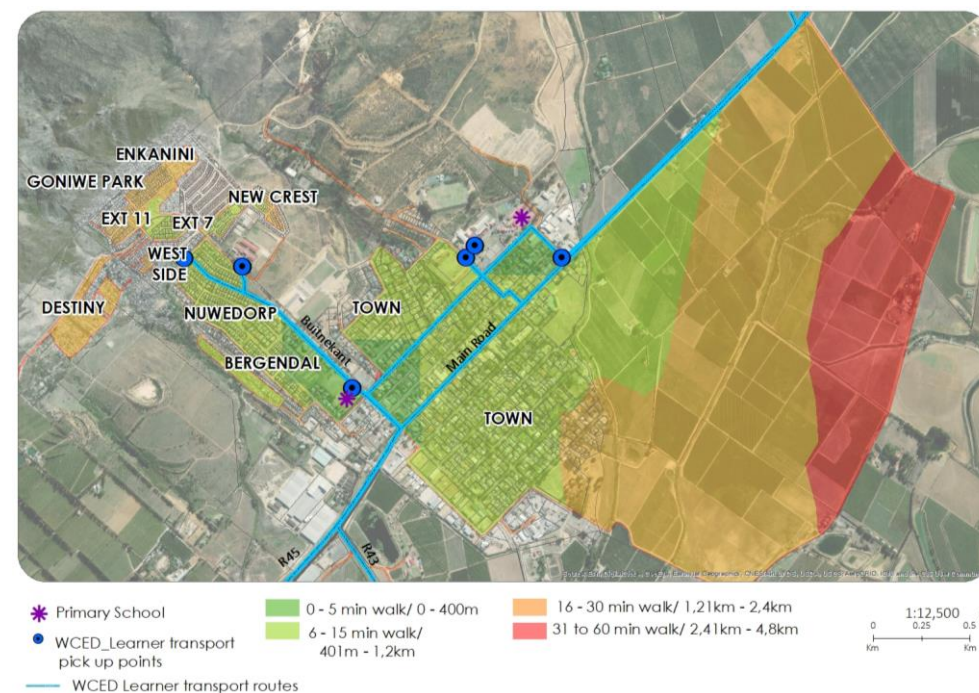


Figure A1.3.12: Villiersdorp: Walking Distances to Secondary Schools

3.3.4 Access to Health Facilities

The following figure illustrates the walking distance to the existing site for the mobile clinic. It shows that the central part of town is within reasonable walking distance to the clinic. However, the lower income areas to the west of town are located farther than a 30 minute walking distance. With the proposed expansion of low income residential development to the west and northwest of town, it would be beneficial to provide a clinic within walking distance to communities dependent on NMT.

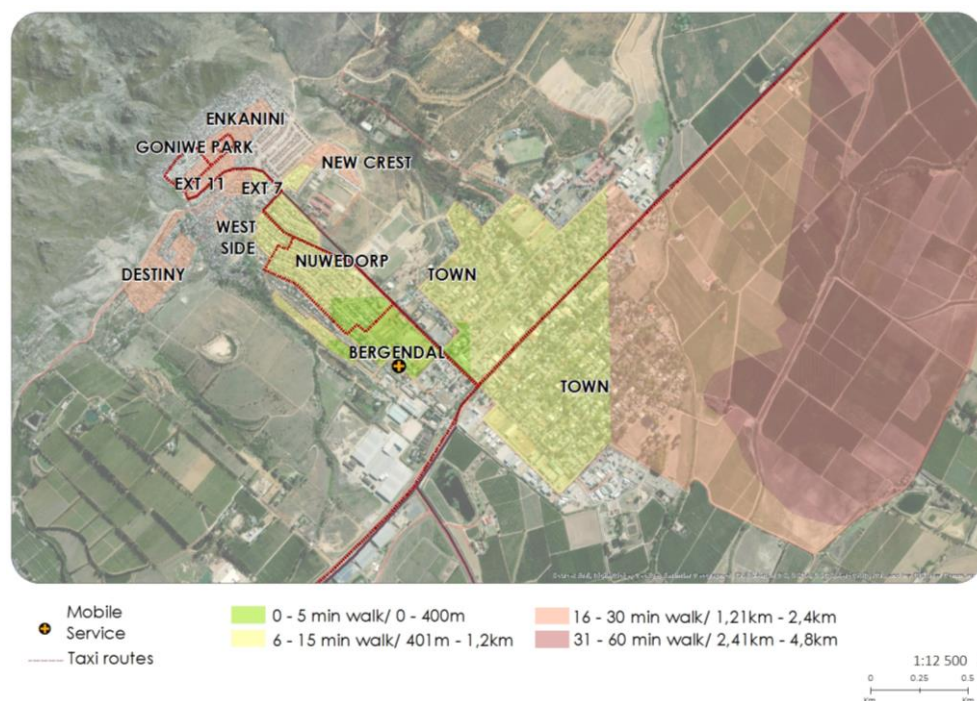


Figure A1.3.13: Walking Distances to Mobile Clinic

3.3.5 Cemeteries

There are two cemeteries in Villiersdorp and sufficient land has been reserved for the expansion of the cemetery.

3.3.6 Engineering Infrastructure

(i) Water Supply and Storage

Villiersdorp is supplied with raw water from a number of water sources, namely the Kommissieskraal River, the Elandskloof Government Water Scheme and four boreholes. Raw water is conveyed from the Elandskloof via a canal and pipeline, owned by the Elandskloof Irrigation Board, to Villiersdorp

Only one borehole is operational and is used for the irrigation of the sports field. The other three boreholes have too high levels of iron and manganese. The Municipality aims to refurbish these three boreholes to be used as an alternative water source.

All potable water is treated at one purification plant. Water is circulated from the purification plant to 19 small reservoirs. Significant MIG funds have been spent in Villiersdorp to commence with the development of Destiny Farm, although the development has been scaled down substantially. Approximately 2 000 opportunities will be accommodated.

(ii) Wastewater

Wastewater is treated at the Villiersdorp WWTW, an activated sludge plant. Water borne sewerage is provided in most places. However, no sewerage services are provided to people located on the steep mountain slopes within the Nature Reserve who are earmarked to be relocated to Destiny farm. Water pollution problems have been experienced in lower Westside. Stormwater flows into the river, which feeds farms further downstream and eventually leads to the Theewaterskloof Dam.

(iii) Stormwater

Remedial work is required to certain sections of the stormwater system.

(iv) Roads

The condition of roads in Villiersdorp ranges from good to poor.

(v) Solid Waste

The Villiersdorp landfill site is no longer operational. There is a transfer station adjacent to the landfill site from where Villiersdorp's waste is transported for disposal at the Karwyderskraal regional facility. Unfortunately, the transfer station is being illegally dismantled for use as building materials.

A landfill closure provisions report was done in 2018. The Municipality is unable to get the landfill closure costs funded through the MIG. However, the Municipality may consider using the Municipality's Capital Replacement Reserve. The Villiersdorp landfill site is considered the priority site to be rehabilitated in relation to other landfill sites in the Municipality.

(vi) Electricity

The Municipality is exclusively responsible for the supply to the town via the Eskom 66/11kV substation located approximately 3 km to the north of town. A single municipal owned 11kV overhead line is installed between the point of supply at the Eskom substation and Villiersdorp town.

(vii) Summary of Infrastructure Constraints

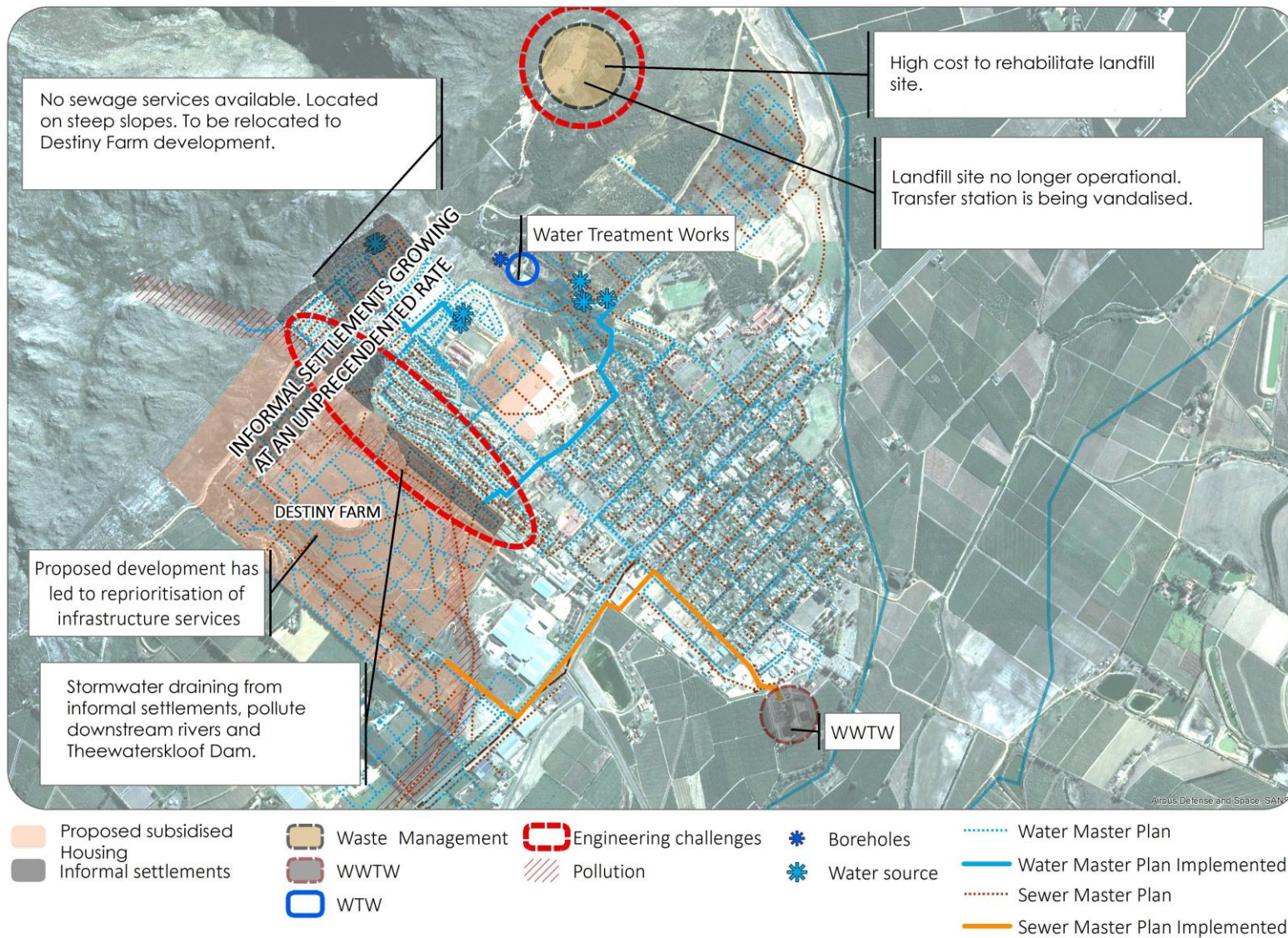


Figure A1.3.14: Villiersdorp: Summary of Infrastructure Constraints

4. BOTRIVIER

4.1 BIOPHYSICAL AND AGRICULTURAL ANALYSIS

4.1.1 Environmental Status Quo

Botrivier is located next to the Kogelberg Biosphere Reserve and the Groenlandberg Conservancy. Some critical biodiversity areas are also located within the current urban edge of the town.

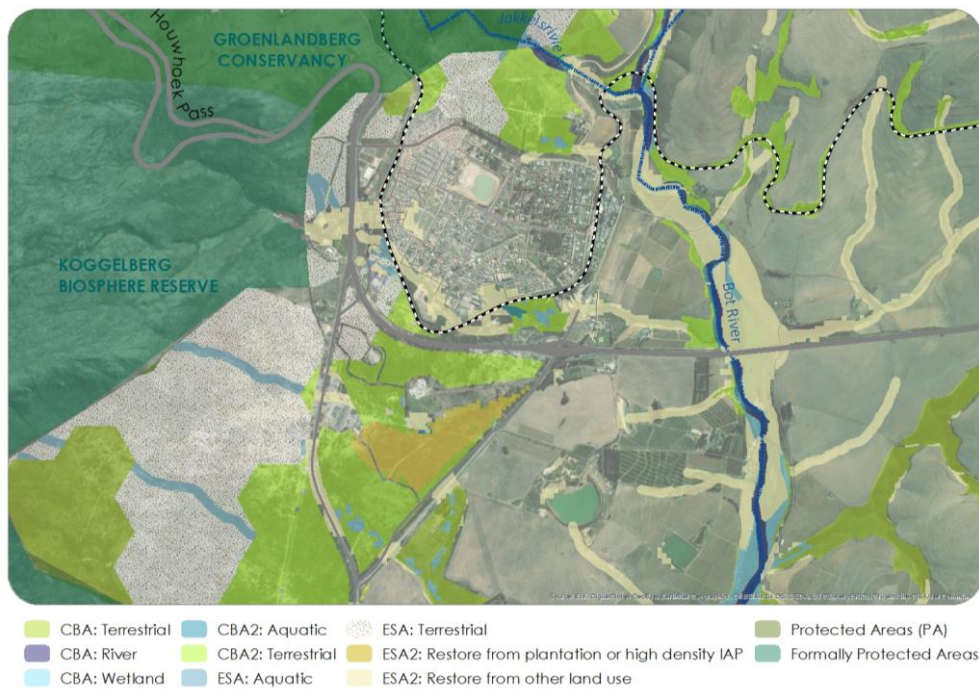


Figure A1.4.1: Botrivier: Core Biodiversity Areas and Ecological Support Areas

The Bot River flows past the town to the north and the east, with a few watercourses flowing through the town. A number of wetland areas are present within the town. These natural constraints limit the available land for future

urban development.

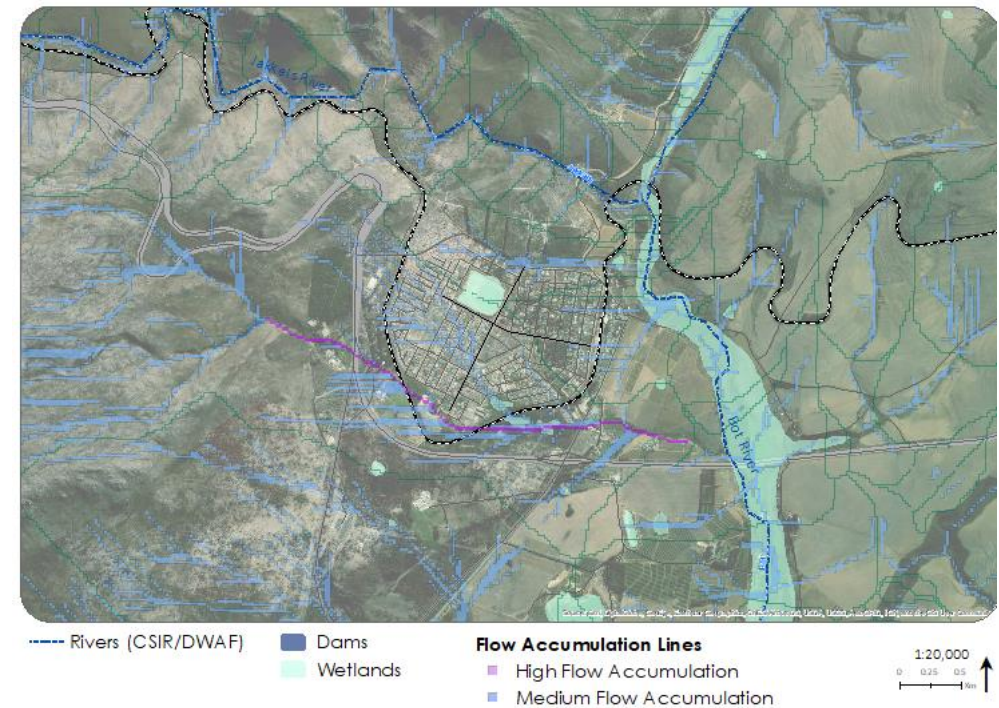


Figure A1.4.2: Botrivier: River Corridors and Wetlands

4.1.2 Environmental Risks

The following figure illustrates the identified environmental risks which limit the development potential of the land.



Figure A1.4.3: Botrivier: Summary of Environmental Risks

4.1.3 Agricultural Status Quo

Agricultural development is located to the east of town and production includes grapes, grains and planted pastures. Well-developed wine estates offer opportunities for supporting, yet subservient, tourism based development.

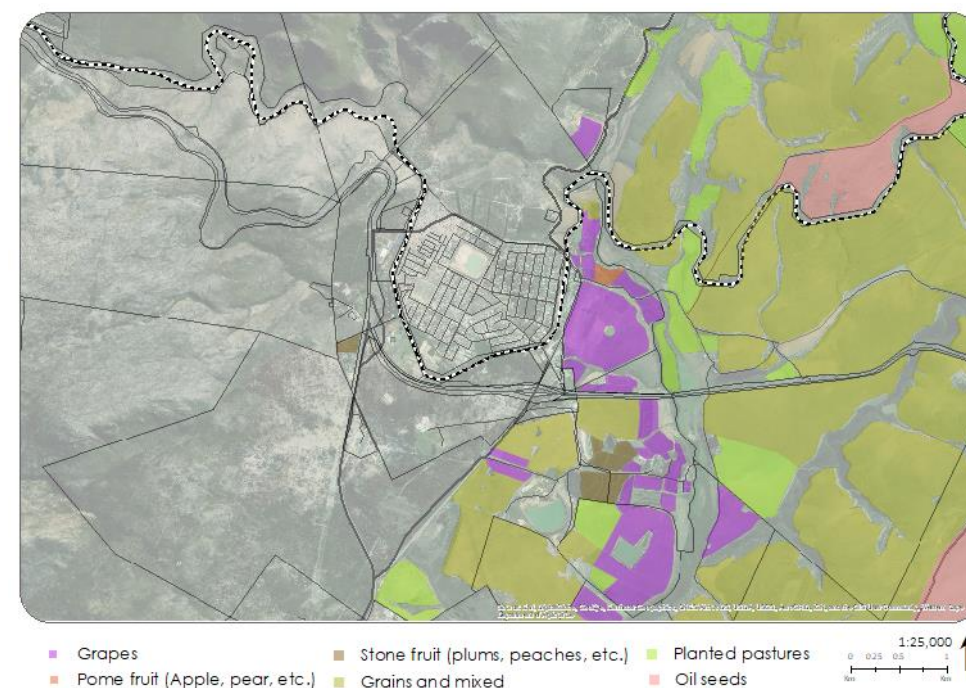


Figure A1.4.4: Botrivier: Main Locally Produced Crops

4.2 SOCIO-ECONOMIC ANALYSIS

4.2.1 Economic Systems

Very little economic activity occurs within the settlement. A small concentration of economic activity is located at the Botrivier Station.

A small industrial development was recently established within the settlement. Only limited industrial development has been taken up in the area designated for industrial development south of the N2.

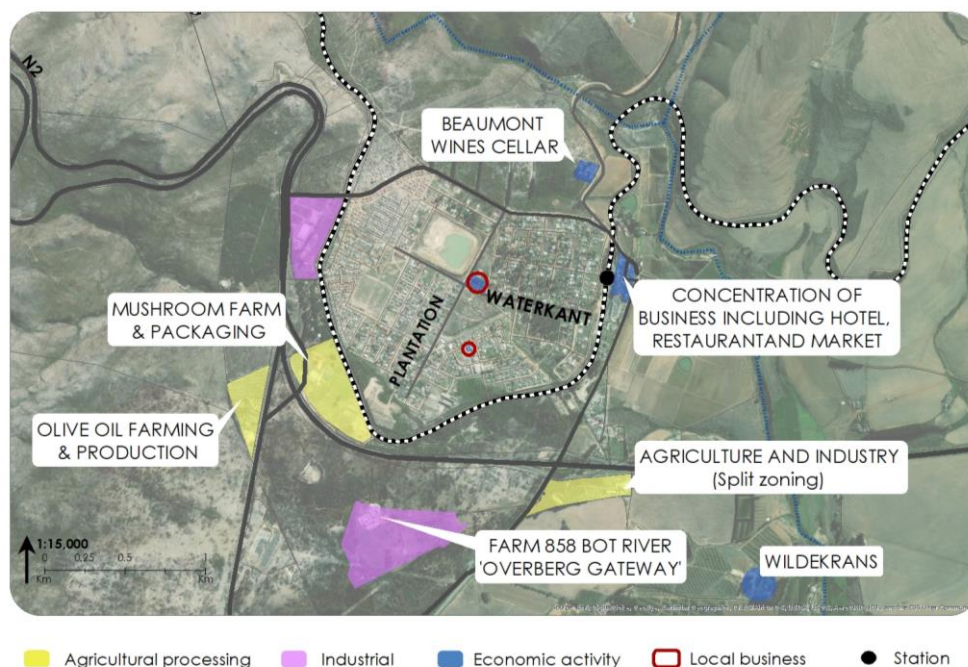


Figure A1.4.5: Botrivier: Concentration of Economic and Industrial Activity

4.2.2 Residential Patterns

The town is divided into two socio-economic areas by Plantation Street. The western parts contain predominantly the lower income areas and the eastern parts are predominantly the higher income residential areas.

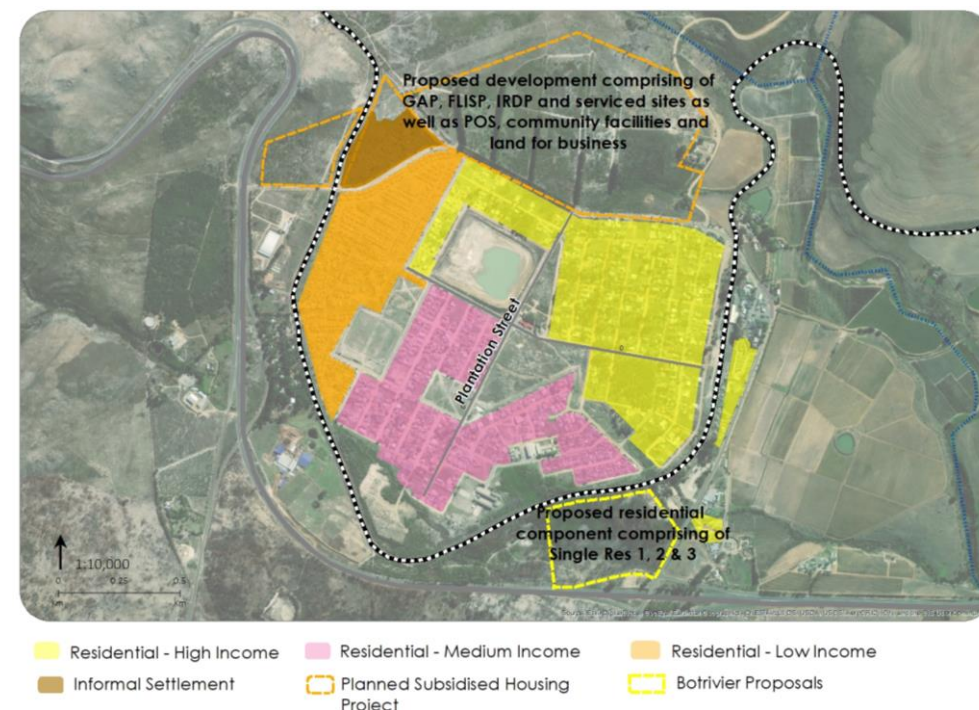


Figure A1.4.6: Botrivier: Existing, Approved and Planned Residential Developments

4.2.3 Income Distribution

Figure A1.4.7 illustrates the socio-economical gradient, which ranges from lower income households in the western residential areas, to medium income households in the central part, and the eastern residential areas consisting of higher income households. The residential densities are therefore also higher in the western part and the density decreased to the east.

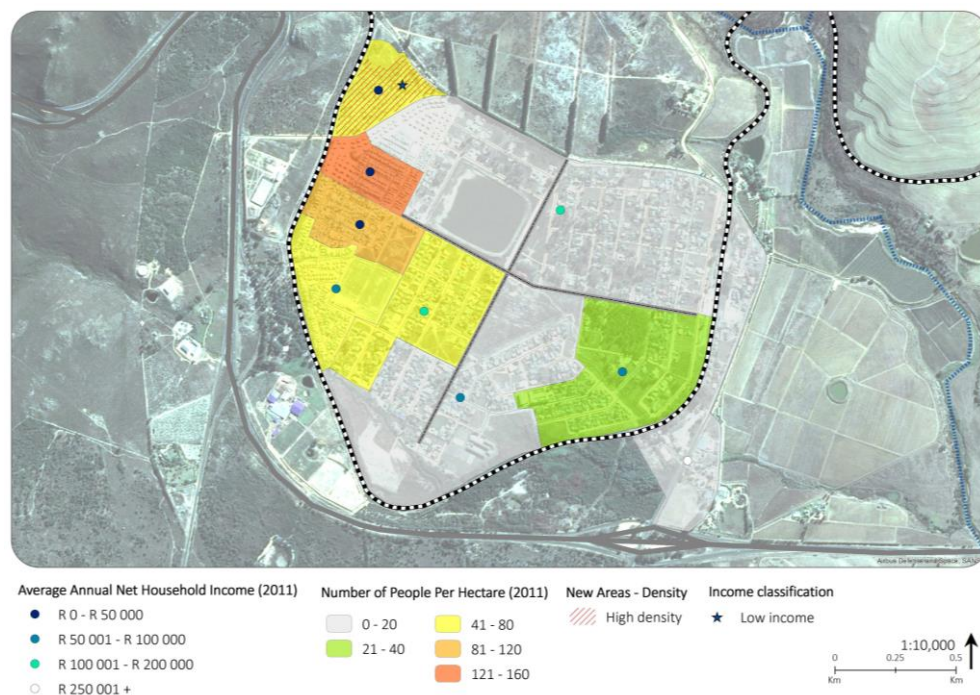


Figure A1.4.7: Botrivier: Household Density versus Household Income

4.2.4 Demographics

Based on the population projections for Botrivier, the estimated total population by 2028 will be 8 035. According to the Community Survey of 2016, the average household size for Botrivier was 3.1 persons per household. It is therefore estimated that approximately 2 592 households is projected by 2028.

The number of households that fall within the subsidized housing category in Botrivier is summarized in **Table A1.4.1**:

Table A1.4.1: Botrivier: Housing Need

NO. OF INFORMAL SETTLEMENTS	HOUSING BACKLOG	INFORMAL STRUCTURES	NO. OF BACKYARDERS REGISTERED	NO. OF FARM WORKERS REGISTERED
1	735	389 units 1 945 persons	257	89

4.3 BUILT ENVIRONMENT ANALYSIS

4.3.1 Movement Systems

The northern part of Botrivier is accessed via Hoof Street, which feeds off the off-ramp north of the N2. The southern part, the town's largely undeveloped industrial area, is located south of the N2 and there is not a direct physical link between these two parts.

The town originated from the Botrivier Station and hotel, which is still in operation, and developed westward. The 'U-shaped' railway line that abuts the settlements creates a sense of enclosure around the town. Once the railway is crossed to access to town, there is a muted sense of arrival into Botrivier as the busier station precinct on the east of the town is separated by the railway line.

Although Plantation Road serves as the main central collector route in the settlement, very little activity occurs along this road. The same applies to Waterkant Street, which intersects Plantation Road and leads to the Botrivier Station. Existing trading spaces provided along Waterkant Street are currently under-utilised.

There is high pedestrian movement crossing the N2 to and from Botrivier, causing a high accident zone along this stretch of road. This may be attributed to the fact that no public transport serves this settlement. Residents are regularly seen standing within the N2 shoulder in order to get transport to access services

elsewhere.

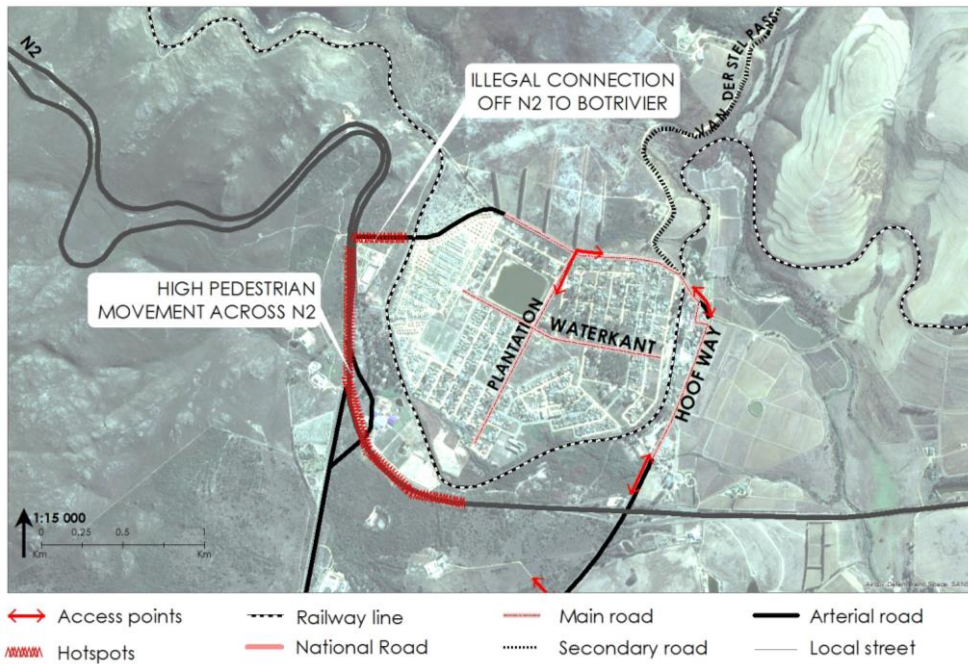


Figure A1.4.8: Botrivier: Gateways and Access Points

Due to the relative small spatial extent and small population residing in Botrivier, the town is not well-served by minibus taxis or other public transport systems. Since the town is only ± 1.6 km across (east-west and north-south), which relates to a walking distance of ± 24 minutes, pedestrians can access most parts of town within a reasonable walking distance.

4.3.2 System of Social Facilities

The following figure illustrates the distribution of existing social facilities. Basic social facilities are located in the central part of town.

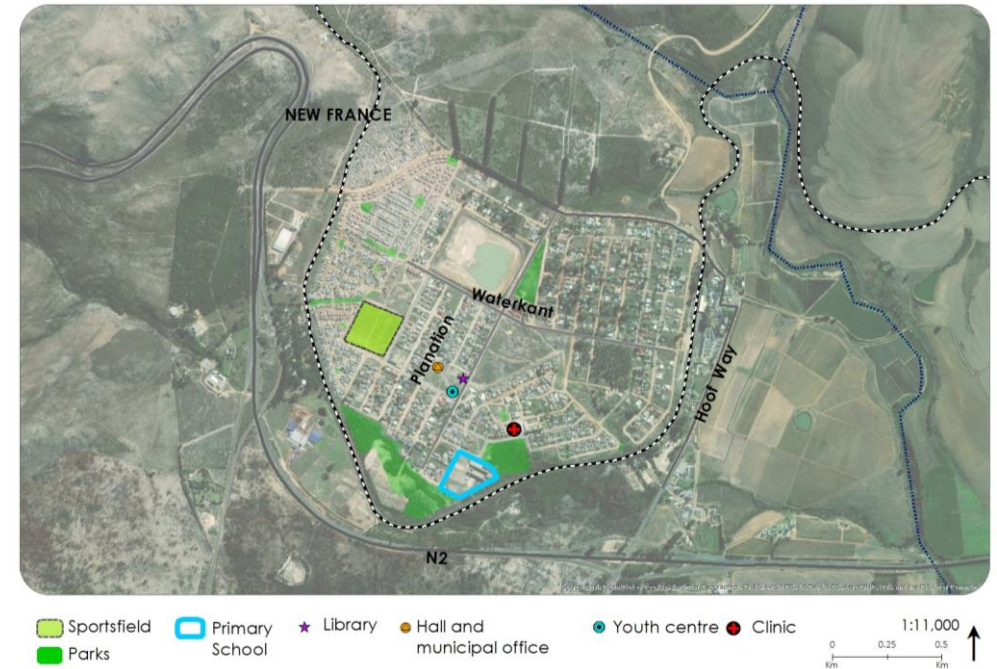


Figure A1.4.9: Botrivier: Social Facilities

4.3.3 Access to Schools

The following figure illustrates the walking distance to the existing primary school in Botrivier. It shows that the primary school is located within reasonable walking distance to most communities living in the town, except for the lower income area in the northwest, which has a walking distance of more than 16 minutes. This community is dependent on NMT as a mode of transport to the school.

There is no secondary school in Botrivier.

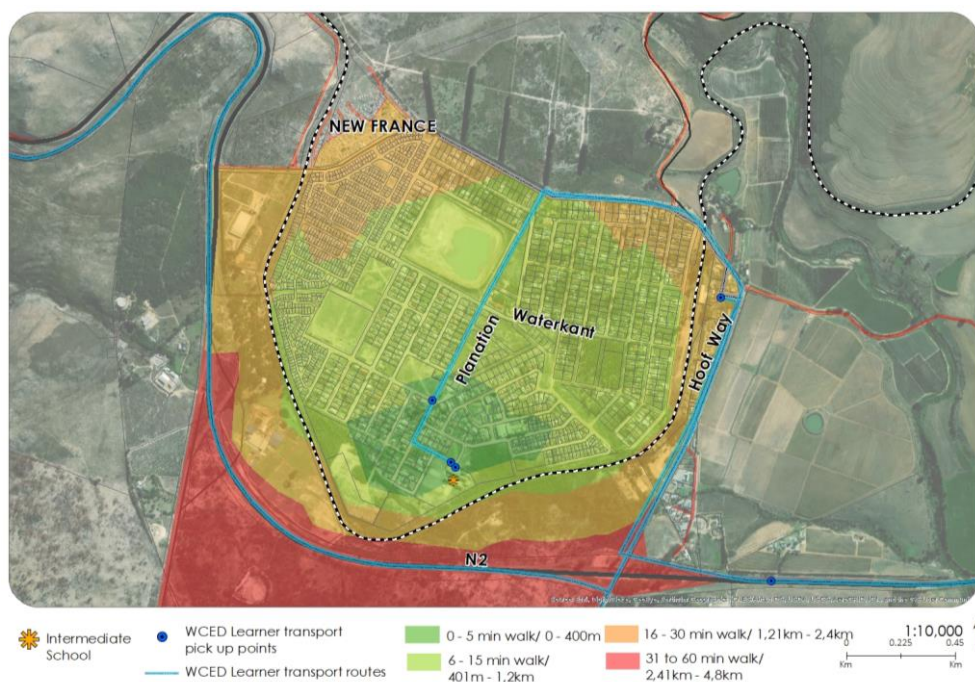


Figure A1.4.10: Botrivier: Walking Distances to Primary Schools

4.3.4 Access to Health Facilities

The following figure illustrates the walking distance to the existing clinic in Botrivier. It shows that the central and eastern parts of Botrivier are located within a reasonable walking distance to the clinic. The northwestern residential areas, accommodating lower income households dependent on NMT to access the clinic, is not within an ideal walking distance (more than 16 minutes).

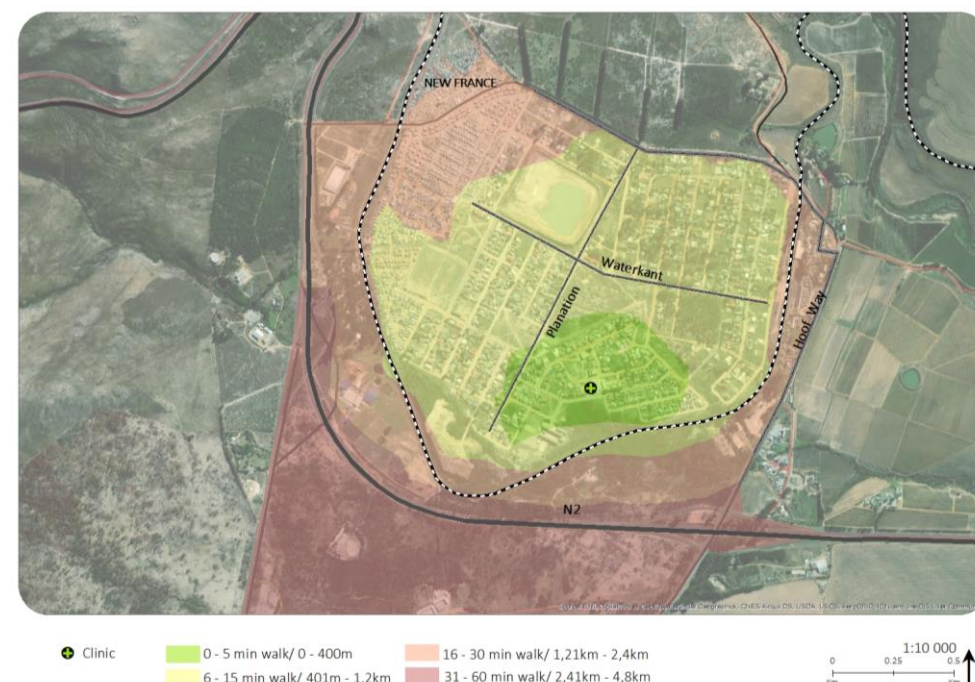


Figure A1.4.11: Botrivier: Walking Distances to Clinic

4.3.5 Cemeteries

The Botrivier cemetery is located north of the railway line and has adequate space for expansion for the immediate future.

4.3.6 Engineering Infrastructure

(i) Water Supply and Storage

Botrivier obtains its potable water supply from six operational boreholes.

The railway dam, which is fed by stormwater, is only used for irrigation of the sportsfields.

Botrivier has no formal water treatment works. Lime stabilisation is the only form of treatment applied to the raw water before it is distributed. To serve the town of Botrivier, three identical concrete reservoirs are used with a capacity of 227 kl each, as well as a new 3 MI high level reservoir. The 3 MI reservoir is in a good condition. The combined capacity of the reservoirs is adequate to meet the immediate future requirements, but not the long term needs.

New France has been provided with interim services, but this will cease as an alternate site is being investigated.

(ii) Wastewater

Only a part of Botrivier is serviced by a full water-borne wastewater system, which is reported to be in an acceptable condition. The rest of the town is served by septic and conservation tanks. There is one pump station for the sewerage.

New France has been provided with interim services, but this will cease as an alternate site is being investigated.

(iii) Stormwater

Botrivier has recorded stormwater issues due to gravel roads not having sufficient stormwater infrastructure.

(iv) Roads

Most of the roads within the town are unpaved. The condition of roads ranges from good to very poor due to lack of stormwater drainage.

(v) Solid Waste

Botrivier has a waste drop off facility located close to the WWTW and the solid waste is transported to the Karwyderskraal regional landfill site. It has been determined that the site on which New France is located was previously used as a landfill site and therefore is not suited for residential development. There is a privately operated buy-back centre, which has recently been opened in Botrivier.

(vi) Electricity

Electricity is supplied by Eskom and there is sufficient capacity to supply the town. Eskom has raised concerns about the condition of the MV line from Worcester to the Houwhoek substation, located outside of the town. Current plans indicate that the Asteria substation, to be located to the west of the N2, might be online by 2025.

(vii) Summary of Infrastructure Constraints

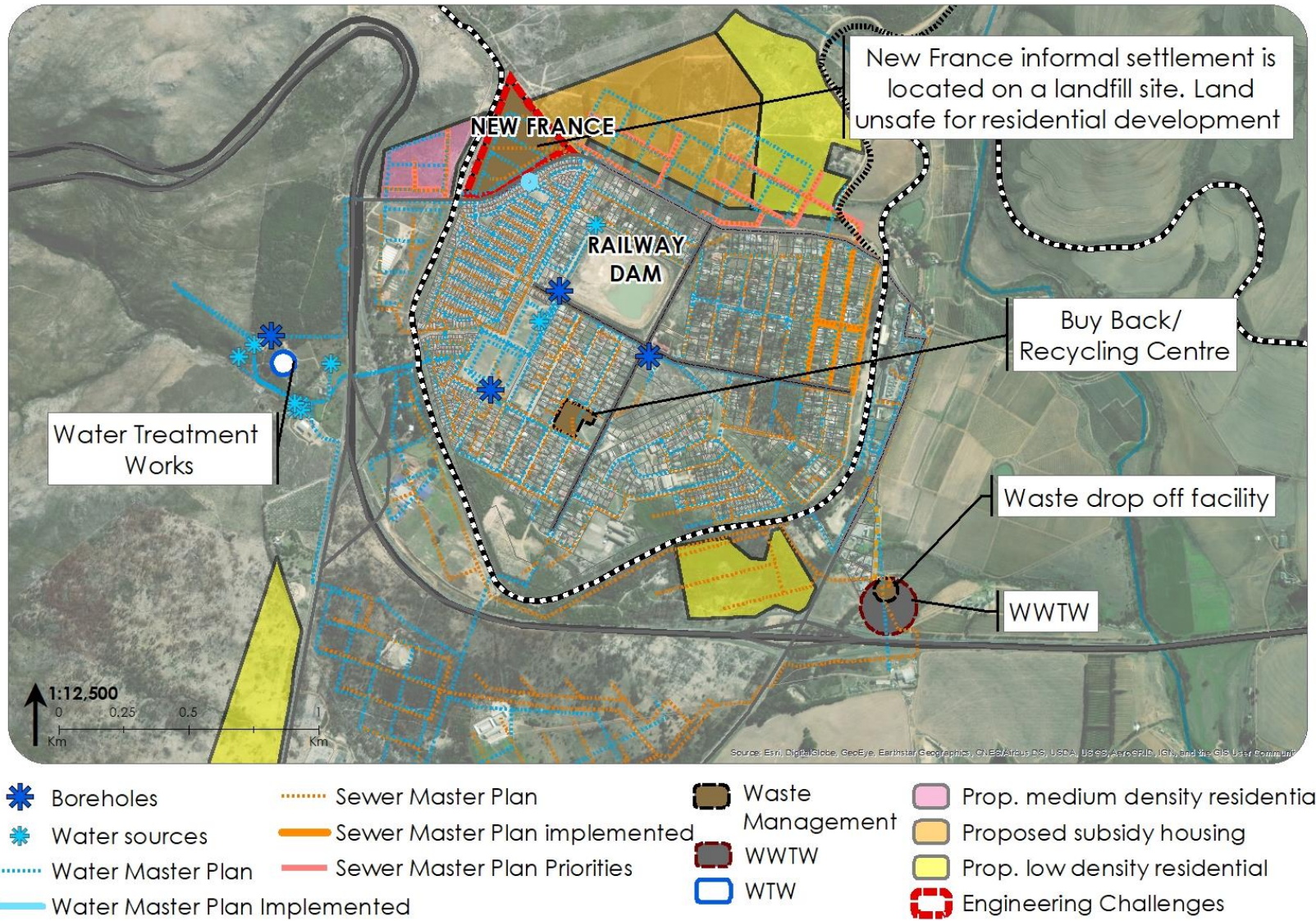


Figure A1.4.12: Botrivier: Summary of Infrastructure Constraints

5 RIVIERSONDEREND

5.1 BIOPHYSICAL AND AGRICULTURAL ANALYSIS

5.1.1 Environmental Status Quo

The town is located at the foot of the Kleinberg Mountain, with the Sonderend River flowing past the town, located to the north and east. A number of watercourses are located within the town. The majority of these watercourses are located north of the N2 and can be attributed to natural drainage areas stemming from the Kleinberg Mountain.

A number of these watercourses flow through the current informal settlement as well as subsidized housing developments. The aforementioned watercourses then drain into the Sonderend River. The possibility therefore exists for the pollution of the Sonderend River from contaminated stormwater runoff flowing through these residential areas.

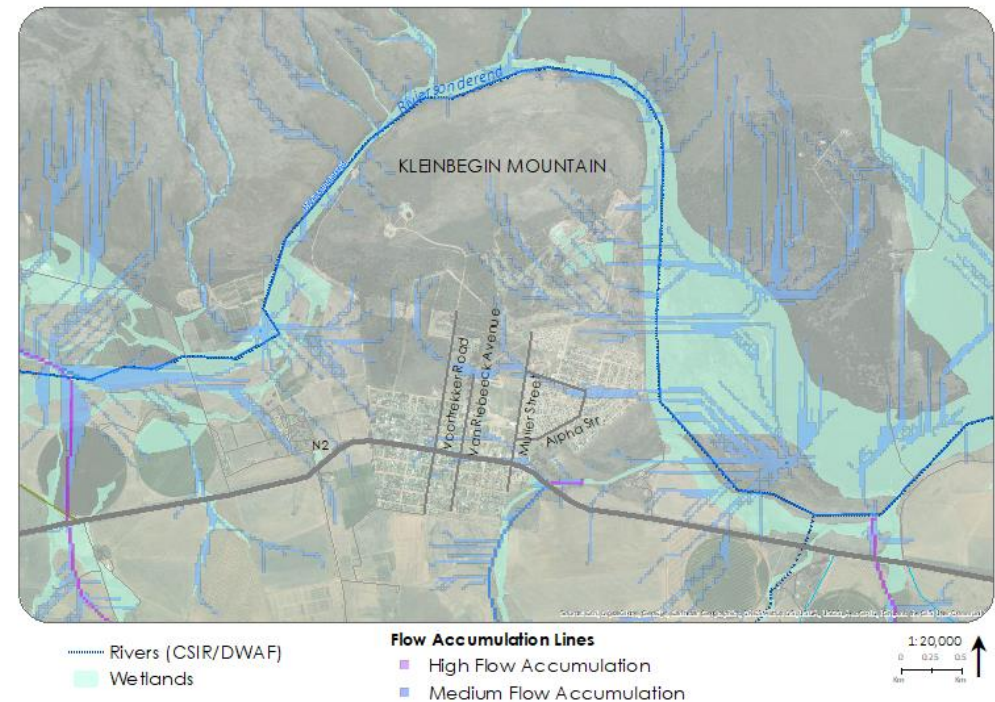


Figure A1.5.1: Riviersonderend: River Corridors and Wetlands

There are large patches of Central Rûens Shale Renosterveld and the Cape Lowland Alluvial Vegetation (having a 'critically endangered' ecosystem status) and largely intact portions of Cape Lowland Alluvial Vegetation (having a 'critically endangered' ecosystem status) within the urban edge. These areas are listed as Critical Biodiversity Areas.

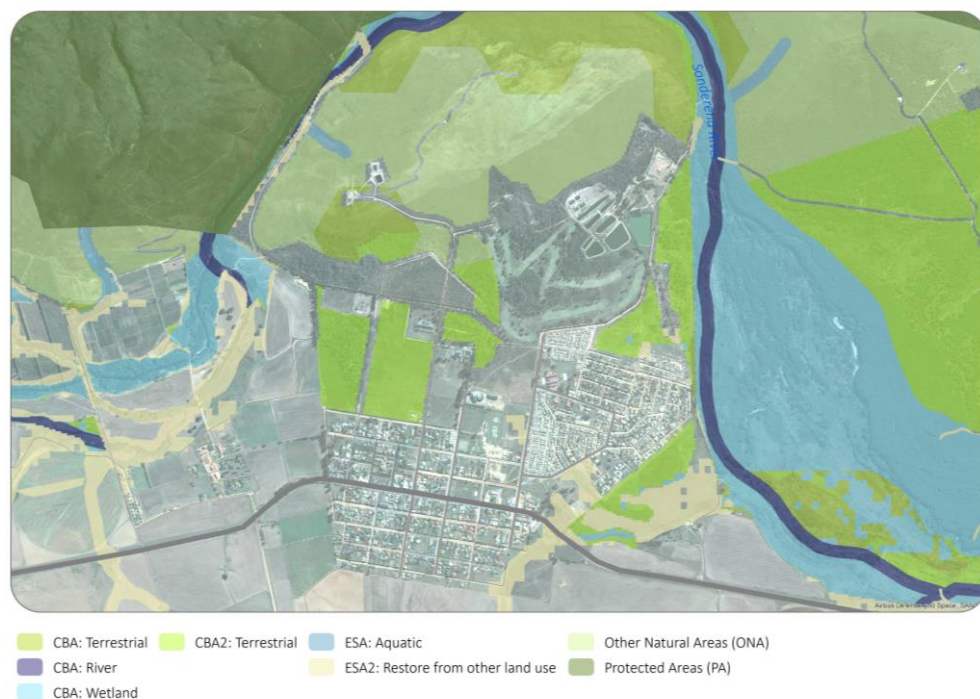


Figure A1.5.2: Riviersonderend: Core Biodiversity Areas and Ecological Support Areas

5.1.2 Environmental Risks

Figure A1.5.3 illustrates the identified environmental risks which limits the development potential of the land. The risks include water pollution caused by informal settlements and the existing piggery located within the northwestern portion of the town and informal settlements being a fire risk.

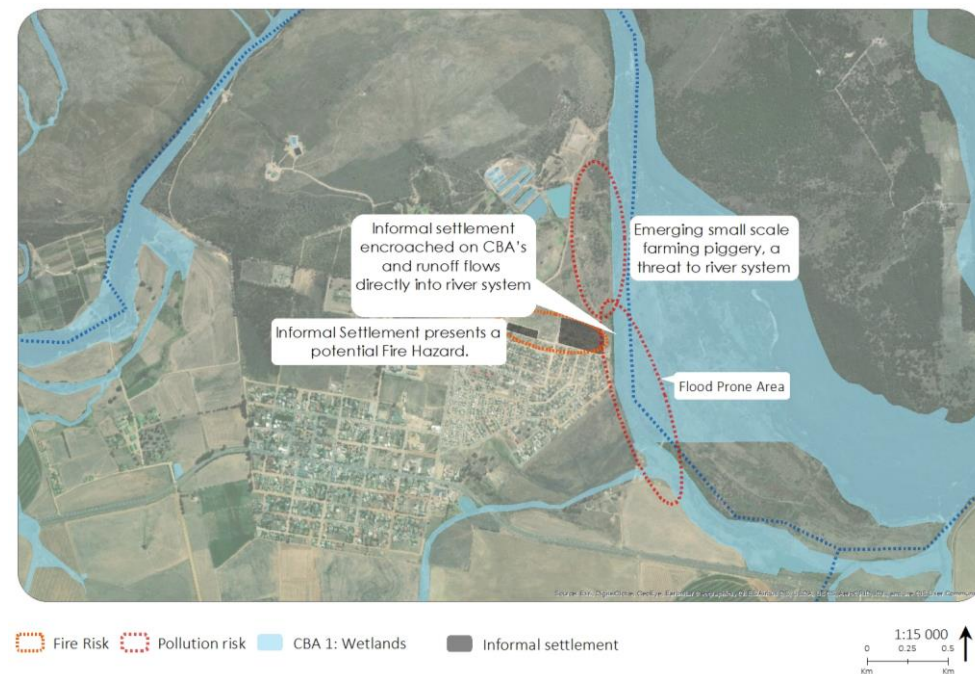


Figure A1.5.3: Riviersonderend: Summary of Environmental Risks

5.1.3 Agricultural Status Quo

Agricultural activities are located south of the Sonderend Mountain range. Agricultural production includes planted pastures, the production of oil seeds and mixed grains. Given the type of products being produced by the agricultural sector in this area, the sector is not as intensively developed as other agricultural sectors in the Municipality, which in turn offers only a limited number of employment opportunities. As a result, cyclical migration of farm workers is not as prevalent in Riviersonderend as in other towns.



Figure A1.5.4: Riviersonderend: Main Locally Produced Crops

5.2 SOCIO-ECONOMIC ANALYSIS

5.2.1 Economic Systems

The main economic activities are concentrated along the N2. A small economic precinct has established in Oostergloed. Limited light industrial activities are located north of the sports fields. A number of undeveloped properties are situated along the N2, which have the opportunity for the establishment of economic development to optimise exposure of products and services to passing traffic.



Figure A1.5.5: Riviersonderend: Concentration of Economic and Industrial Activity

5.2.2 Residential Patterns

The town is clearly divided by the N2 with the higher income residential area located south of the N2. Oostergloed is isolated from the main commercial activities in Riviersonderend CBD. Large areas of under-utilised and/or vacant land exist within the current urban edge, owned by the municipality or state. Only one informal settlement exists within the town. This settlement is in the process of being upgraded with formal housing opportunities.

A number of service related activities abuts single residential land use. These areas can have a negative impact on the character of the surrounding area.

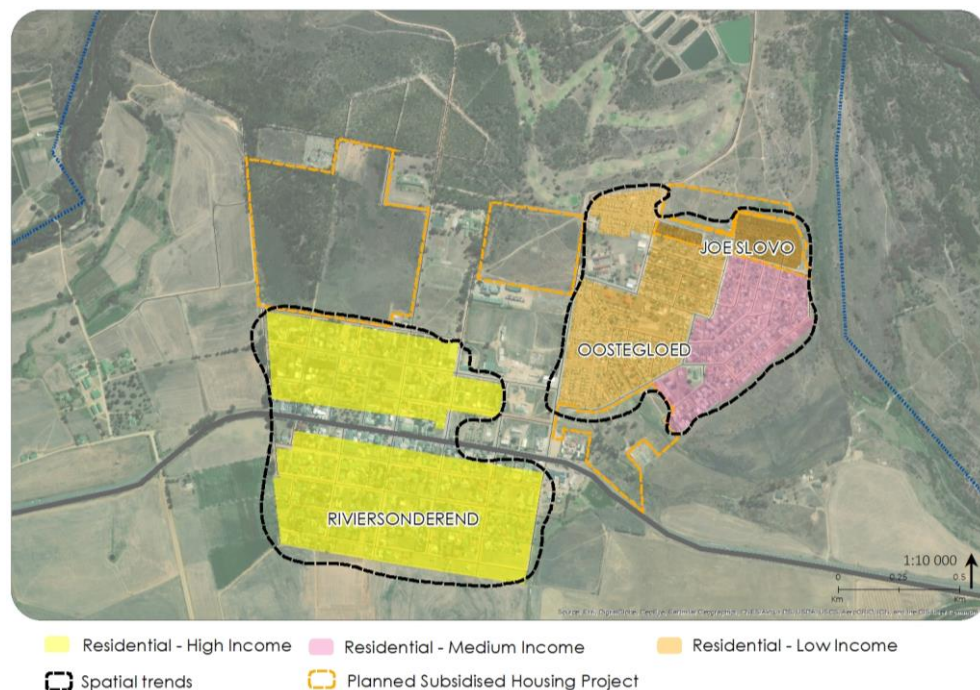


Figure A1.5.6: Riviersonderend: Existing, Approved and Planned Residential Developments

5.2.3 Income Distribution

Figure A1.5.7 illustrates the distribution of household densities and income levels across the town, with higher densities prevalent in the eastern part of Riviersonderend. Higher densities tend to overlap where households are located with lower incomes and informal settlements are concentrated. The western part of Riviersonderend consists of more affluent residents with a density of between 0 and 20 people per hectare.

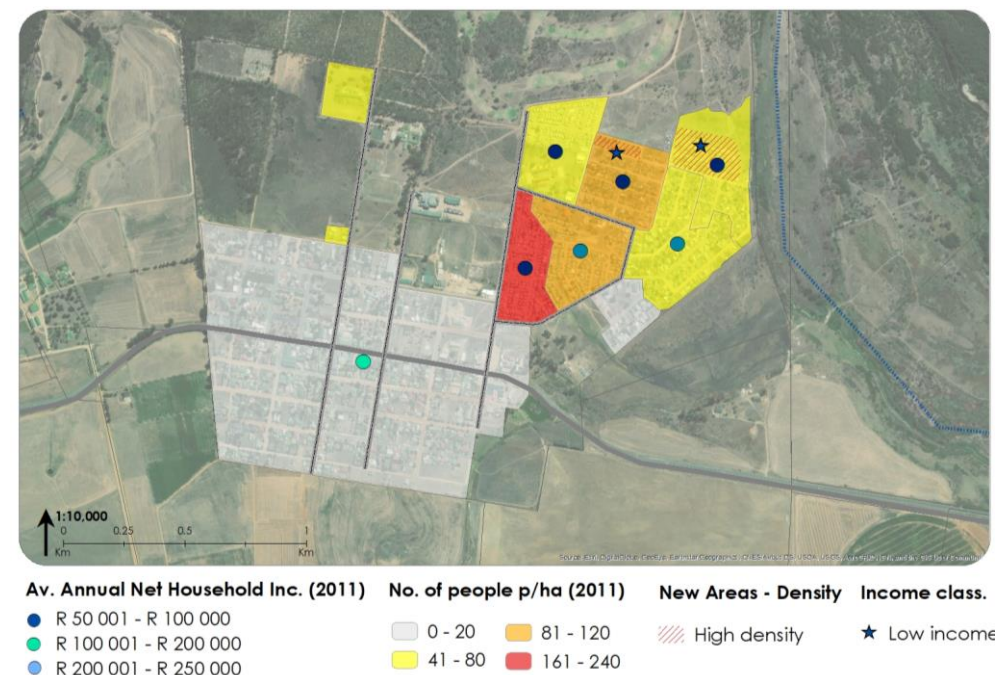


Figure A1.5.7: Riviersonderend: Household Density versus Household Income

5.2.4 Demographics

According to the 2011 Census, Riviersonderend's total population is estimated 5 245. The 2018 Mid-Year Population Estimate (MYPE) population estimate for Riviersonderend is 6 171. An annual growth rate of 3.8% was recorded between 2001 and 2011 and an annual growth rate of 2.4% between 2011 and 2018. The estimated future annual growth rate between 2018 and 2028 is 2.2%. As discussed in **subsection 4.4.3**, population growth projections for TWKM were undertaken by the D:EA&DP's Development Planning and Information Management Directorate, with the endorsement of the Western Cape: Department of Social Development. Based on these population projections for Riviersonderend, the total population in 2028 is estimated to be 7 656.

According to the Community Survey of 2016, the average household size for Riviersonderend was 3.1 persons. It is therefore estimated that approximately 2 470 households will reside in Riviersonderend by 2028.

The number of households that fall within the subsidized housing category in Riviersonderend is summarized in the following table (Source: WC: DoHS, July 2018):

Table A1.5.1: Riviersonderend: Housing Need

NO. OF INFORMAL SETTLEMENTS	HOUSING BACKLOG	INFORMAL STRUCTURES	NO. OF BACKYARDERS REGISTERED	NO. OF FARM WORKERS REGISTERED
1	850	142 units 710 persons	640	68

5.3 BUILT ENVIRONMENT ANALYSIS

5.3.1 Movement Systems

The N2 National Road forms the main movement corridor running through the town. The road layout of the town is characterized by a grid structure. The main movement routes running perpendicular to the N2 are Voortrekker Road, Van Riebeeck Avenue and Muller Street. These roads have the potential to accommodate non-residential land uses.

Economic activities are concentrated along the N2 in order to capitalize on traffic moving through the town. The Oostergloed residential area is located the furthest from these economic activities.

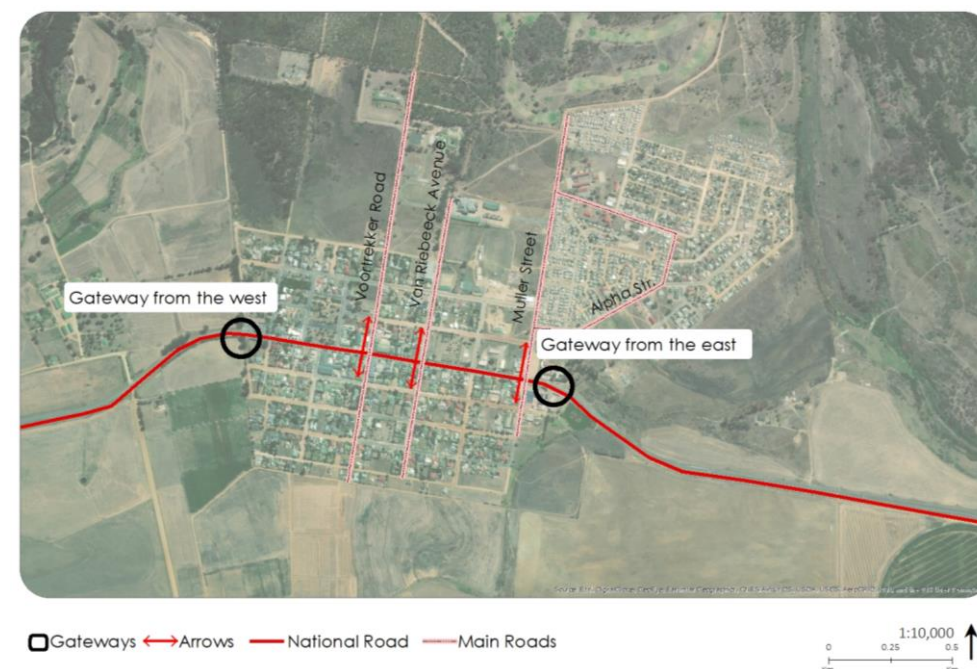


Figure A1.5.8: Riviersonderend: Gateways and Access Points

5.3.2 System of Social Facilities

Figure A1.5.9 illustrates the distribution of existing social facilities. Riviersonderend is reasonably well served by education facilities, with one primary and one secondary school located in the town. Other social facilities include a clinic, two libraries and a community hall, the latter is located in Oostergloed.

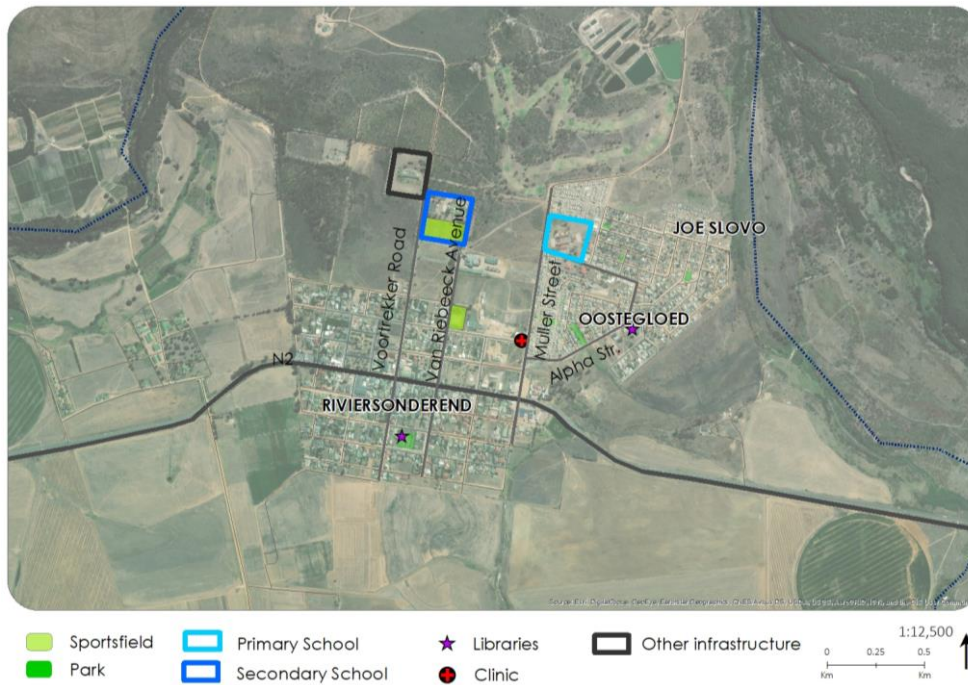


Figure A1.5.9: Riviersonderend: Social Facilities

5.3.3 Access to Schools

Figures A1.5.10 and A1.5.11 illustrate the walking distances to the existing schools within Riviersonderend. It shows that the primary school is within reasonable walking distance to communities dependent on NMT as a mode of transport. The future residential areas proposed within the western part also would be located within a reasonable walking distance to this school (less than 30 minutes).

The secondary school is within reasonable walking distance of the communities dependent on NMT to get to school. The future residential areas proposed within the northeastern part would still be located within a reasonable walking distance (less than 30 minutes) to this school.

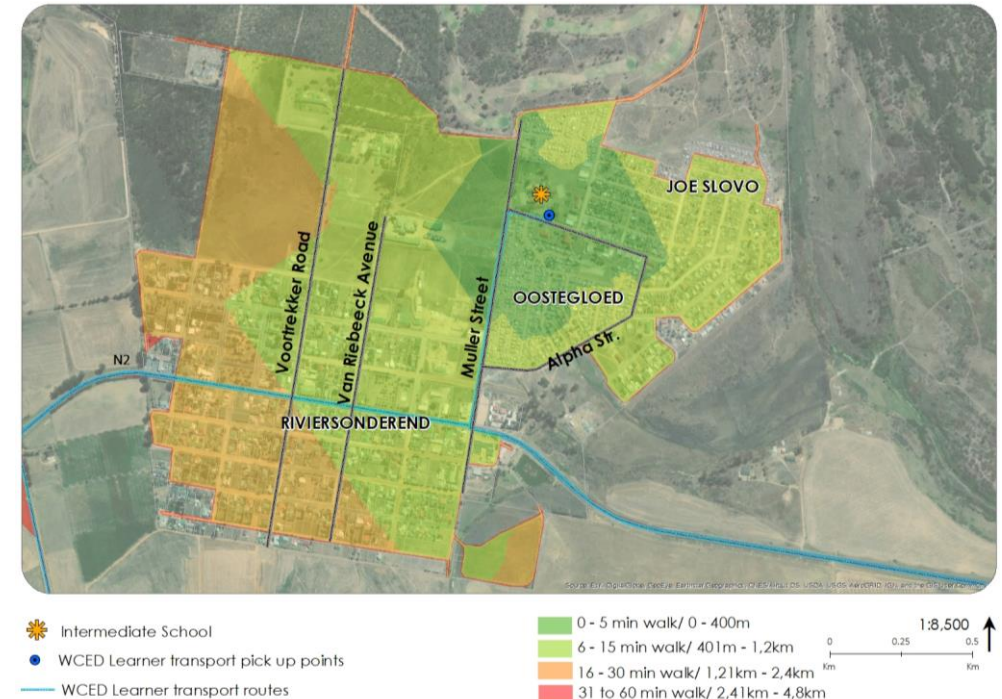


Figure A1.5.10: Riviersonderend: Walking Distances to Primary Schools

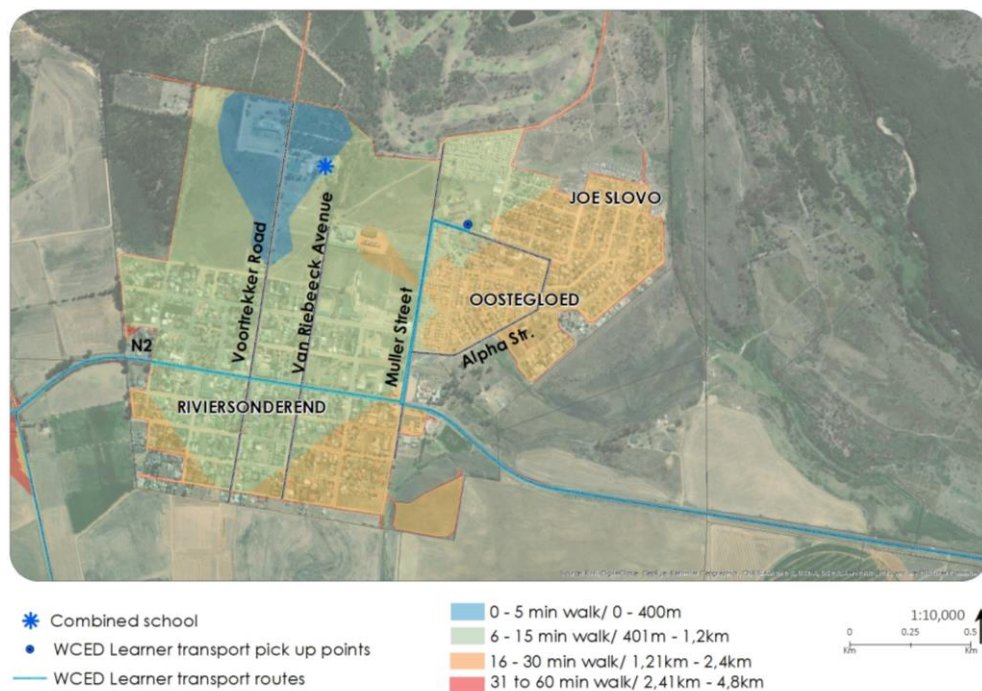


Figure A1.5.11: Riviersonderend: Walking Distances to Secondary Schools

5.3.4 Access to Health Facilities

There is one community day clinic, located on the corner of Muller and de Kock Streets. It is located in a central location within the town within reasonable walking distance to most communities dependent on NMT as a mode of transport.

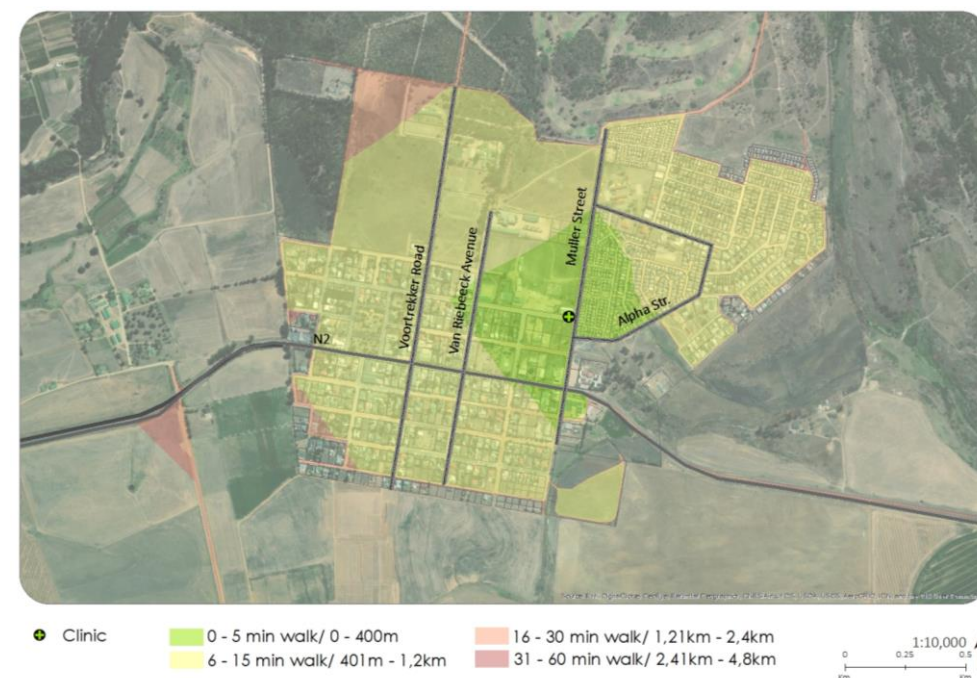


Figure A1.5.12: Riviersonderend: Walking Distances to Clinic

5.3.5 Cemeteries

Two cemeteries exist in Riviersonderend and there is adequate land to accommodate future needs.

5.3.6 Engineering Infrastructure

(i) Water Supply and Storage

The town contains two surface water sources, with the main water supply originating from a weir situated in the Olifantbos River. Water is also pumped directly from the Riviersonderend River to the raw water pump station. A borehole is proposed near the WWTW. Water purification will be outsourced to package plants.

A new reservoir has recently been constructed.

(ii) **Wastewater**

All residents have access to waterborne sewerage and capacity at the WWTW is adequate. Final effluent is disposed of by irrigation of the golf course with a small quantity discharged into natural streams.

(iii) **Stormwater**

The stormwater system is sufficient to meet the general requirements.

(iv) **Roads**

The condition of roads within the town ranges from average to poor. Gravel roads need to be upgraded to paved roads with stormwater infrastructure.

(v) **Solid Waste**

The landfill site is operating at capacity but has been issued with a closure licence. A landfill closure provisions report has been done in 2018. Based on the date that the licence was issued, the decommissioning of the site must commence by the end of 2019.

The design of a waste transfer facility is underway and is proposed near the WWTW. The waste will be transported to the regional Karwyderskraal facility.

(vi) **Electricity**

Both Eskom and the Municipality supply electricity to the town and there are no reported network or capacity constraints.

(vii) Summary of Infrastructure Constraints

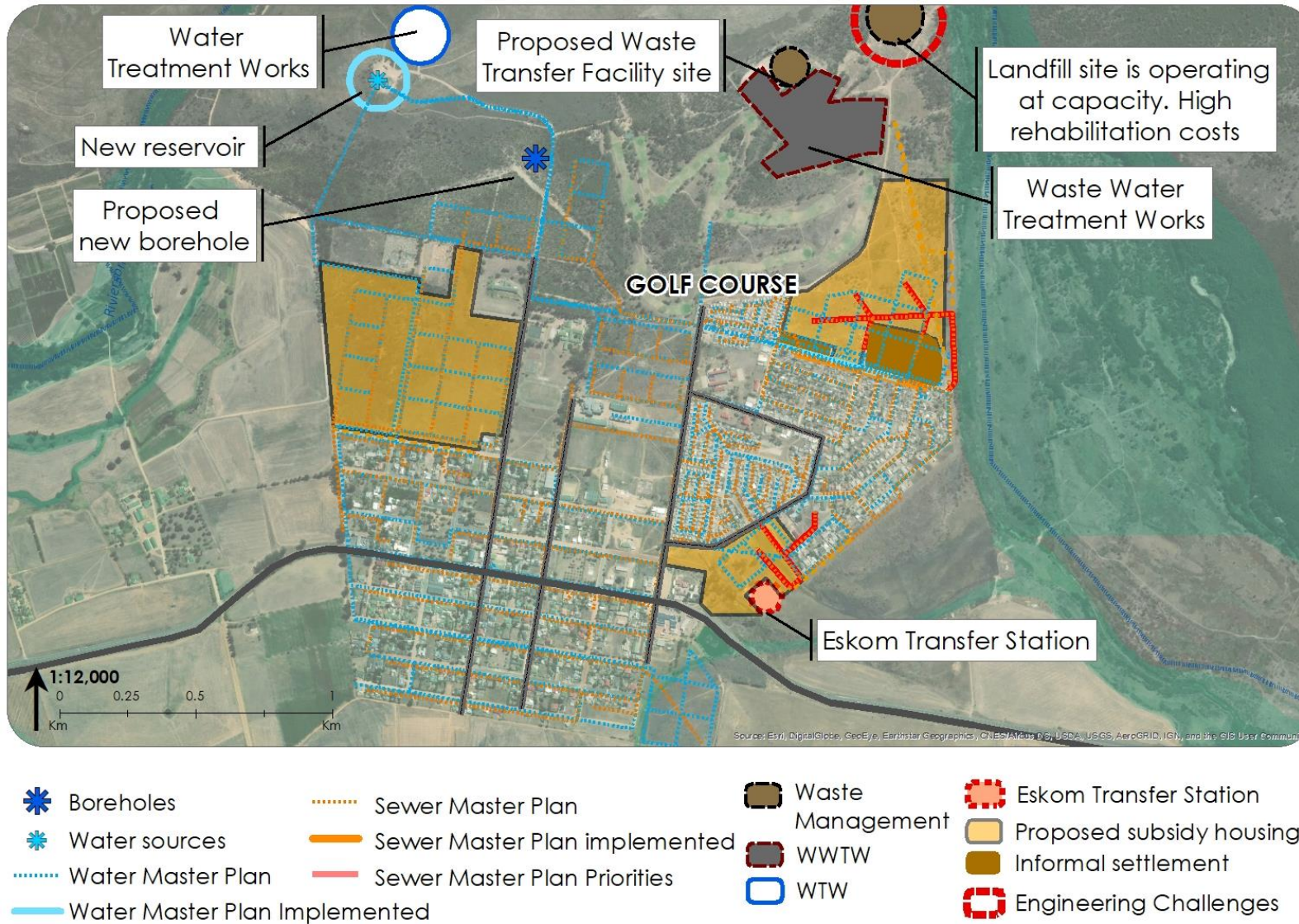


Figure A1.5.13: Riviersonderend: Summary of Infrastructure Constraints

6 GREYTON

6.1 BIOPHYSICAL AND AGRICULTURAL ANALYSIS

6.1.1 Environmental Status Quo

A number of watercourses and wetlands are located within and next to the town. The two main watercourses are the Sonderend River located to the south of the town and the Gobos River bordering the town to the east. A secondary drainage area flows south of Knietjies Hoogte and drains in a southeasterly direction into the Gobos River. Given the location of the town in relation to these watercourses, many areas within the town are prone to flooding and present a significant risk to residents. The existence of these watercourses further limits potential development areas to accommodate the future expansion of the town.

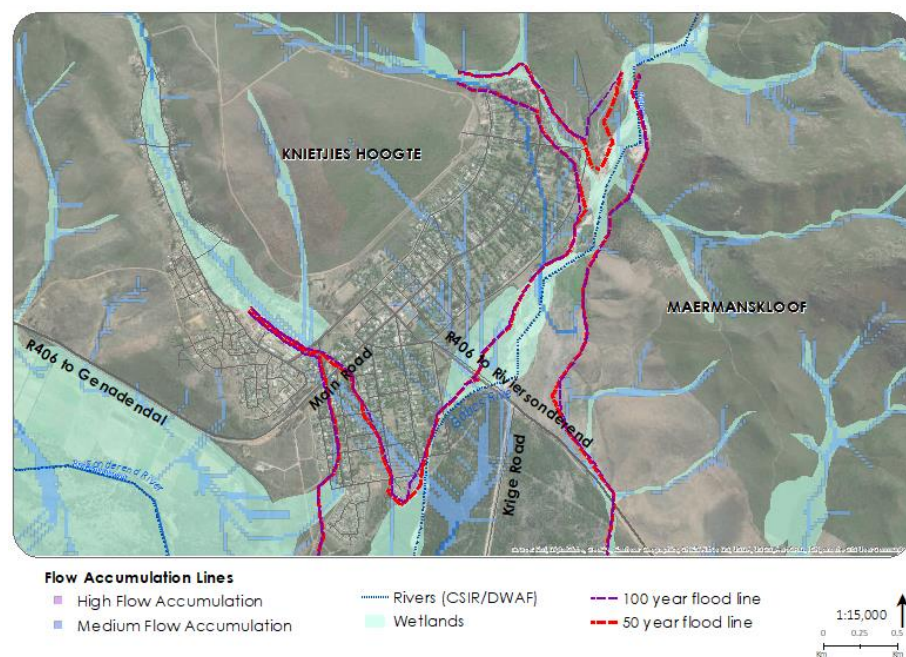


Figure A1.6.1: Greyton: River Corridors and Wetlands

Greyton is surrounded by a pristine natural environment. There are intact patches of relatively well connected central rûens shale renosterveld within the urban edge. These areas have been identified as Critical Biodiversity Areas. The Greyton Nature Reserve is located north of the town, with Critical Biodiversity Areas surrounding the town. A number of ecological support areas are located within the area and is mainly limited to the watercourses draining into the river systems. It is proposed to therefore extend the Greyton Nature Reserve towards the south of the town on municipal owned land.



Figure A1.6.2: Greyton: Core Biodiversity Areas and Ecological Support Areas

6.1.2 Environmental Risks

The following figure illustrates the environmental risks that have been identified, which limit the development potential of the land. The main risk is the southern portion of Greyton which is located within the floodplain. In addition, substandard treated effluent from the wastewater treatment works could pollute the Sonderend River and negatively affect farmers downstream.

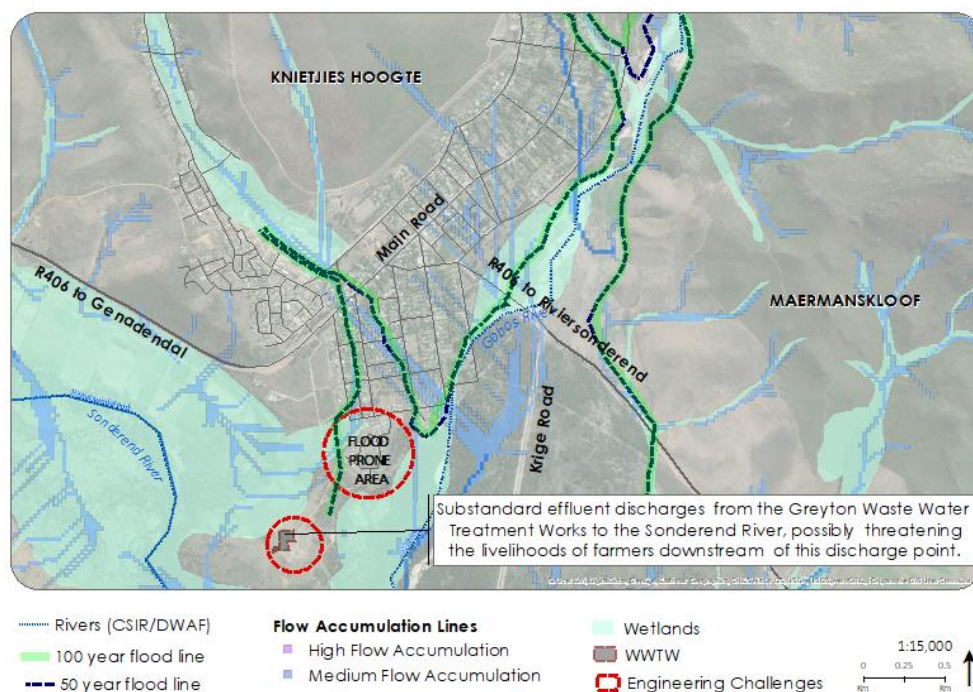


Figure A1.6.3: Greyton: Summary of Environmental Risks

6.1.3 Agricultural Status Quo

Limited agricultural production is located in the area immediately surrounding Greyton. Some planted pastures, stone fruit orchards and vegetable farming activities are located to the southwest of Greyton.

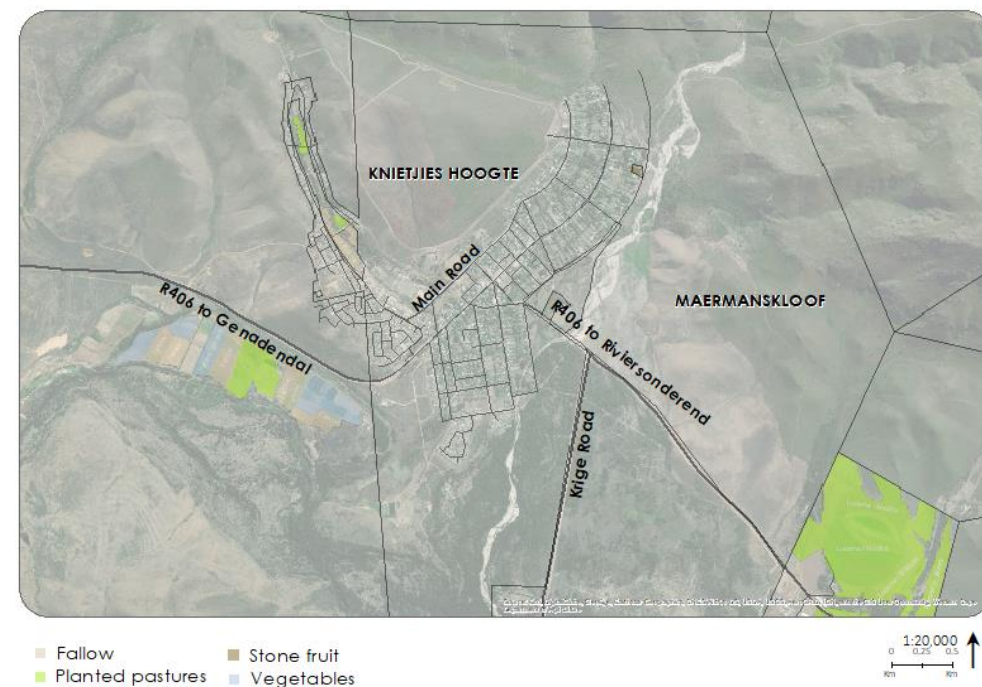


Figure A1.6.4: Greyton: Main Locally Produced Crops

6.2 SOCIO-ECONOMIC ANALYSIS

6.2.1 Economic Systems

Greyton contains a well-developed tourist sector, with many economic activities revolving around this sector. Economic activities are mainly concentrated along the Main Road, up to Cross Market Street. A small secondary business node is located in the Heuwelkroon area.

Numerous overnight accommodation facilities are located in Greyton offering short term accommodation for visitors. There are numerous outdoor activities located around Greyton, such as mountain biking and hiking. The weekend market is also a popular tourist attraction. With Greyton being a popular tourist

destination, there is a growing need for commercial and tourism development. It is therefore important to achieve a balance between the conservation of the natural and man-made environment and the need to provide for sustainable development and economic growth.



Figure A1.6.5: Greyton: Concentration of Economic Activity

6.2.2 Residential Patterns

A challenge for Greyton is protecting the existing village layout structure, land use patterns and historic character of the town, while also addressing development needs. The surrounding natural environment dictates the spatial form of the town and also limits the possibility of expanding the current built footprint of Greyton. Development pressure is therefore directed inwardly to the

existing built environment.

As Boschmanskloof and Greyton are spatially isolated, integration should be facilitated through the identification of integration areas and integration spaces and along collector routes. However, it is important that the identity of Boschmanskloof as part of the greater Farm 39 should be retained throughout the aforementioned integration initiatives.

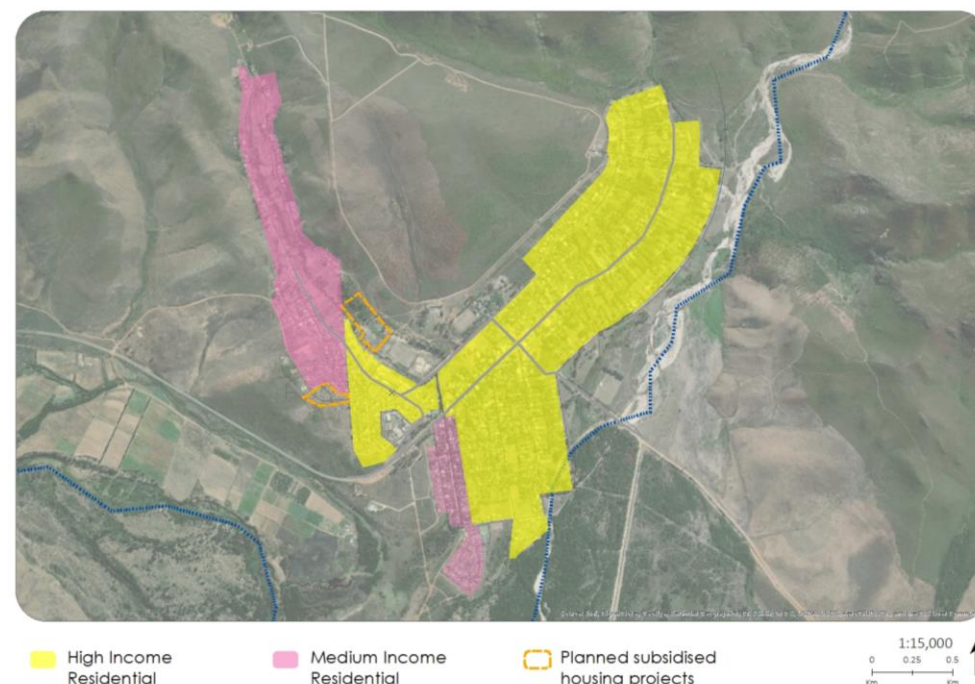


Figure A1.6.6: Greyton: Existing, Approved and Planned Residential Developments

6.2.3 Income Distribution

There is a clear economic separation between Greyton and Boschmanskloof, with Greyton consisting of higher income households which are predominantly

retirees and weekend homes, and Boschmanskloof consisting of predominantly lower income households.

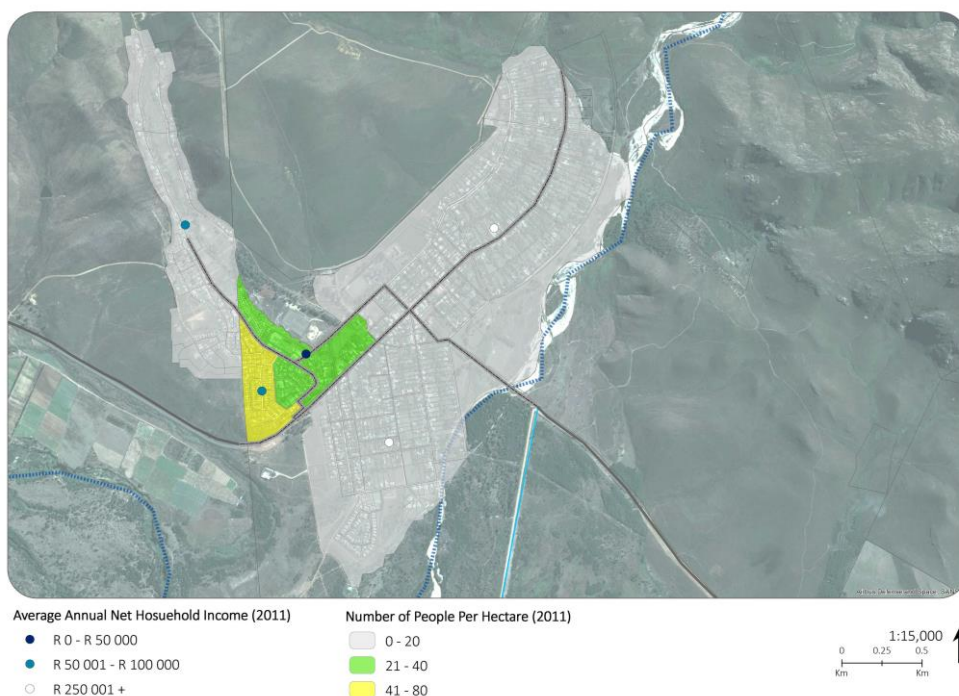


Figure A1.6.7: Greyton: Household Density versus Household Income

6.2.4 Demographics

According to the 2011 Census, Greyton's total population is estimated at 2 780. The 2018 Mid-Year Population Estimate (MYPE) population estimate for Greyton is 3 271. An annual growth rate of 2.2% was recorded between 2001 and 2011 and an annual growth rate of 2.4% between 2011 and 2018. The estimated future annual growth rate between 2018 and 2028 is 2.2%. Based on the population projections for Greyton, the estimated total population by 2028 will be 4 058.

According to the Community Survey of 2016, the average household size for Greyton was 2.6 persons. It is therefore estimated that approximately 1 561 households will reside in the town by 2028.

The number of households that fall within the subsidized housing category in Greyton is summarized in the following table (Source: WC: DoHS, July 2018):

Table A1.6.1: Greyton: Housing Need

NO. OF INFORMAL SETTLEMENTS	HOUSING BACKLOG	INFORMAL STRUCTURES	NO. OF BACKYARDERS REGISTERED	NO. OF FARM WORKERS REGISTERED
1	306	52 units 260 persons	246	8

6.3 BUILT ENVIRONMENT ANALYSIS

6.3.1 Movement Systems

Two access roads provide access to Greyton. This is the R406 to Genadendal and the R406 to Riviersonderend.

Given the historic character of the town, very little on-site parking is provided in the CBD area. The result is that people visiting the CBD have to make use of on-street parking. Traffic flow in Oak Street is also a major concern that needs to be addressed. As a result of historic land use rights, it would not be possible to retrofit buildings in order to provide on-site parking for business premises. It is therefore recommended that alternative parking areas be identified within walking distance of the Primary Economic Area.



Figure A1.6.8: Greyton: Gateways and Access Points

6.3.2 System of Social Facilities

The following figure illustrates the distribution of existing social facilities. Greyton accommodates three primary schools, one clinic, a community centre and a library. These facilities provide basic services to the communities.

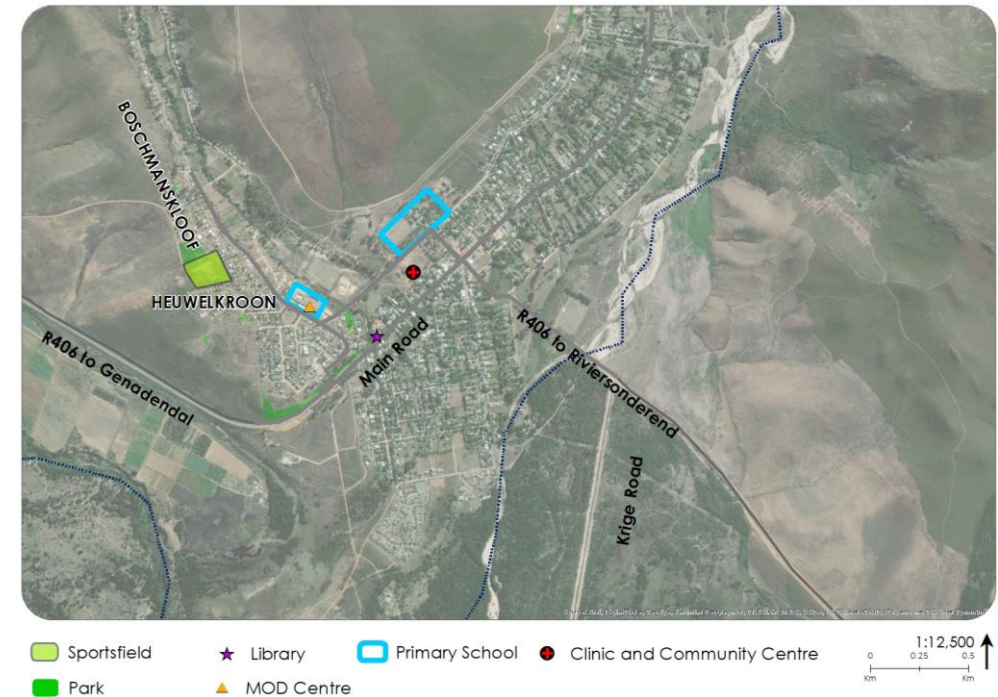


Figure A1.6.9: Greyton: Social Facilities

6.3.3 Access to Schools

The following two figures illustrate the walking distances to the existing two primary schools and one independent school. It shows that the two public primary schools are within reasonable walking distance to communities dependent on NMT as a mode of transport. The proposed future subsidised residential area is also within reasonable walking distance. The Greyton House independent school also caters for pupils from Grade 00 to Grade 7.

There are no public or independent secondary schools located in Greyton.

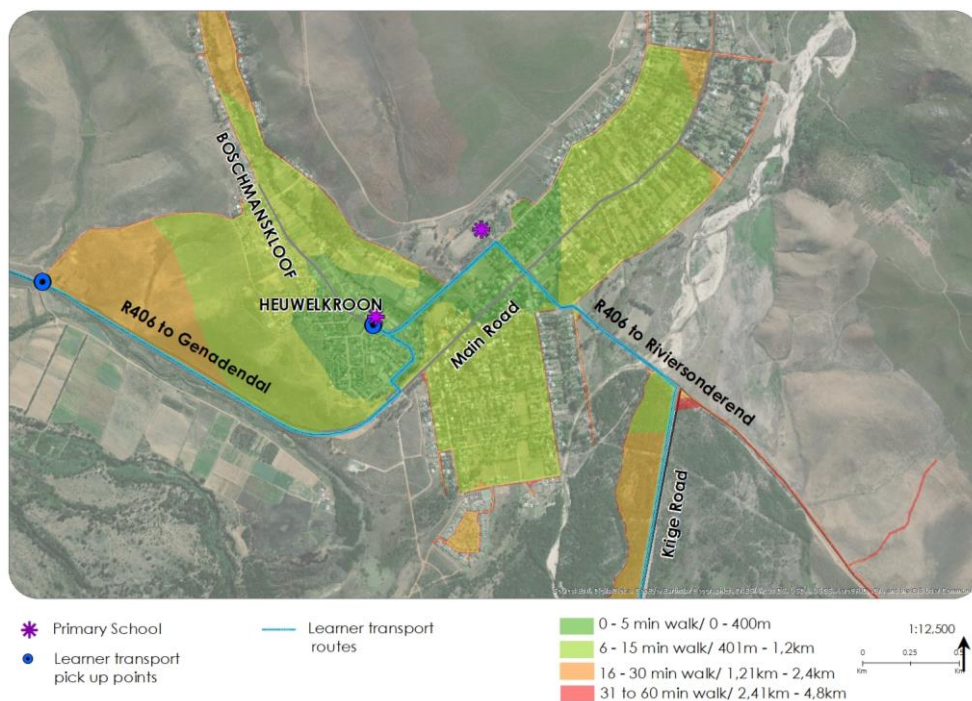


Figure A1.6.10: Greyton: Walking Distances to Primary Schools

6.3.4 Access to Health Facilities

The clinic is located in a central location within the town and within reasonable walking distance to most communities in Greyton dependent on NMT as a mode of transport.

6.3.5 Cemeteries

The cemetery in Greyton has sufficient space to accommodate the long term spatial requirement.

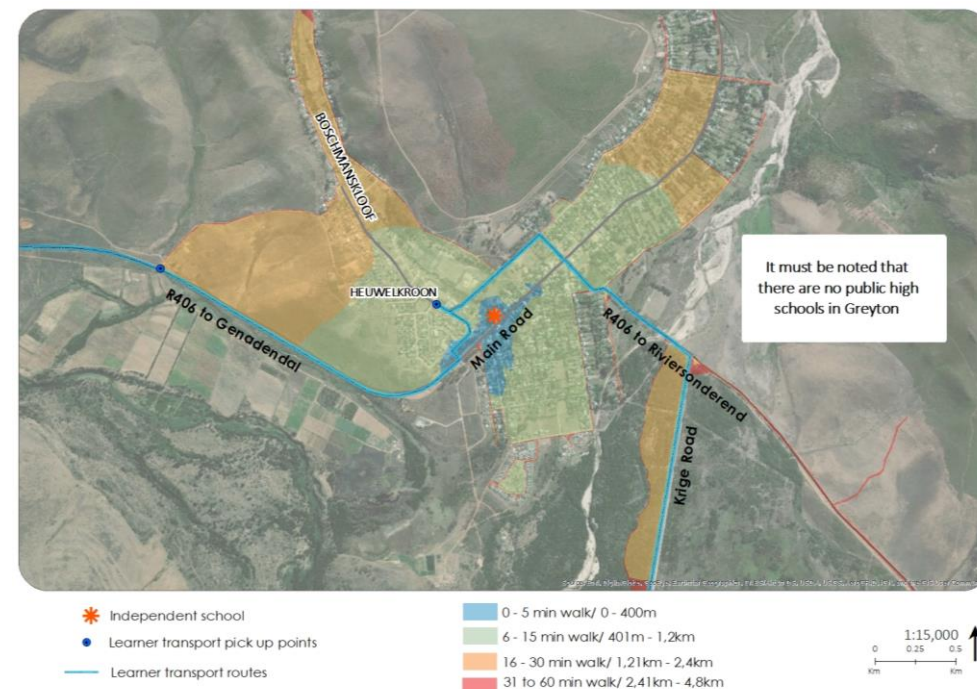


Figure A1.6.11: Greyton: Walking Distances to Independent School

6.3.6 Engineering Infrastructure

(i) Water Supply and Storage

The Greyton and Boschmanskloof water distribution systems are integrated. Greyton is supplied from two surface water sources, namely the Wolwekloof mountain stream via a weir and from three abstraction points on the Gobos River (Boschmanskloof). The water supplied by these two sources is of good quality, but at times aesthetic problems associated with the high iron content are encountered.

A borehole is located next to the river but will not be operational until the wtw has been upgraded.

There are three reservoirs which supply water to Greyton, Heuwelkroon and Boschmanskloof.

The reticulation network is very old and consists of asbestos pipes. This system would need to be replaced with uPVC pipes.

(ii) **Wastewater**

Only a small part of Greyton is serviced by a water-borne sewer system. The rest of the town has conservancy or septic tanks with soak-away drains. Heuwelkroon and Boschmanskloof have water-borne sewage.

The Greyton wwtw comprises of oxidation ponds and is generally in a good condition. The final effluent is disposed of by overland irrigation of an 11 ha area and no effluent is returned to source.

A package plant is planned to accommodate future development within Greyton.

(iii) **Stormwater**

The retirement village is located in the flood plain and is at a risk of being flooded. Flood mitigation measures are required.

(iv) **Roads**

The roads within the town are mostly of poor condition and many are unpaved.

(v) **Solid Waste**

The landfill site is operating at capacity and has been issued with a closure licence. Based on the date that the licence was issued the decommissioning of the site must commence at the end of 2019. A landfill closure provision report was done in 2018 and rehabilitation of the site required.

Planning of a new transfer station has commenced.

(vi) **Electricity**

Electricity is supplied by Eskom and the Municipality. There is one Eskom substation and a feeder between Greyton and Genadendal. It has been reported that there are no network or capacity constraints.

(vii) Summary of Infrastructure Constraints

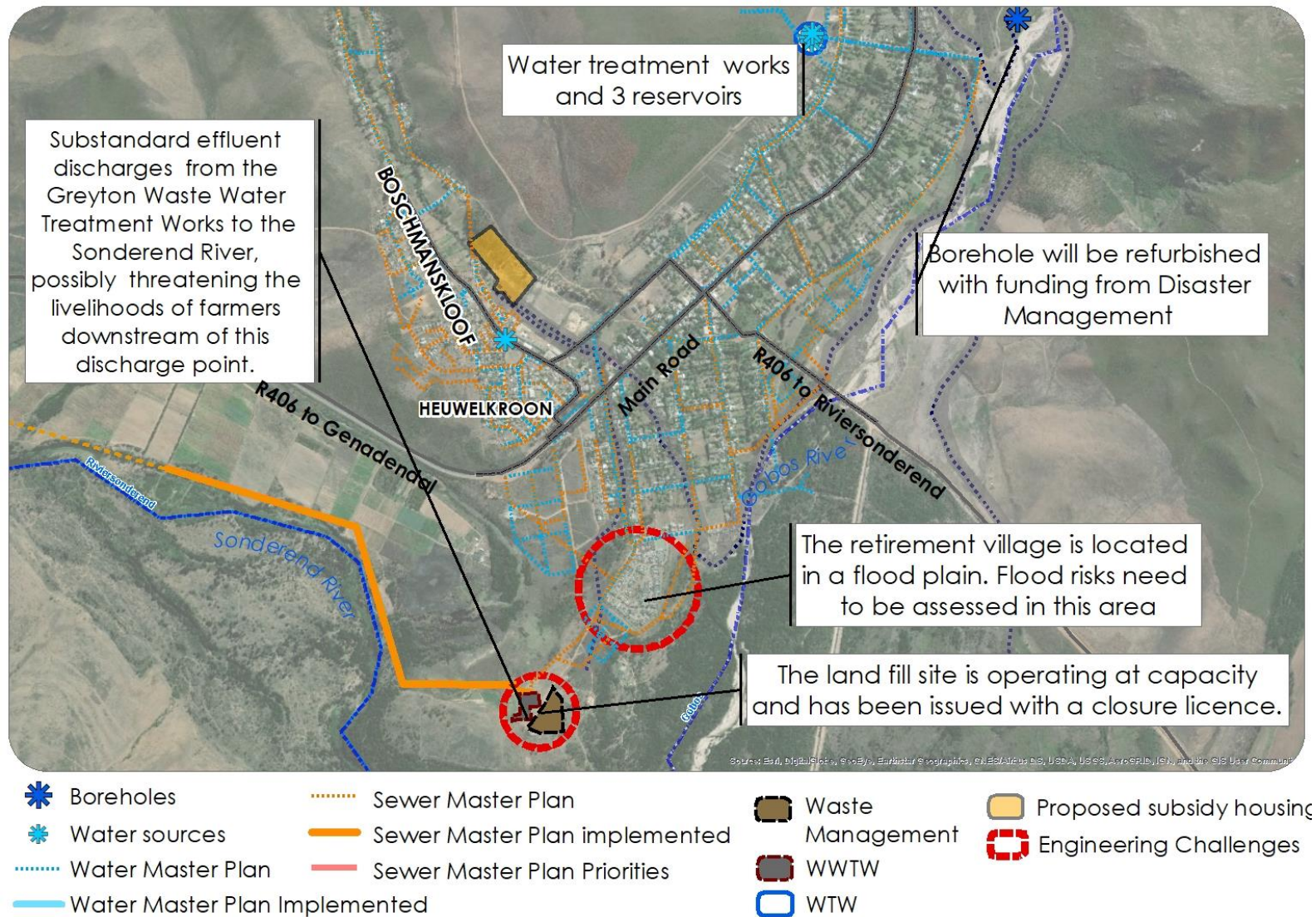


Figure A1.6.12: Greyton: Summary of Infrastructure Constraints

7 GENADENDAL, BEREAVILLE AND VOORSTEKRAAL

7.1 BIOPHYSICAL AND AGRICULTURAL ANALYSIS

7.1.1 Environmental Status Quo

The settlements are enclosed by physical, biophysical and ecological constraints, i.e. the Sonderend Mountains with steep slopes and sections of critical endangered vegetation.

The Sonderend River, which flows along the southern boundaries of Genadendal, Voorstekraal and Bereaville, is an important ecological corridor. There are wetlands and/or floodplain areas associated with the Sonderend River system that are similarly an important part of this ecological corridor.

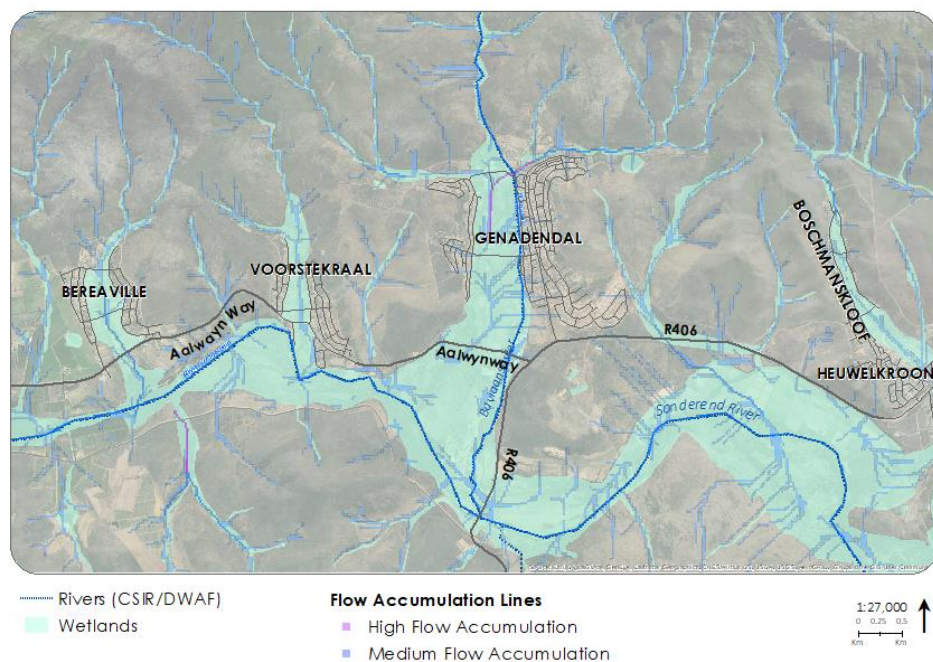


Figure A1.7.1: Farm 39: River Corridors and Wetlands

The tributaries of the Sonderend River which flow through the urban areas of Genadendal, Voorstekraal and Bereaville, also form important ecological corridors. There are wetlands and/or floodplain areas associated with these tributaries of the Sonderend River system that are similarly an important part of these ecological corridors. These corridors are environmentally sensitive, subject to flooding and should be safeguarded from development.

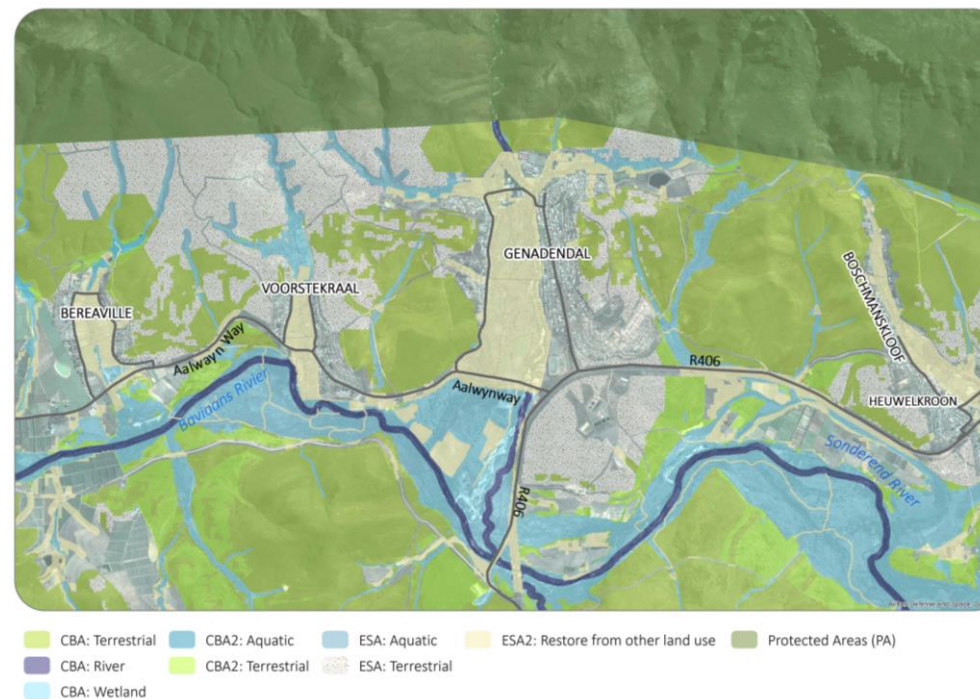


Figure A1.7.2: Farm 39: Core Biodiversity Areas and Ecological Support Areas

7.1.2 Environmental Risks

The following figure illustrates the identified environmental risks which limits the development potential of the land.

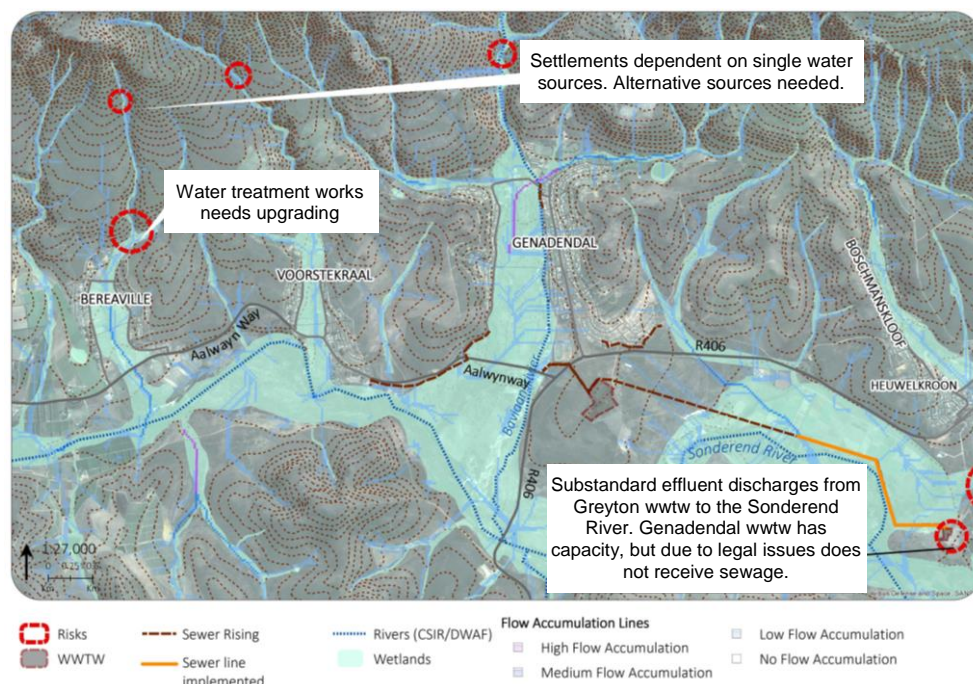


Figure A1.7.3: Farm 39: Summary of Environmental Risks

7.1.3 Agricultural Status Quo

The fertile soil areas within the settlements have been developed into gardens ('tuine'). The fertile valleys outside of the settlements have been developed for agricultural developments called the 'paglande' and 'saailande'.

The tuingronde and paglande contain high agricultural production potential areas. In a study by MBB (1997) and BKS (2000), the "very good agricultural" potential of the greater Genadendal region has been documented. The results of these studies indicate the following:

- 1 300 ha irrigable soil of which 600 ha is classified as high potential soil;
- Water resources can sustain 625 ha under irrigation. Two storage dams

would however be required to store winter runoff before the area can be fully developed;

- To develop the area to its full potential of 1 300 ha, a further water allocation from the Theewaterskloof Dam is required;
- According to the agricultural development plan, the original "subdivision" of the farm into 37 farming units has been used to allocate farming opportunities;
- Apart from the Riviersonderend River irrigation scheme, water could be obtained from the Baviaans River and the Sergeants River;
- The Baviaans River is a dependable water source, which can be utilised to provide irrigation water to a large area, provided that an adequate storage facility can be built. Water from this river is currently extracted for household use. There is a suitable area in the Baviaans River where a dam with sufficient storage capacity can be constructed;
- The estimated storage capacity will be enough to irrigate approximately 90 ha vegetables, 360 ha fruit and 270 ha grazing;
- The Sergeants River's full irrigation potential has not been determined; therefore it is not possible to estimate its possible water contribution to Genadendal. It is however deemed unlikely that there will be a significant water contribution possible from the Sergeants River, due to the volume of water that is abstracted upstream of Genadendal.

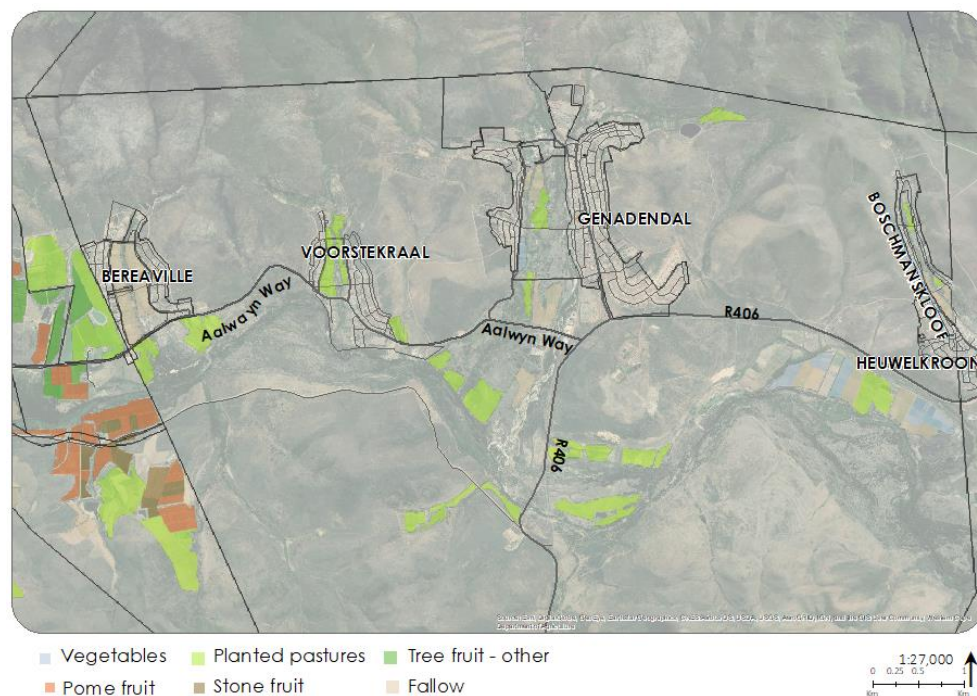


Figure A1.7.4: Farm 39: Main Locally Produced Crops

7.2 SOCIO-ECONOMIC ANALYSIS

7.2.1 Economic Systems

High level of poverty exists within the town, with very limited development taking place. There is a need to find a balance between conservation requirements (of the natural and manmade environment), the historic sense of place characteristics and the need for sustainable development that aim to eradicate poverty. There is a lack of industrial and business erven within the settlements, which limits economic development and growth in Genadendal, Bereaville and Voorstekraal. There is also no clearly demarcated town centre in any of the settlements.



Figure A1.7.5: Farm 39: Concentration of Economic and Industrial Activity

7.2.2 Residential Patterns

The settlements are structured around the historic layouts that were approved by the Surveyor General. Due to the transformation process not being concluded, no development outside of the aforementioned layout, apart from the subsidized human settlements development located to the east of Genadendal, has taken place.

The urban form therefore remains unchanged. Many erven within the historical layout remains undeveloped.

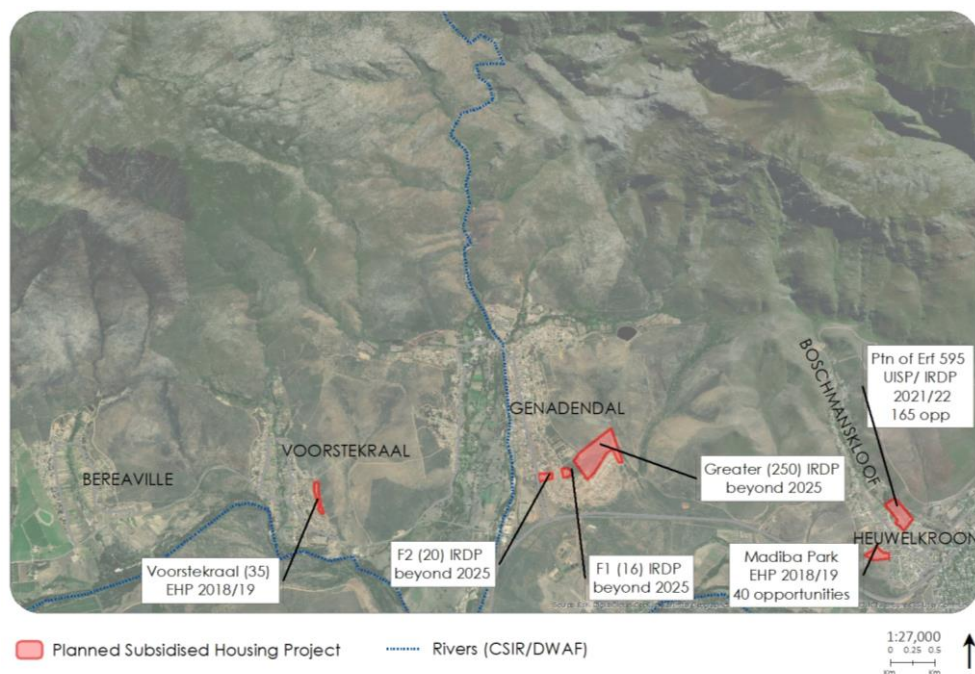


Figure A1.7.6: Farm 39: Planned Residential Developments

7.2.3 Income Distribution

The households within the three settlements have similar income levels. The income distribution is therefore relatively even throughout the settlements.

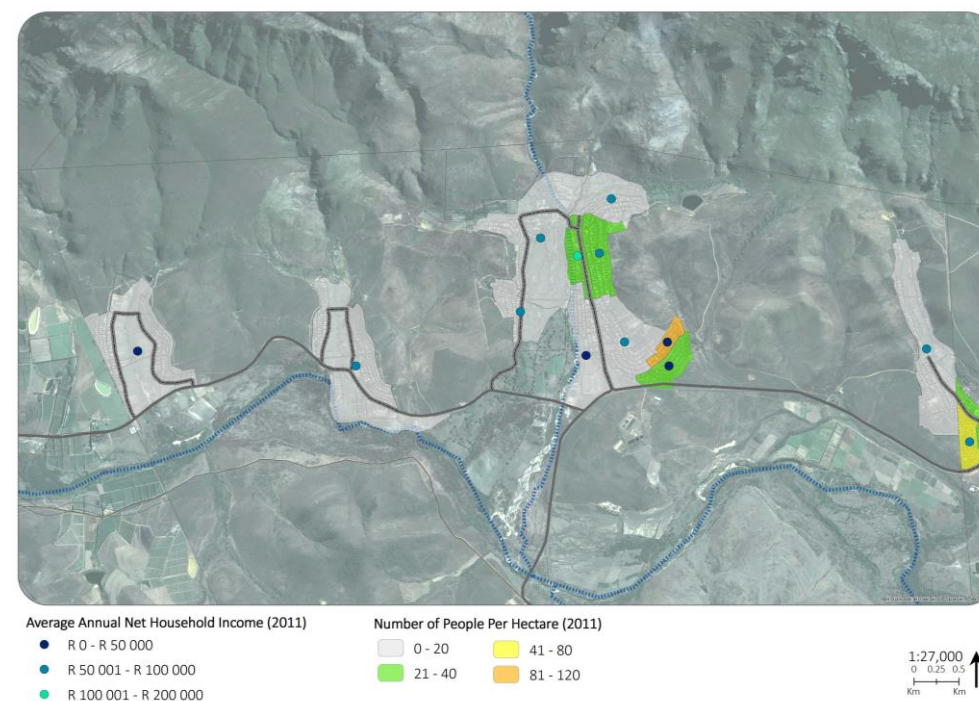


Figure A1.7.7: Farm 39: Household Density versus Household Income

7.2.4 Demographics

According to the 2011 Census, Genadendal's total population is estimated at 5 663. The 2018 Mid-Year Population Estimate (MYPE) population estimate for Genadendal is 6 662. An annual growth rate of 1.6% was recorded between 2001 and 2011 and an annual growth rate of 2.4% between 2011 and 2018. The estimated future annual growth rate between 2018 and 2028 is 2.2%. Based on the population projections for Greyton, the estimated total population by 2028 will be 8 266.

According to the Community Survey of 2016, the average household size for Genadendal was 3.2 persons. It is therefore estimated that approximately

2 583 households will reside in Genadendal by 2028.

7.3 BUILT ENVIRONMENT ANALYSIS

7.3.1 Movement Systems

The settlements are readily accessible from main transport routes, with Genadendal having the highest accessibility due to its location next to the R406 Road.

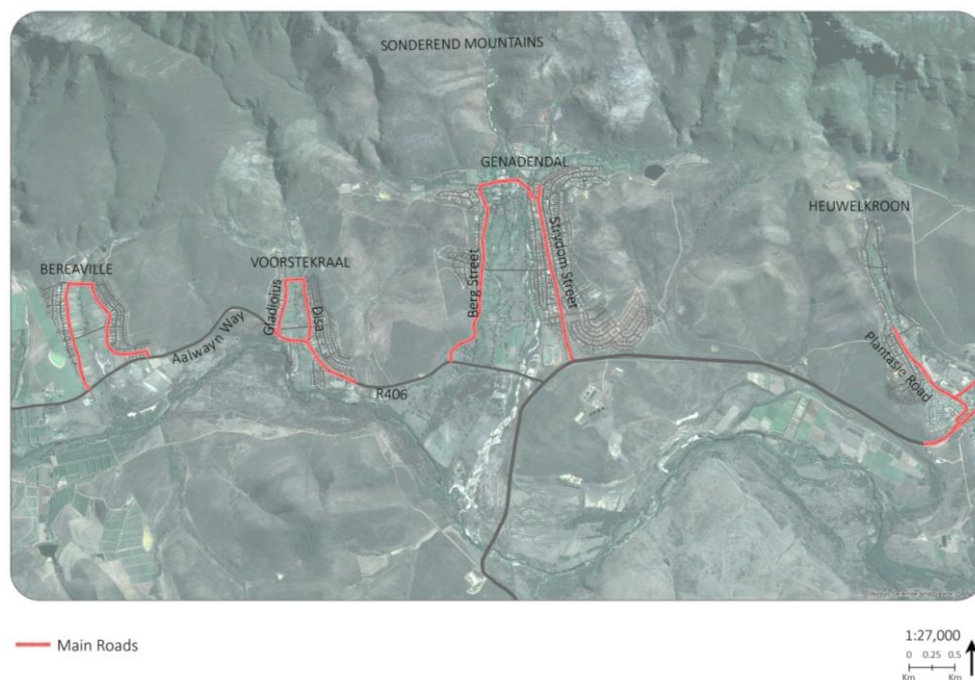


Figure A1.7.8: Farm 39: Gateways and Access Points

7.3.2 System of Social Facilities

The following figure illustrates the distribution of existing social facilities. Genadendal has two primary schools, one secondary school, one clinic, satellite

clinics (in Bereaville and Voorstekraal) and a library. These facilities provide basic services to the local communities.

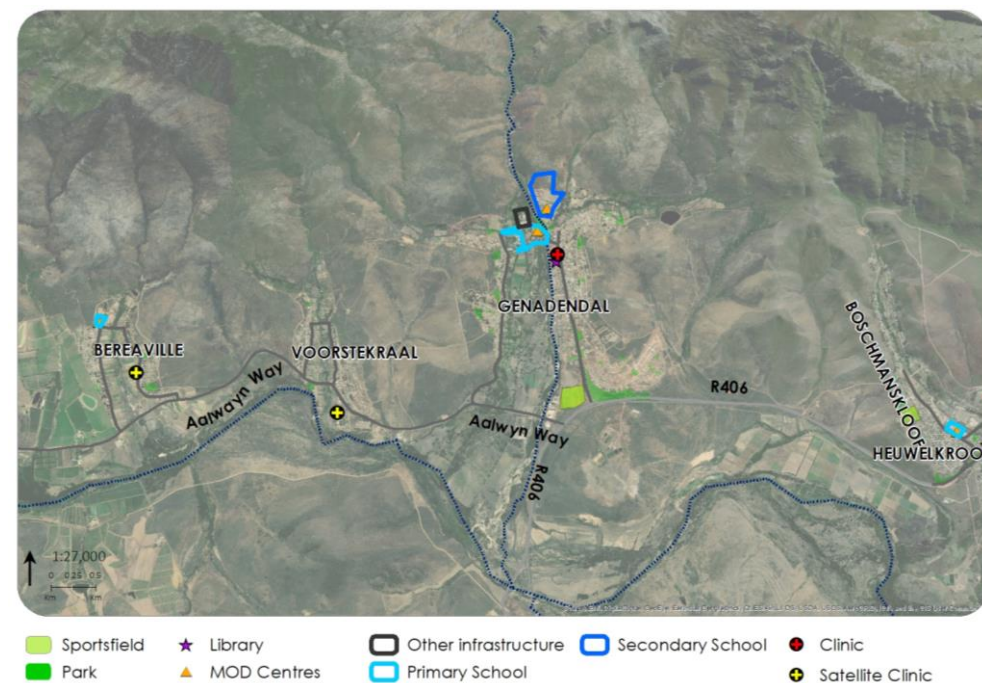


Figure A1.7.9: Farm 39: Social Facilities

7.3.3 Access to Schools

The following two figures illustrate the walking distances to the existing three schools. It shows that Voorstekraal is not within reasonable walking distance to a primary school. Furthermore, Bereaville and Voorstekraal is not within reasonable walking distance to the secondary school (more than 30 minutes).

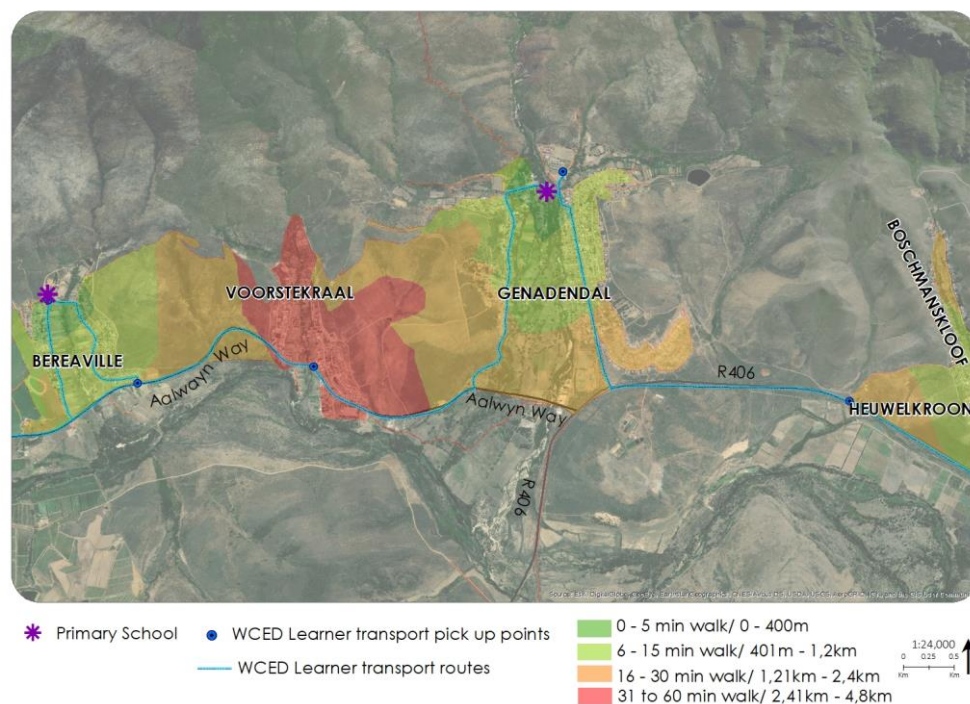


Figure A1.7.10: Farm 39: Walking Distances to Primary Schools

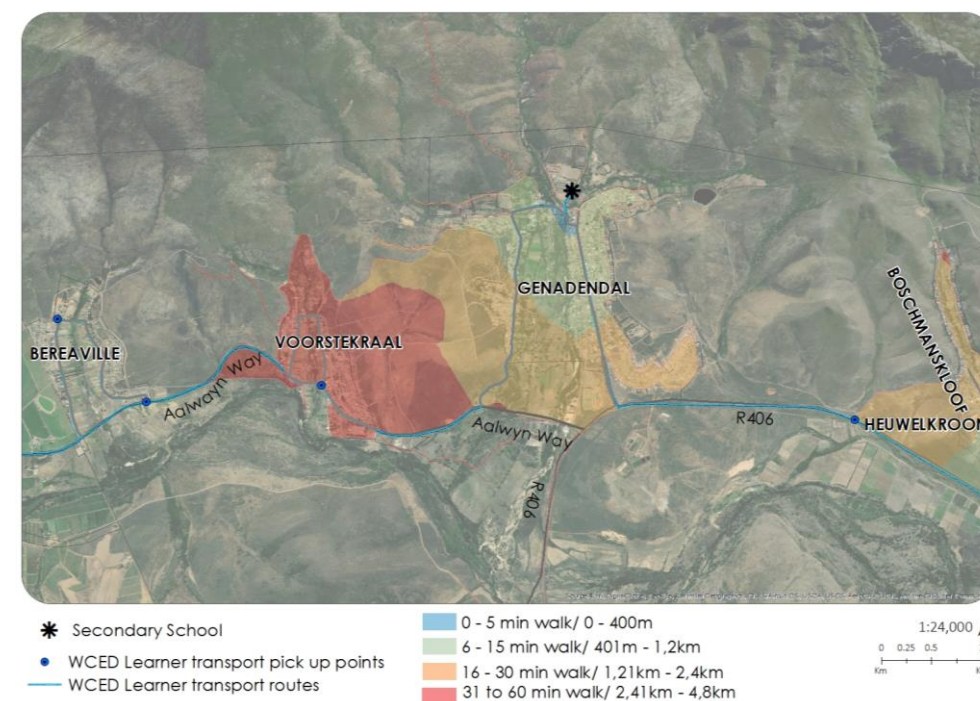


Figure A1.7.11: Farm 39: Walking Distances to Secondary Schools

7.3.4 Access to Health Facilities

A clinic and satellite clinics are located in Genadendal, Bereaville and Voorstekraal. These facilities are within reasonable walking distance to these communities.

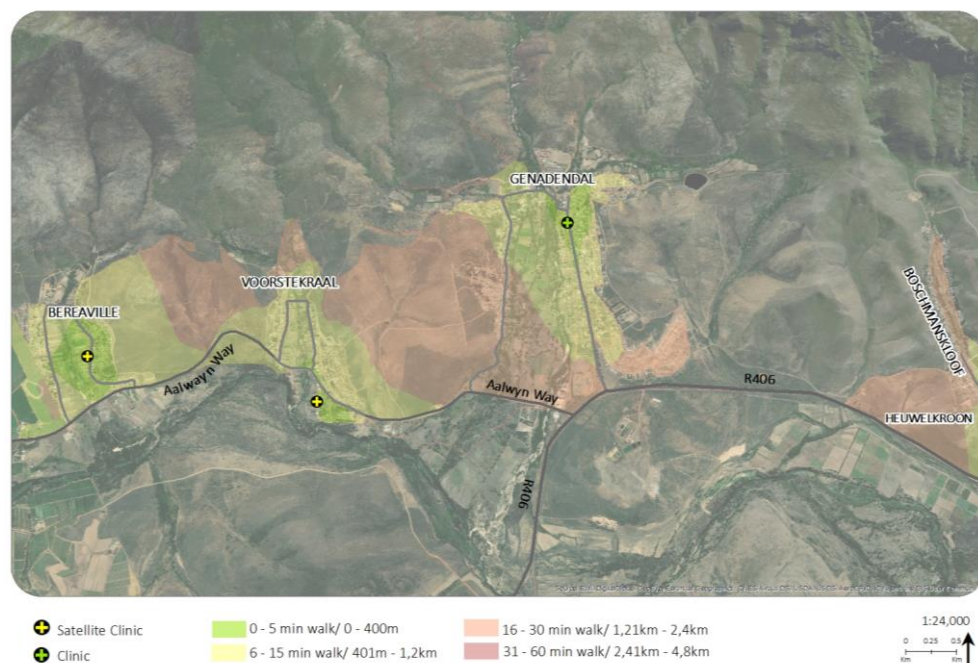


Figure A1.7.12: Farm 39: Walking Distances to Clinics

7.3.5 Cemeteries

The cemeteries have sufficient space to accommodate the needs of the community in the long term.

7.3.6 Engineering Infrastructure

(i) Genadendal:

■ Water Supply and Storage

Genadendal is supplied with water extracted from a weir situated in the Baviaans River, approximately 4.5 km upstream from Genadendal, in the Riviersonderend Mountains. Overflow from the weir supplies the Badsberg Dam.

The purification works is located at the reservoir. There is a water pump station in Korlandskloof, which is higher than the current reservoir.

All households have access to potable water.

Proposed future housing will impact on the purification works and an additional reservoir is required to increase storage capacity. Currently, only a 6 hour supply is available. The settlements need at least 24 to 48 hours.

■ Wastewater

It is planned to implement a waterborne sewerage reticulation system throughout all the settlements.

The Genadendal wwtw comprises of an activated sludge facility, which is generally in a good condition. The final effluent from the WWTW is discharged to the Baviaans River and currently there is no re-use of treated effluent.

■ Stormwater

Seasonal flooding occurs near the school. Gabions have been installed to mitigate against flooding. A culvert could further alleviate this issue.

■ Roads

The roads are mostly of poor condition and many roads are unpaved.

■ Solid Waste

The landfill site is at full capacity and has been issued with a closure licence. A landfill closure provisions report was done in 2017. Based on the date that the licence was issued the decommissioning of the site must commence at the end of 2019.

At the moment waste from Genadendal is taken to Greyton. A need exists for a transfer station for the greater area.

▪ Electricity

Electricity is provided exclusively by Eskom and two substations are located at the settlements. There are no network constraints or planned upgrades, although the distribution line between Caledon and Genadendal has been reported to be very old and would need replacement in future.

(ii) Bereaville:

▪ Water Supply and Storage

Bereaville is supplied from a perennial mountain stream, which is separate from Genadendal's water source. All households have access to water, although the source runs dry from time to time. A borehole was drilled, but needs to be equipped and connected to the reticulation system. The iron content of the borehole water is however too high and needs purification. The purification works needs to be upgraded to have a compliant plant.

▪ Wastewater

Bereaville still has no formal sewer reticulation system or a WWTW. Conservancy tanks or septic tanks with soak-a-way drains are generally in use and a tanker discharge the sewerage from Bereaville at the Genadendal wwtw.

▪ Roads

All roads have been formalised, except in the informal area.

▪ Solid Waste

Waste from Bereaville is transported to the Greyton landfill site, which has capacity limitations.

A need exists for a transfer station for the greater area.

▪ Electricity

Electricity is provided exclusively by Eskom.

(iii) Voorstekraal:

▪ Water Supply and Storage

Voorstekraal obtains its water from a weir on a perennial mountain stream. A borehole is also used as an alternative source. Alternative water sources would need to be investigated in the future to accommodate future development.

▪ Wastewater

Some sections of the settlement have waterborne sewerage, while other sections are served with conservancy tanks.

▪ Stormwater

Flooding is an issue in the area.

▪ Roads

All roads have been formalised.

▪ Solid Waste

Waste from Voorstekraal is transported to the Greyton landfill site, which has capacity limitations.

A need exists for a transfer station for the greater area.

▪ Electricity

Electricity is provided exclusively by Eskom.

(iv) Summary of Infrastructure Constraints

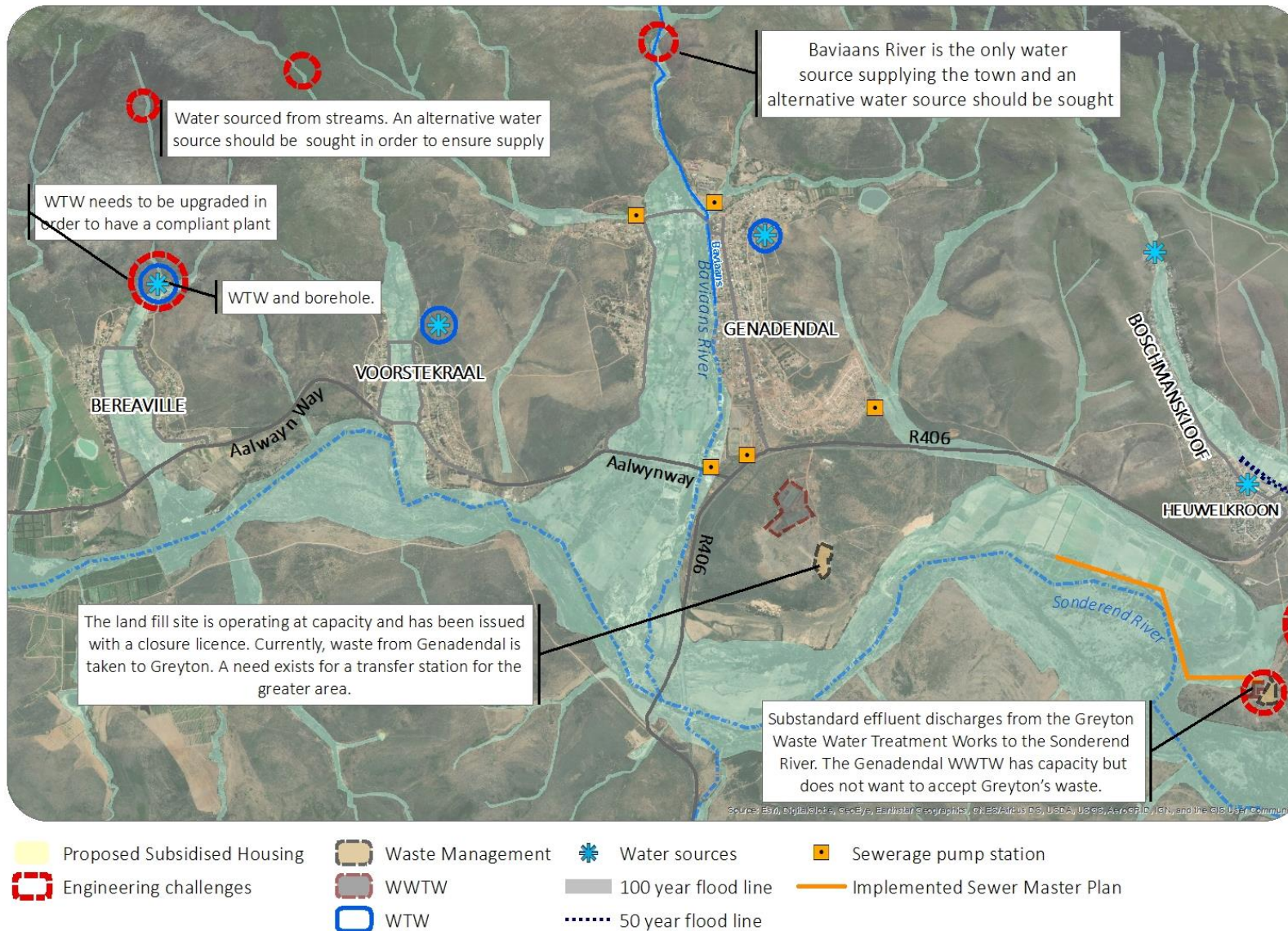


Figure A1.7.13: Farm 39: Summary of Infrastructure Constraints

8 TESSELAARSDAL

8.1 BIOPHYSICAL AND AGRICULTURAL ANALYSIS

8.1.1 Environmental Status Quo

The Klein River and its tributary, the Hartebeeste River, which flow through Tesselaarsdal, are important ecological corridors. There are wetlands and/or floodplain areas associated with these river systems that are similarly an important part of this ecological corridor.

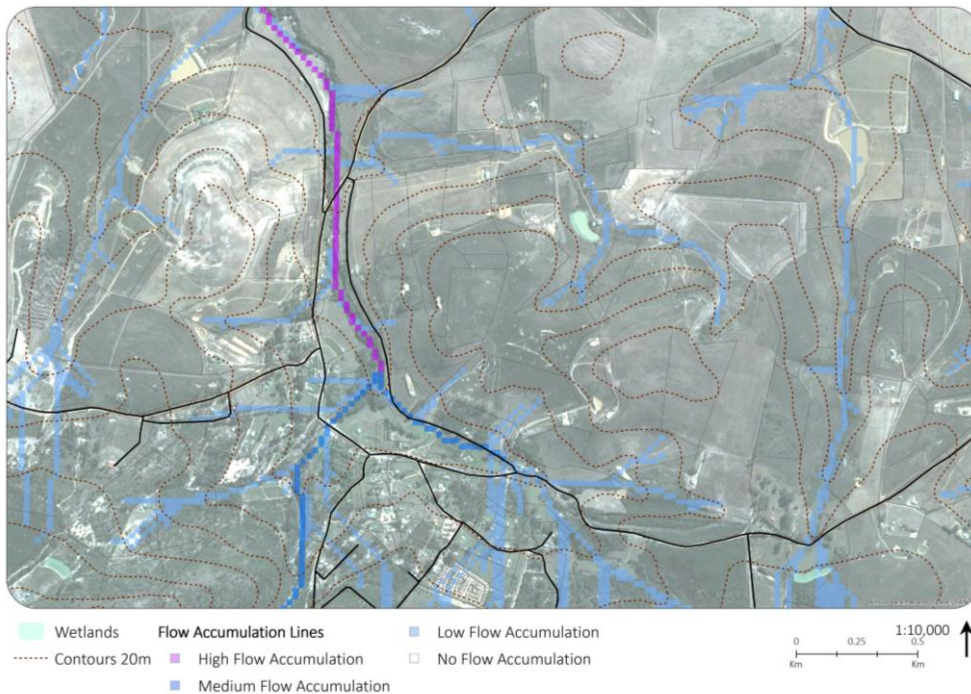


Figure A1.8.1: Tesselaarsdal: River Corridors and Wetlands

Given the remote location of the settlements, a large number of Critical Biodiversity Areas and ecological support areas occur in the immediate

surrounding area.



Figure A1.8.2: Tesselaarsdal: Core Biodiversity Areas and Ecological Support Areas

8.1.2 Agricultural Status Quo

Some agricultural production can be observed within the area, given the fact that the settlement is located in an area where the dominant land use is agriculture.



Figure A1.8.3: Tessaarsdal: Main Locally Produced Crops

8.2 SOCIO-ECONOMIC ANALYSIS

8.2.1 Economic Systems

Given the limited extent of the settlement, very limited and basic commercial activities exist. Residents either travel to Caledon or Hermanus to access higher order commercial activities. Some land uses aimed at the tourism market is located within the landscape. The community is generally a poor community and development proposals that will encourage the creation of local employment opportunities should be supported such as guest houses, arts and crafts centers, restaurants, etc. In addition, the agricultural potential of the area should be maximized. The area is characterized by small scale farming enterprises and a

large percentage of the residents are involved in the agricultural sector. Local economic development should focus on agriculture and tourism development.

8.2.2 Residential Patterns

With the exception of the 89 low cost housing units contained in 'Die Spruit', the settlement has an unstructured, rural pattern that is its main distinguishing element. The unstructured layout therefore requires a different approach to the conventional. Where possible, disruption of the organic development pattern must be restricted. In order to maintain the existing character of the settlement, non-rural type of land uses must be restricted to the identified urban edge.



Figure A1.8.4: Tessaarsdal: Existing Low Income Residential Development

8.3 BUILT ENVIRONMENT ANALYSIS

8.3.1 Movement Network

The main access roads are gravel roads under the jurisdiction of the Department of Transport and Public Works. A challenge that is encountered in the settlement is access to individual properties. Very few properties have direct access to the higher order, public gravel roads. Residents therefore make use of gravel roads that traverse each other's properties. In some instances, these access roads have been formalized by means of registered right-of-way servitudes. However, in most instances, this is not the case. It is therefore recommended that, in light of the aforementioned, no land use applications will be considered without proof being provided of formal access to the subject property.



Figure A1.8.5: Tesselaarsdal: Gateways and Access Points

8.3.2 System of Social Facilities

There are four churches and four cemeteries in Tesselaarsdal. However, only one cemetery is currently being utilized. There is one primary school and the recently built library and community hall directly opposite the school.



Figure A1.8.6: Tesselaarsdal: Social Facilities

8.3.3 Engineering Infrastructure

(i) Water Supply and Storage

Tesselaarsdal is supplied with water from a single production borehole, which is augmented by water abstracted from weir in a non-perennial mountain stream. Tesselaarsdal and Bethoeskloof water distribution systems are integrated and

water can also be supplied from Tesselaarsdal to Bethoeskloof.

A new reservoir is proposed next to the existing one which is in a very bad state. Bethoeskloof has a borehole next to the reservoir.

(ii) **Wastewater**

The settlement is serviced by conservancy tanks. The contents are taken to Caledon. A small wastewater package plant for low income housing has been constructed.

(iii) **Roads**

The main road within Tesselaarsdal is owned by the Department of Transport and Public Works. Access to individual properties are either by mutual agreement or formalised via right-of-way servitudes.

(iv) **Solid Waste**

A transfer station collects waste, which is taken to Caledon and Karwyderskraal.

(v) **Electricity**

Electricity is provided exclusively by Eskom.

(vii) Summary of Infrastructure Constraints

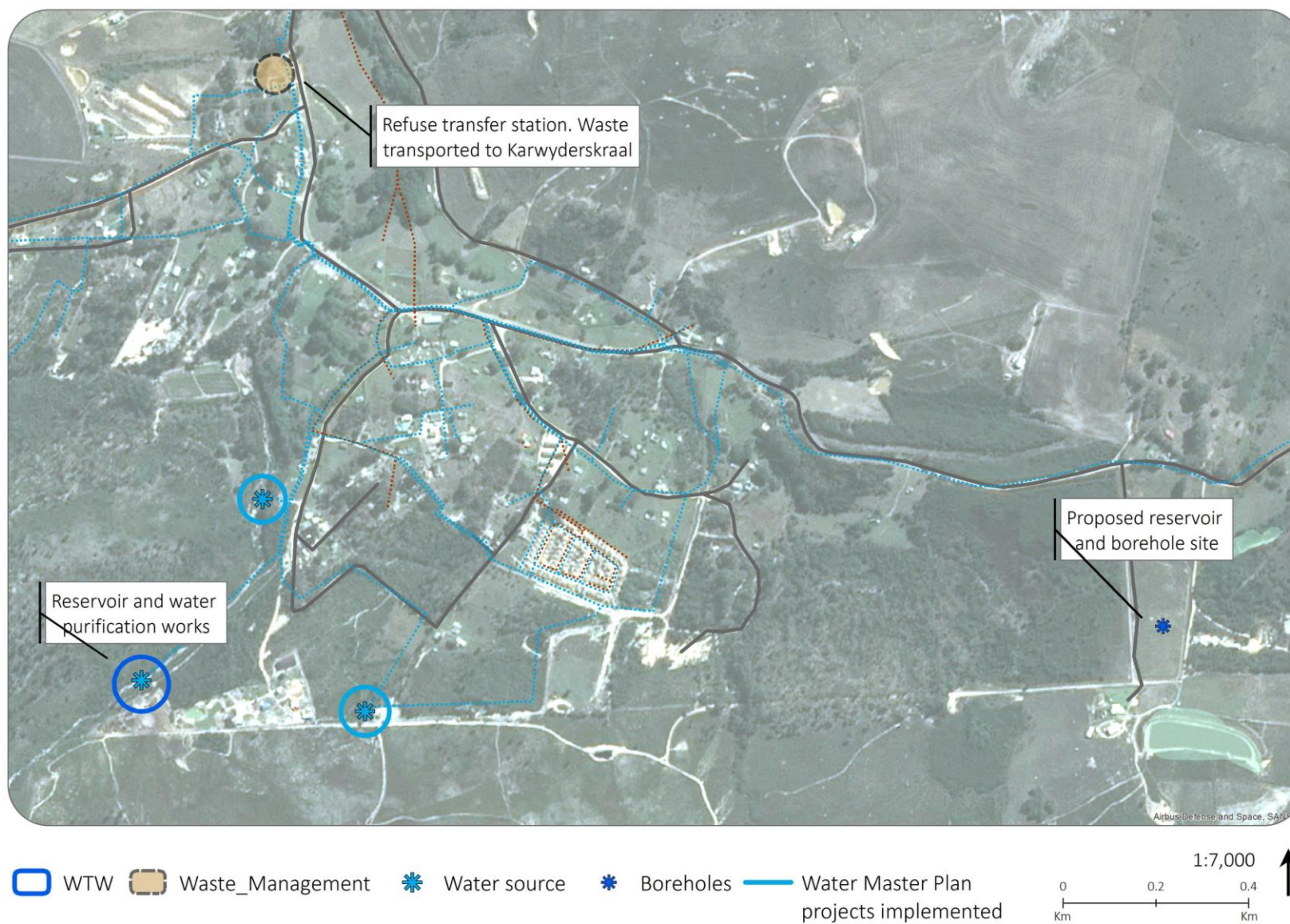


Figure A1.8.7: Tesselaarsdal: Summary of Infrastructure Constraints