# Project R031700554

# Analysis of the City of Cape Town Tourism Database

**prepared for the**

**DEPARTMENT OF TOURISM, CITY OF CAPE TOWN**

by

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November 2017

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# 1 BACKGROUND

According to Hall (no date: 1) "the development of spatial analysis as a field of study has been given much impetus by the growing demands for spatial data accuracy and quality given the increased amount of spatially referenced data held by the public and private sectors as well as the use of GIS as an interactive decision-making and planning tool." According to Hall (no date) "GIS has been well recognised as a tool for tourism planning because of its capacity to not only integrate spatial data but also because of its potential to represent data to users." GIS has also brought back a renewed interest in Tobler's (1970) first law (TFL) of geography that postulates that ‘‘everything is related to everything else, but near things are more related than distant things.’’

The City of Cape Town’s Information & Knowledge Management Department is a primary source of spatial data for all line departments[2]. However, many departments do not make use of their GIS data and are not aware of how useful the representation of data on maps can be to their understanding of specific patterns and features and how valuable these can be to inform strategies, policies and overall planning. In a tourism context, maps can show the spatial relationships between for example hotels or guest houses and land use zoning types, as well as attractions, transportation accessibility and proximity to services and facilities.

In the context of the aforementioned, the main purpose of this project was to illustrate how GIS (ArcMap) can be used to map spatial patterns of the tourism industry. The analyses had to:

1. Show the concentration of accommodation, attractions and services, the relation to each other, and how they link or are interdependent on each other.
2. Map accessibility of the above in terms of public transport.
3. Map the zoning categories for tourism accommodation establishments.

During the inception meeting it became clear that limiting the GIS analyses to the coast, Durbanville and Langa would be counterproductive because:

1. Data exists for the entire City of Cape Town (CoCT) area.
2. The inclusion of the entire metro in the analysis will not require much more work.
3. By only focussing on certain areas (e.g. coastal zone) one might lose sight of the “bigger picture” of the tourism industry in the CoCT.

The scope of the work was thus expanded to carry out the GIS analyses on the full extent of the CoCT, and in addition a specific focus on the CoCT owned resorts, Durbanville and Langa.

[2] See the CoCT’s spatial data in the Spatial Data Catalogue - search by theme or type the layer’s name in the search box.

http://cityweb.capetown.gov.za/en/cdirc/SpatialInformation/Pages/Spatial-Data-Catalogue.aspx

# 2 GEOGRAPHY, TOURISM AND MAPPING

The saying that "geography matters" is most evident when it comes to the mapping of features, objects, patterns, trends, etc. in space. Establishing where things are located is one of the two most fundamental premises of geography, the other being to remember where things are to help us in the process of making decisions and solving problems. For Golledge (2002: 10) "establishing where things are has produced the need for exact forms of locational determination and place and feature representation as epitomized in cartographic developments" ... "but establishing where things are is but one way that geographic knowledge is found useful." Geographic knowledge makes us aware of spatial relations amongst 'things' (e.g. tourism accommodation and transport), the extent to which these 'things' interact (e.g. urban land use and tourism accommodation establishments or tourism accommodation establishments and recreational spaces), and the extent to which these 'things' are co-related in terms of their spatial occurrence and distribution (e.g. tourism activities and urban spaces).

Maps, spatially depicting 'things' therefore "helps us to know why things are where they are, and how and why they are spatially related to other things. Acquiring geographic knowledge helps to develop a capacity for recognizing occurrences of similar phenomena in different environments (knowledge transfer) and recognizing one, two, or three-dimensional transformations of phenomena" (Golledge, 2002: 11). For Golledge (2002: 11) "the natural world and the human activities embedded in it are incredibly diverse. The human brain does not deal well with extreme diversity (chaos), but can handle variability. We do this in a spatial sense by searching for locational regularities that can be cognitively categorized and spatially associated so that information can be ordered and communicated. In this way, variability and diversity can be interpreted, and what might otherwise be considered chaos can be comprehended at some scale of organization. Geographic knowledge thus helps us make sense out of chaotic or apparently highly diversified environments." Spatial analysis is the quantitative study of phenomena that are located in space (Bailey and Gatrell, 1995: 7) comprising of four broad overlapping areas of spatial analysis: (1) spatial data analysis, (2) spatial statistical analysis, (3) spatial modelling and (4) spatial data manipulation (Hall, no date).

There has been a long tradition within tourism geography and cartography to investigate spatial tourism related trends through the representation of spatial data on maps (Van Doren & Gustke, 1982; Smith, 1987). Yet, surprisingly, until as recent as 2009, scholarship proclaims that by mapping spatial distribution of tourism resources in selected parts of the USA they would have been the first to create a tourism resource inventory database at the county level that would spatially examine tourism resource distribution patterns across all counties (Deng & Dyre, 2009).

Examining tourism resources and distribution patterns spatially across a range of geographic scales (country, province or metro) can for example be based on:

- the tourism resource quantity measured by size, length, or number, as well as on the quality determined by an Analytic Hierarchy Process (AHP) through surveys;

- on the spatial relationships and characteristics of land use, attractions, and transport facilities around hotels for example can be analysed with a set of logistic regression models;
- using a buffer analysis tool to analyse for example the clustering of accommodation within different ranges of spatial clustering patterns of accommodation (Deng & Dyre, 2009; Hsueh & Tseng, 2013; Li et al., 2015);
- point pattern analysis (quadrat, nearest neighbour and standard deviational ellipse analyses) is useful to track the change in spatial location of, for example tourism accommodation, over time (Wall et al., 1985). However, time-series data is needed for this and such mapping is very useful for urban planning strategies because identifying the clustering of tourism-related industries can promote the development of tourism in general (Hsueh & Tseng, 2012); and
- of late mapping the extent by means of GPS to which hotel location influences tourist movements through tourists' movement patterns in aggregate, the time of day when tourists are most likely to visit different regions and the impact of distance on intensity of activity is conducted, has been used to spatially represent tourism infrastructure and tourist behaviour (Shoval, et al., 2011).

Density can tell you where clusters in your data exist, but not if your clusters are statistically significant. In GIS, hot spot analysis is a good way of making sense of a large dataset of points (locations), such as a tourism database. Hotspot analysis uses vector polygons (usually square cells) to identify the locations of statistically significant hot spots and cold spots in data. The Optimized Hot Spot Analysis (OHSA) tool in ArcGIS calculates the Getis-Ord Gi* statistic (pronounced G-i-star) for each feature (location) in a dataset. It generates a set of z-scores and p-values that can be used to determine spatial clusters (i.e. concentration of locations). Each feature is assessed within the context of neighbouring features. A large number of features in a specific location may be interesting, but may not be a statistically significant hot spot. A statistically significant hot spot occurs if the local sum of features is proportionally larger to the sum of all features (i.e. where features are concentrated). In contrast, a cols spot represents areas where the local sum of features are significantly lower than the sum of all the features. When the local sum is very different from the expected local sum, and when that difference is too large to be the result of random chance, a statistically significant z-score results. For instance, when applied to the locations of accommodation providers the tool aggregates (counts) the number of providers per predefined region (cell). It then spatially compares the aggregated value of each cell to its neighbours (using Moran I statistics) to determine if it is significantly higher (hot) or lower (cold) (Figure 1). Figure 2 is an example of a hot and cold spot map done for the CoCT's Arts and Culture Department in 2015. In the subsequent sections of the report a similar approach was followed mapping tourism data spatially.

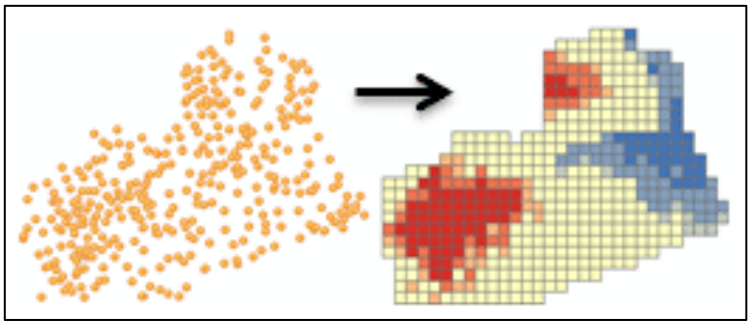


Figure 1 Hot spot analysis converts point events (e.g. accommodation providers) into regions (cells) that are statistically higher (hot) and lower (cold) than most of the cells in the region

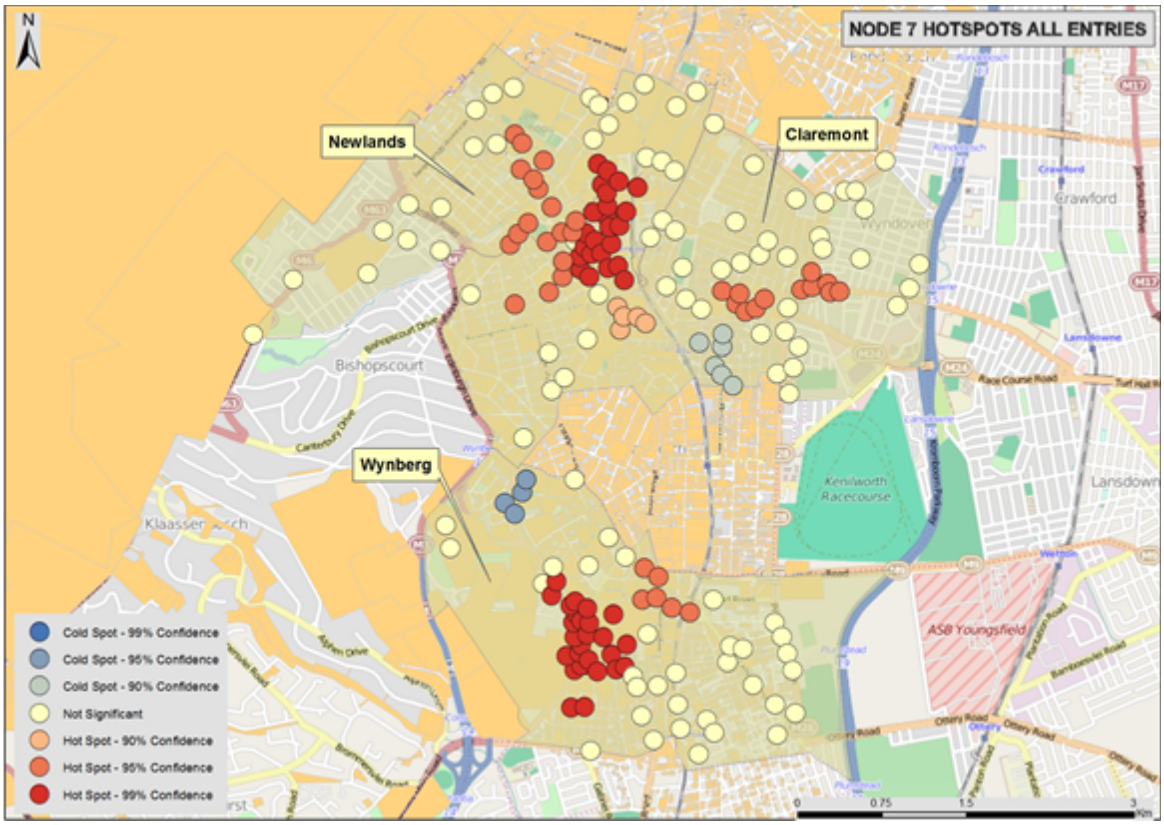



Figure 2 Hot and cold spot map of arts and culture establishments and places in a selected part of the southern suburbs (Tourism and Urban Research Unit cc, 2015: 89)

# 3 METHODOLOGY

The CoCT's tourism points of interest (POIs) database was the principle data source for this project – hereafter referred to as the CoCT database. Appendix A lists the fields (attributes) in the database. When only the POIs within the CoCT (the database also include data for outside of the CoCT extent) are considered, it consists of 7891 records pertaining to locations and characteristics of 1432 accommodation providers, 1071 tourism attractions and 5133 tourism services[3]. Some 255 records are uncategorised (shown in black in Figure 3). Making sense of such a large dataset is difficult as the large number of locations is overwhelming . In addition, a number of reports and tourism statistical sources were obtained from Cape Town Tourism (CTT) and CoCT of which maps were drawn to illustrate how tourism data can be used to map trends spatially.

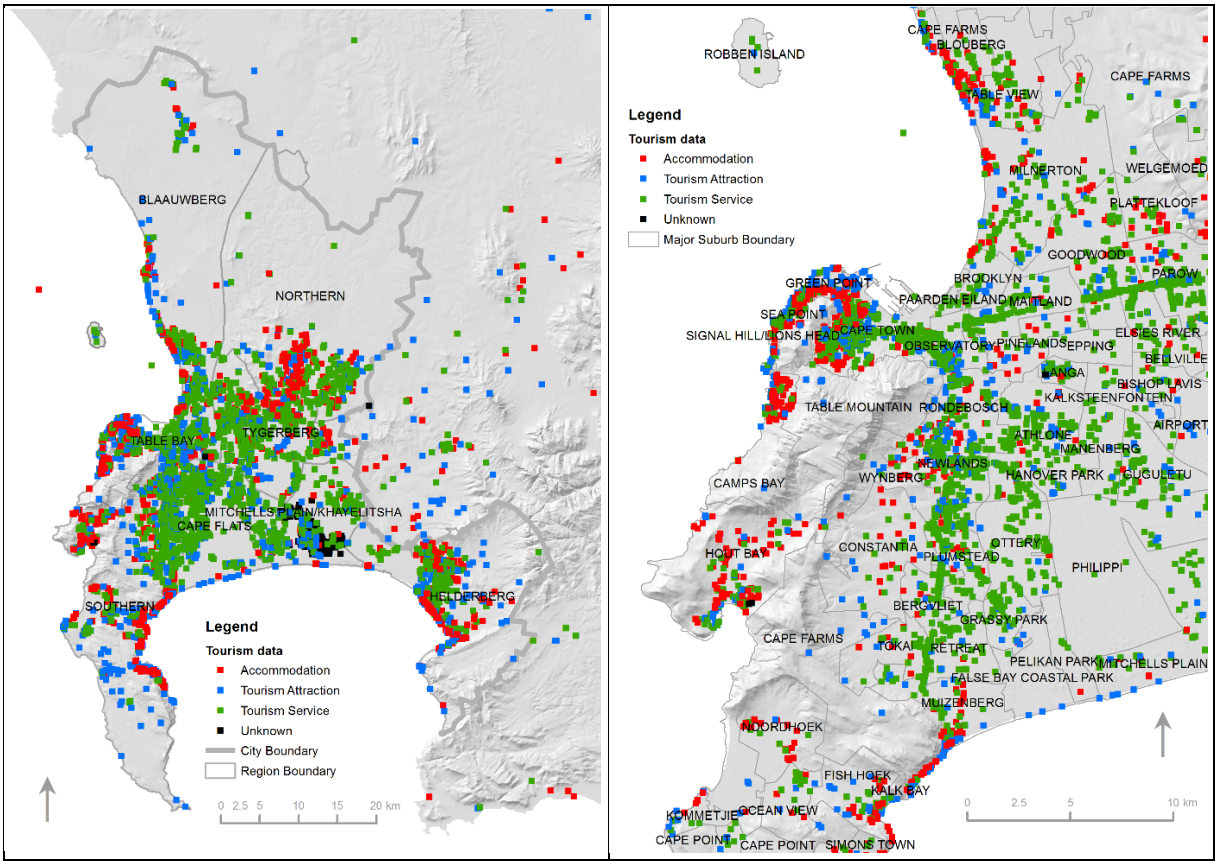



Figure 3 Tourism database for (a) CoCT and (b) a detailed area contains a large number of records that are difficult to interpret[4]

As noted in the previous section, Optimized Hot Spot Analysis (OHSA) is ideal for removing noise and emphasizing trends. Because it is scale dependent, a pre-analysis was required to determine the most suitable cell size for analysis. Through a set of experiments (using all accommodation and attraction POIs as input), the cell size was initially set to 1000m and gradually reduced to 100m. The results of some of the iterations are shown in Figure 4. It is clear that the hotspots generated at 1000m cell size are too generalized (e.g. they include natural areas such as Table Mountain), while at 100m the hotspots become too small and even represents individual properties in some areas. From visual interpretation of the maps it

[3] Accommodation provides, tourism attractions and tourism services are represented in the SUB_CTGR field as numbers 1, 2, and 3 respectively. See Appendix B for lists of sub-categories.
[4] For a larger version see https://www.dropbox.com/s/6oauh89j31f67vc/Fig03_tourism_database.pdf?dl=1

was determined that a cell size of 200m provided a good compromise between generalization and removal of noise. For the purposes of understanding where most tourism activities are clustered, only hot spots are considered (in fact, no significant cold spots were generated using the OHSA tool on the tourism data).

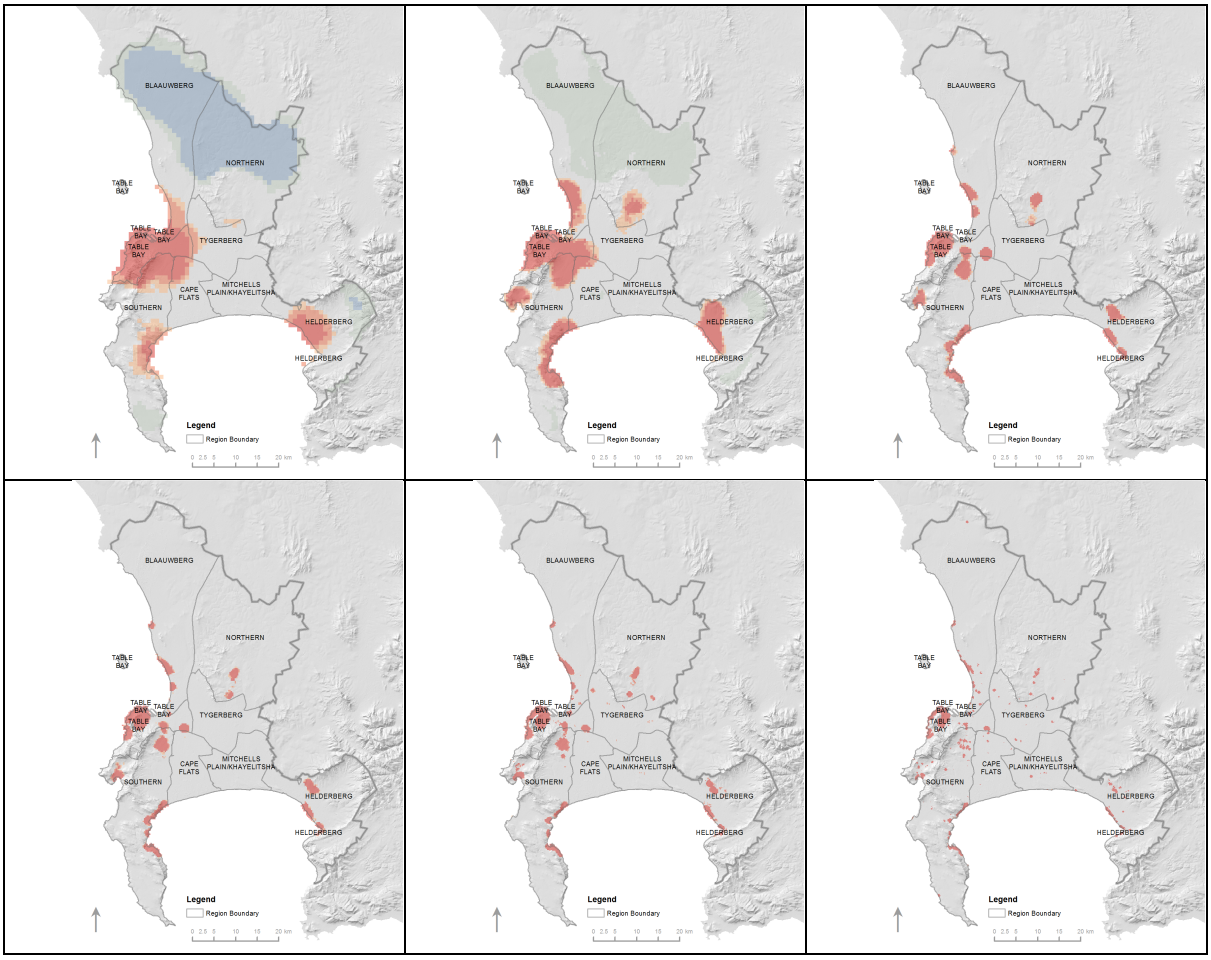



Figure 4 Tourism (accommodation and attractions) hotspots as modelled using (a) 1000m, (b) 500m, (c) 400m, (d) 300m, (e) 200m, and (f) 100m cell sizes

Larger scale versions of the hotspot map of accommodation, tourism attractions and tourism services (combined) are provided in Figure 5. Of the eight planning districts two are completely insignificant in terms of tourism hotspots (Tygerberg, Michel's Plain/Khayalitsha and Cape Flats) whereas the Northern district has minor hotspots. Understandably, the inner city, Atlantic Seaboard, Hout Bay, False Bay stretch between Muizenberg and Simon's Town as well the coastal parts of the Helderberg and Blaauwberg are the main hotspot cluster areas.

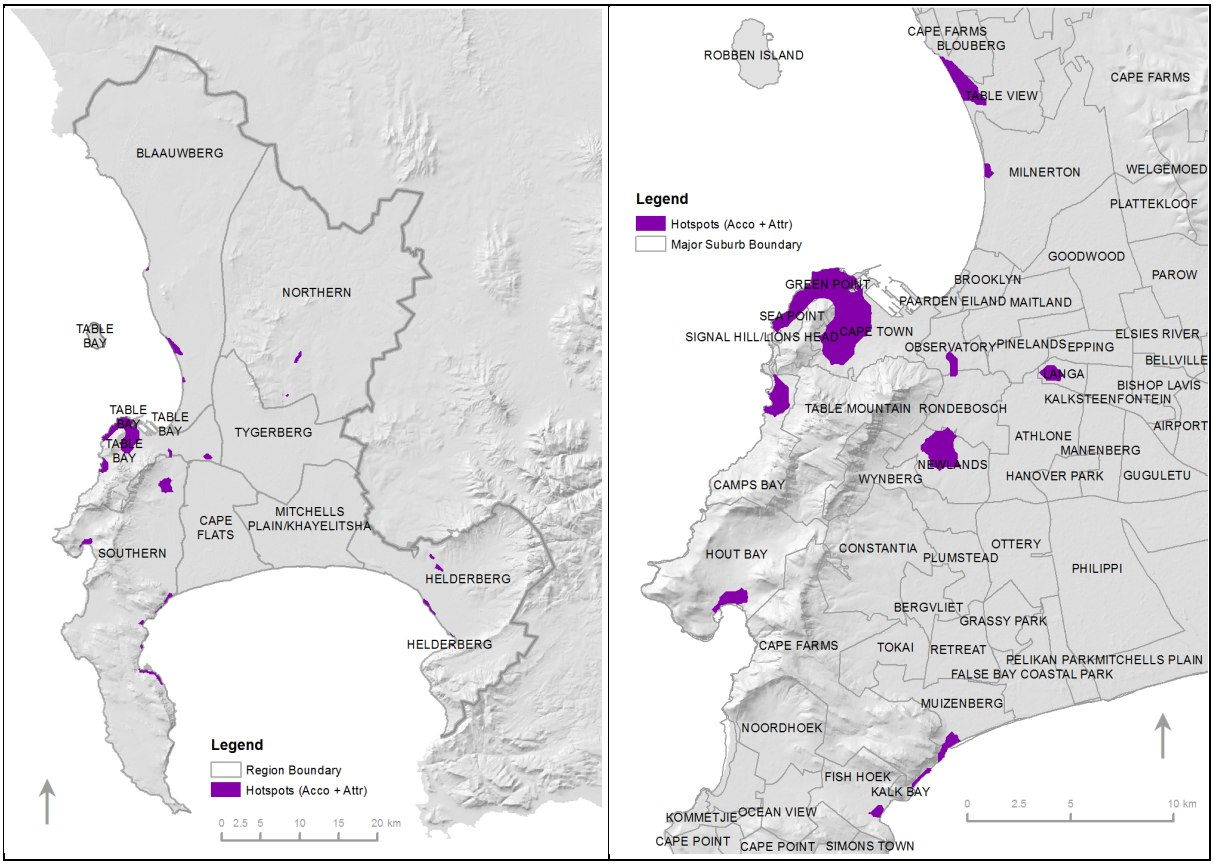



Figure 5 Tourism (accommodation and attractions) hotspots of (a) the CoCT and (b) a more detailed area[5]

[5] For larger version go to https://www.dropbox.com/s/eyocttj26wvmu9t/Fig5_hotspots_acc_att.pdf?dl=1

# 4 CITY-WIDE DISTRIBUTION OF TOURISM INFRASTRUCTURE

To provide context to the maps that follow, Figure 6 provides an overview of the City of Cape Town and shows conservation areas, water bodies, beaches and slipways (the typical outdoor tourism activity spaces).

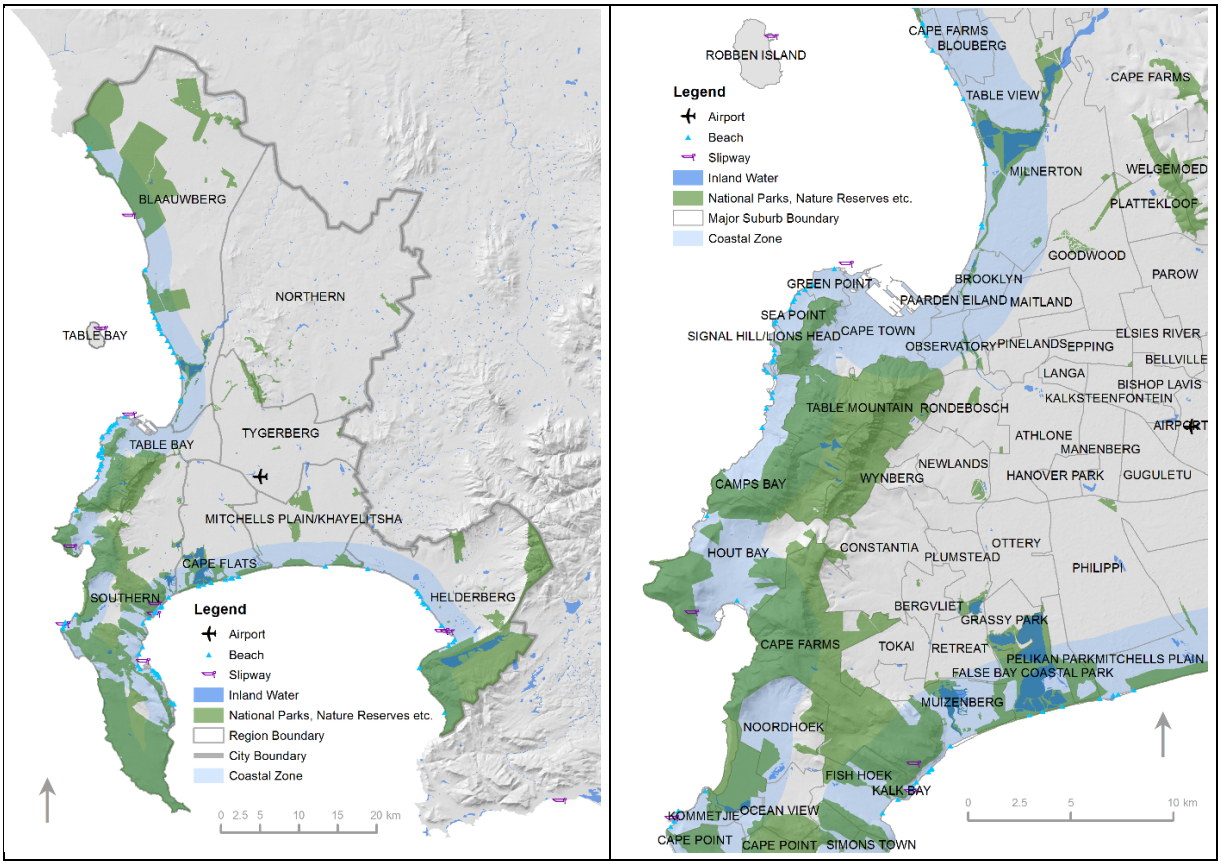



Figure 6 Overview of (a) CoCT and (b) a detailed area, showing the coastal zone, water bodies, parks/reserves and other points of interest[6]

The raw data collected from the CoCT's database for this analysis is based on the number of points per category and district (Table 1). It should be noted that all the data in the report is based on the existing CoCT database and all errors, inadequacies and omissions are not accounted for in the report. The following subsections consider the spatiality of accommodation, attractions and services separately.

Figure 7 shows the percentage of places within each of the three categories per districts; confirming the dominance of the Table Bay (inner city and immediate surrounding areas) as hub for accommodation, services and attractions. The second most significant district is the Southern District. In fact, the majority of the tourism accommodation (52%), attractions (59%) and most services (47%) are located in these two districts.

[6] https://www.dropbox.com/s/7d7ctd8g0elpxs7/Fig6_Overview.pdf?dl=1

Table 1 Summary of number of points per category and district

| Region (Abbreviation) | # Accommodation providers | # Tourism attractions | # Tourism services | Total | Ranking |
|---|---|---|---|---|---|
| Table Bay (TBy) | 403 | 345 | 1449 | 2197 | 1 |
| Southern (SEn) | 349 | 289 | 980 | 1618 | 2 |
| Tygerberg (TBg) | 99 | 73 | 819 | 991 | 3 |
| Cape Flats (CFs) | 24 | 62 | 613 | 699 | 4 |
| Helderberg (HBg) | 228 | 87 | 377 | 692 | 5 |
| Blaauwberg (BBg) | 170 | 91 | 285 | 546 | 6 |
| Northern (NEn) | 129 | 69 | 343 | 541 | 7 |
| Mitchell's Plan/Khayelitsha (MKa) | 30 | 55 | 267 | 352 | 8 |
| Total | 1432 | 1071 | 5133 | 7636 | ** |

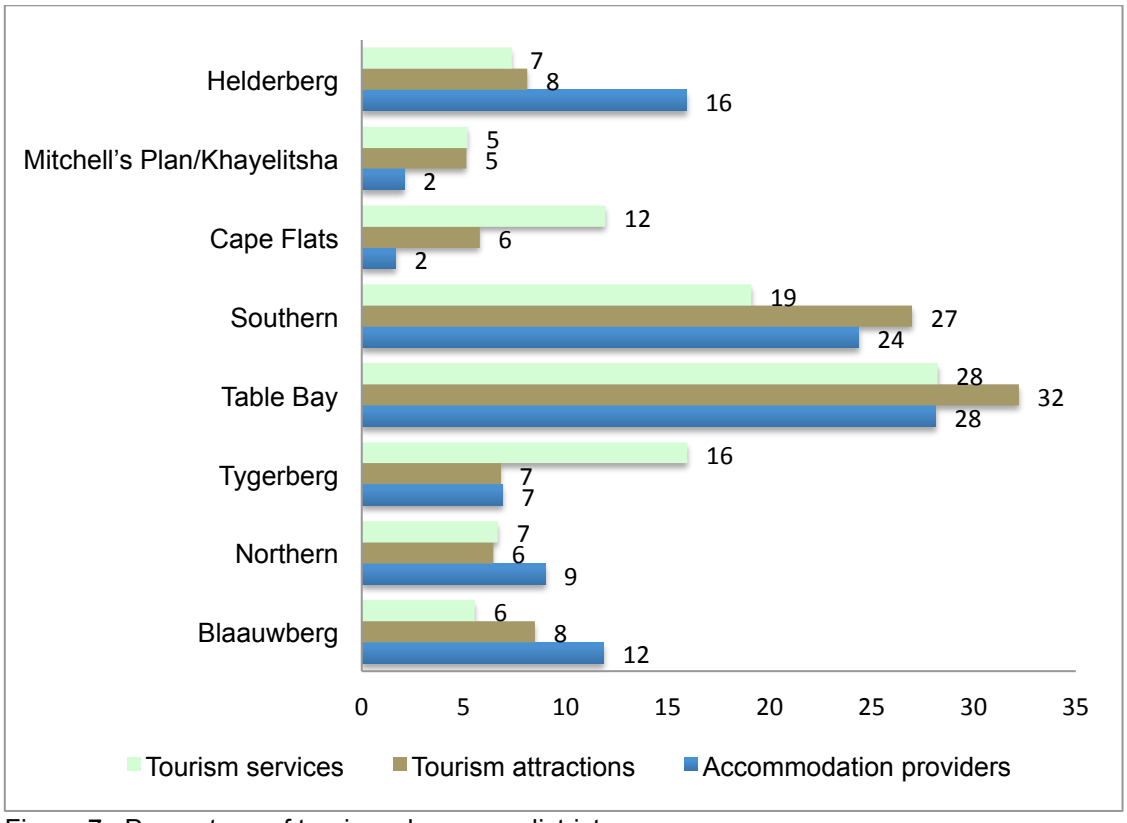



Figure 7 Percentage of tourism places per district

The analysis hereon will reflect on and differentiate between the eight different planning districts of the CoCT. The existence of strong regional variations in the tourism resource base (in this case accommodation, attractions and services) could be evidence of the need for tourism planners and policy analysts to incorporate an explicit district perspective in their work at the metro level. According to Smith (1987: 265) "failure to do so can result in wasted promotional budgets, inefficient allocation of tax incentives and other development grants, and possibly even undesirable social and environmental impacts if development projects are located in inappropriate locales."

## 4.1 Tourism accommodation

The locations of tourism accommodation providers are provided in Figure 8. Given the large number of POIs it is difficult to clearly delineate concentrations of accommodation providers. At face value, it is evident that the Table Mountain National Park (TMNP) (for obvious reasons), the Cape Flats and Khayelitsha districts, as well as the agricultural and rural parts to the northern parts of the CoCT, have the lowest density of accommodations. At regional scale the data provided by Lighthouse does not seem to differ much from the CoCT database, which focusses only on the coastal zone Figure 9. Given the different classification schemes used, variations in attribute capturing and poor spatial accuracy of both databases, it was not possible to do a quantitative comparison between the two databases. The Lighthouse data was consequently only used for map production and visual (qualitative) comparisons.

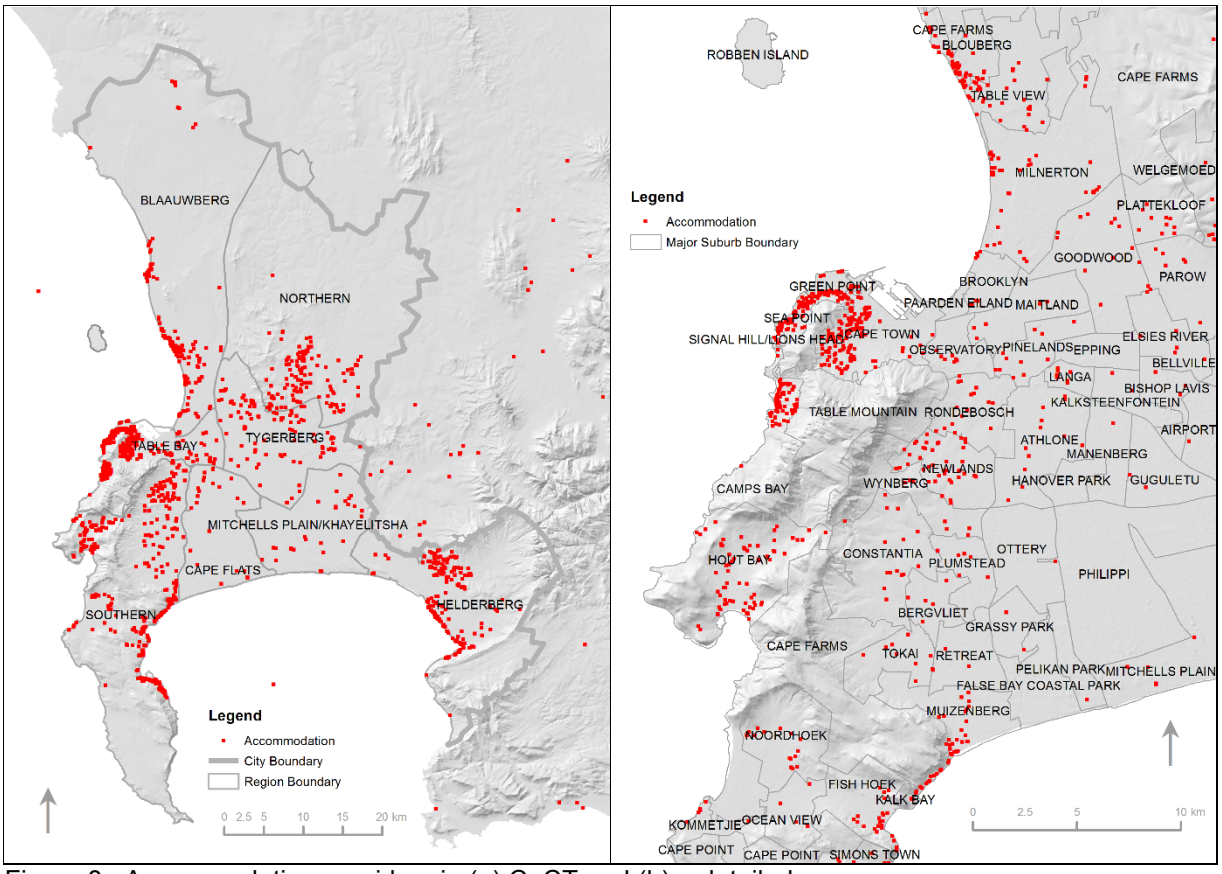


Figure 8 Accommodation providers in (a) CoCT and (b) a detailed area

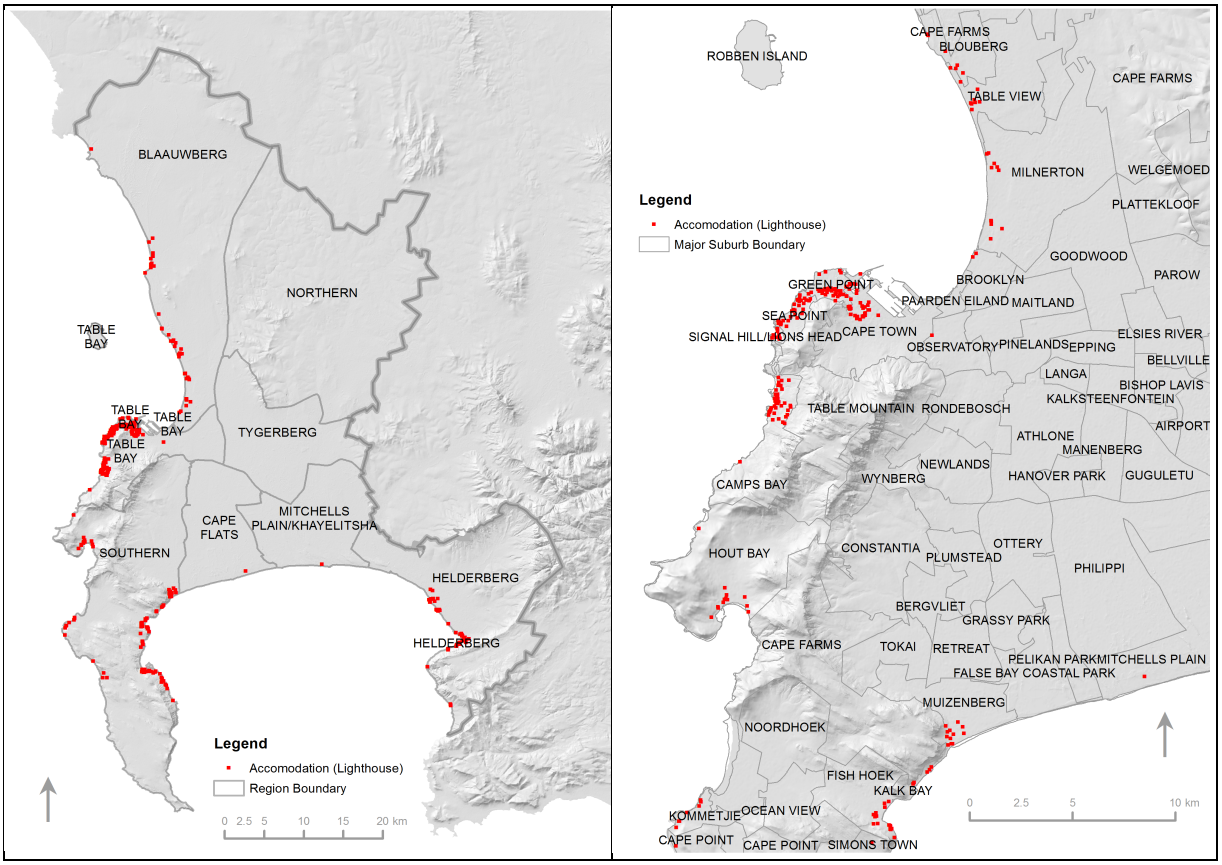



Figure 9 Accommodation according to Lighthouse database for (a) CoCT and (b) a detailed area

The hotspot map of tourism accommodation providers is shown in Figure 10. A total of 583 (37%) accommodation providers are located in the identified hotspots. This relatively large proportion suggests that hotspot analyses is a good way of generalizing the accommodation data. When Figure 10b is studied, it is clear that small concentrations, such as the one in Langa, are successfully identified but is difficult to discern in Figure 8b.

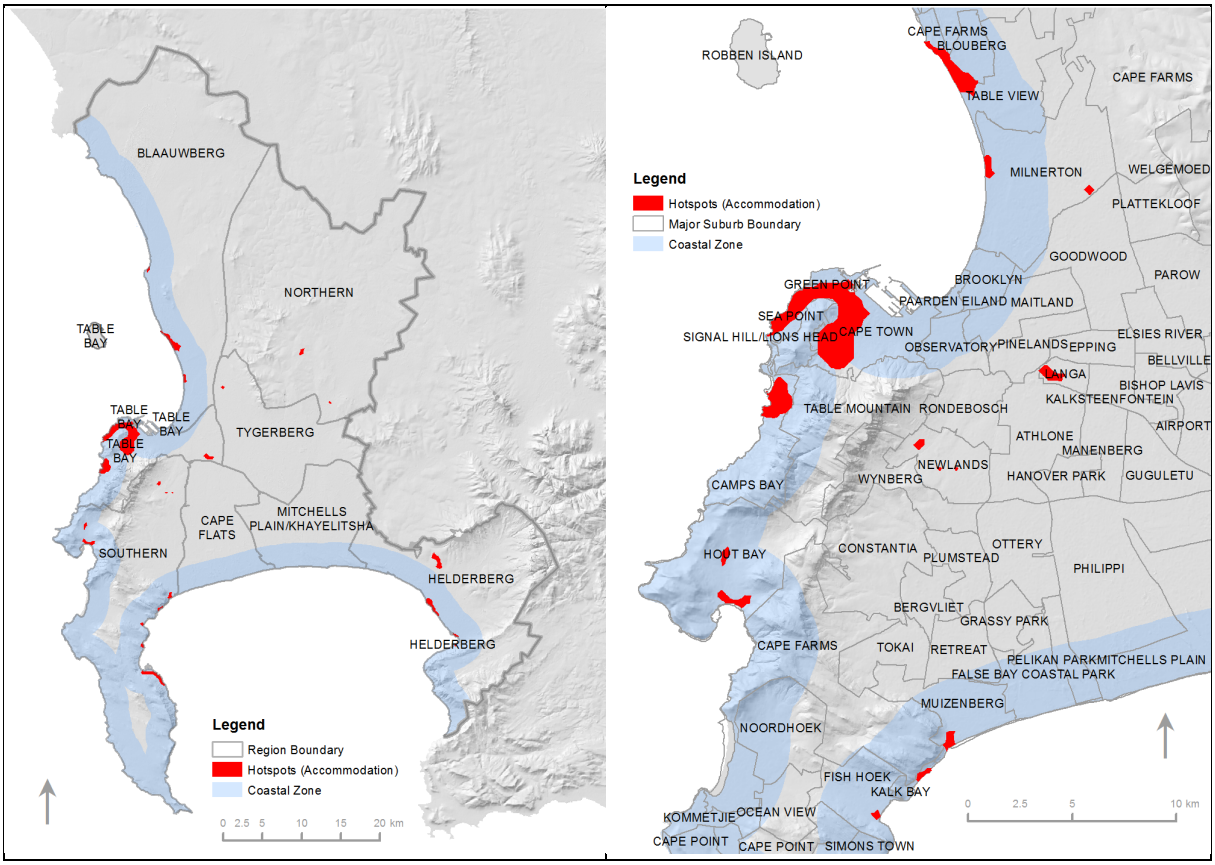



Figure 10 Accommodation hotspots of (a) in the coastal zone of the CoCT and (b) a more detailed area in general[7]

### 4.1.1 Accommodation establishment categories

The CoCT database lists 16 accommodation types (Hotel; Guest House; Bed and Breakfast; Self-Catering; Resort; Caravan Park; Campsite; Hostel; Backpackers; Farm Accommodation; Game Reserve; Lodge; Caravan and Camping Site; Homestay; Holiday Flat/Apartment; Holiday House) plus an additional two categories: 'unknown' and 'other'. For the purpose of the analysis, the above categorisation was reduced to six accommodation groups (Figure 11):

- Hotel and Lodge
- Guesthouse and B&B
- Hostel and Backpacker
- Self-catering
- Holiday House
- Flat and Apartment

It is clear that most hotels are clustered around the CBD and Waterfront areas, while Camps Bay, Hout Bay, Blouberg, Somerset West and the southern suburbs are dominated by guesthouses, B&Bs and self-catering accommodation.

[7] For larger version see https://www.dropbox.com/s/1ygcgogjwki18s7/Fig10_hotspots_acc.pdf?dl=1

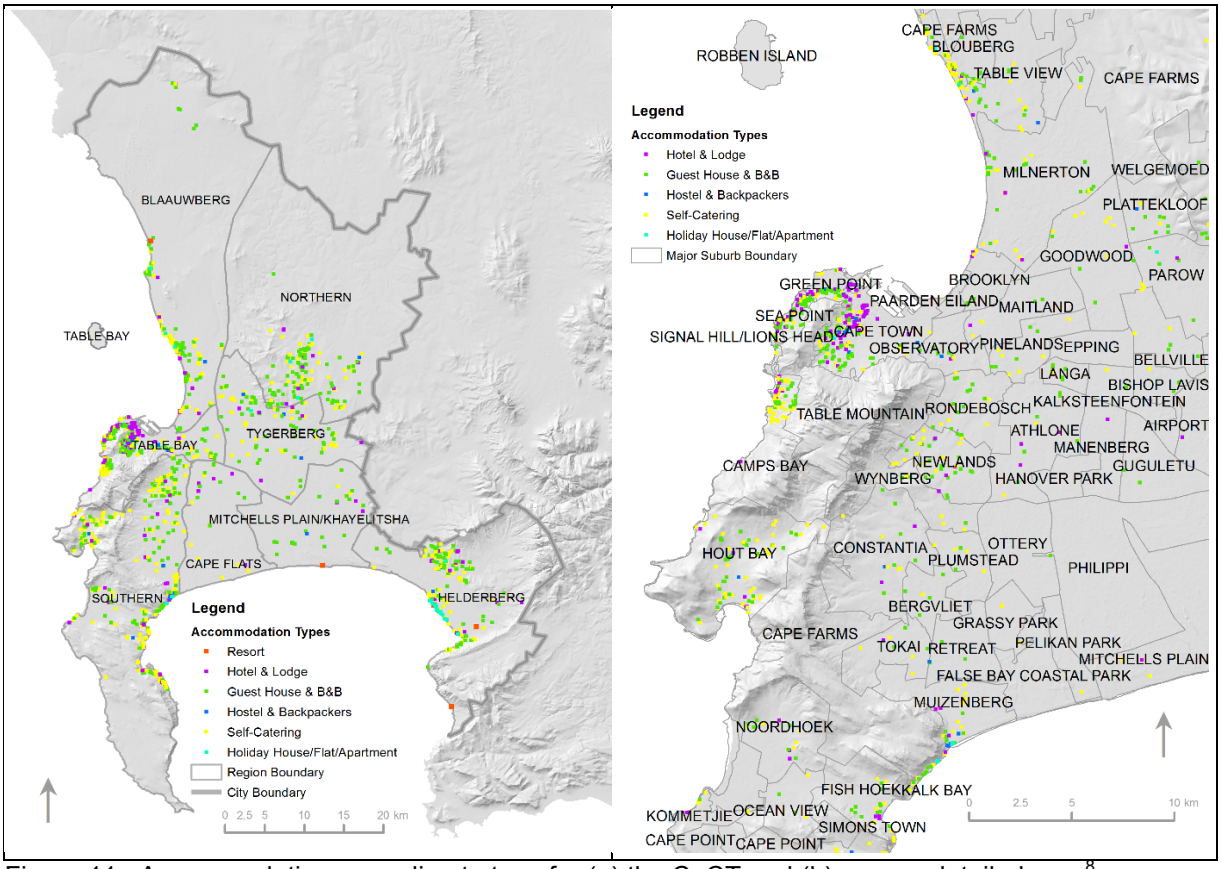



Figure 11 Accommodation according to type for (a) the CoCT and (b) a more detailed area[8]

Figure 12 indicates the number of the three main accommodation types per district.

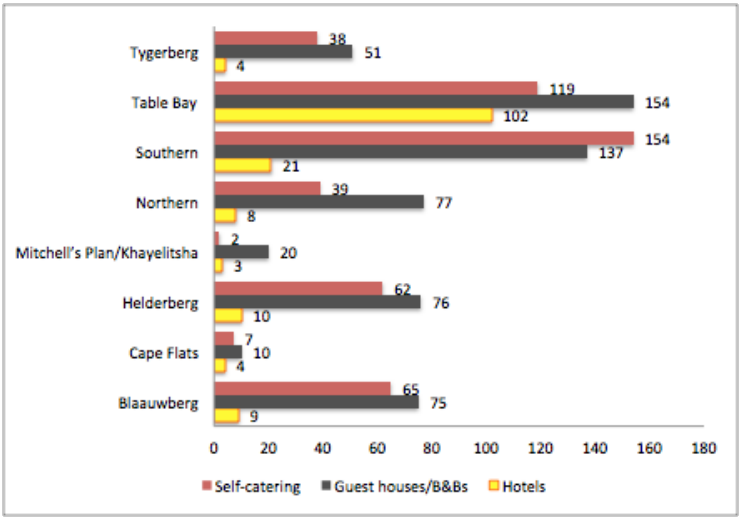



Figure 12 Number of tourist accommodation establishments per district

Hotspot maps can only be generated if enough cases (establishments) are present. Producing hotspot maps for individual types of accommodation was consequently only possible for the types shown in Figure 13 a-d (some types had to be combined). Large hotspots for self-catering are observed especially in the coastal parts of the southern suburbs, Somerset-West/Strand/Gordon's Bay and Blaauwberg districts for example. Hotel hotspots are almost exclusively located in the CBD.

[8] For a larger version see https://www.dropbox.com/s/8zyi5ipe1yeiaze/Fig11_Accommodation_types.pdf?dl=1

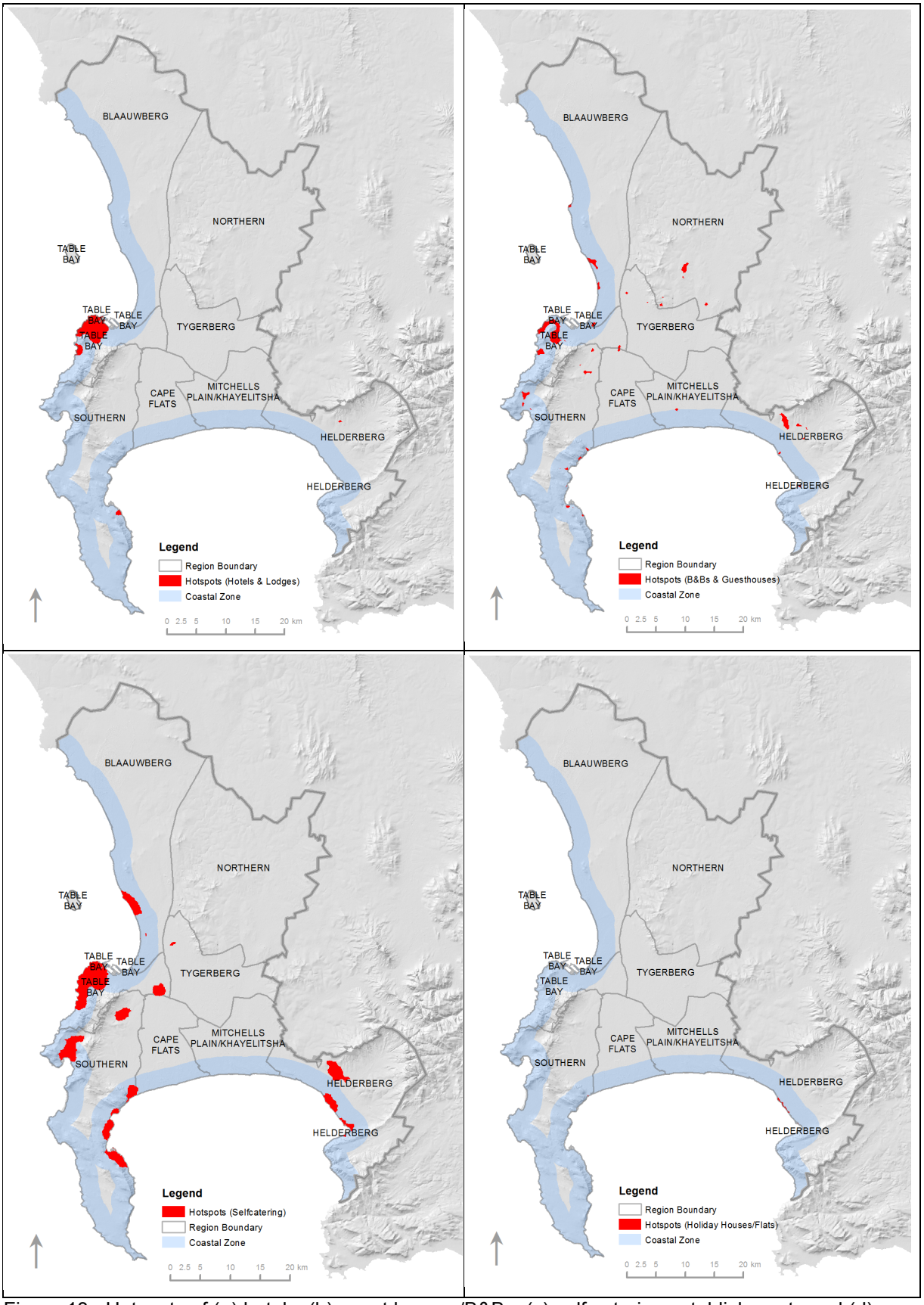



Figure 13 Hotspots of (a) hotels, (b) guest houses/B&Bs, (c) self catering establishments and (d) holiday houses/flats in the CoCT area

### 4.1.2 Size of establishments

Some of the records in the accommodation POIs include information on the number of rooms and beds per establishment. Unfortunately, these values are stored as text, which makes any kind of analyses very difficult. Also, no data integrity measures (e.g. domains) were used, which results in a poorly structured set of records. For instance, some of the records in the number of rooms field (NMBR_OF_RO) contained descriptive entries such as “3x self catering , 5xVictoria rooms, 1x Loft room”. A total of 540 text records were successfully converted to quantities representing number of rooms in this manner. The number of descriptive entries were much larger for the number of beds (NMBR_OF_BE) field. Table 2 lists some examples. These entries were interpreted and manually edited before conversion to numbers resulting in 265 records with number of bed values.

Table 2 Examples of entries in the number of beds (using NMBR_OF_BE field in CoCT database)

| Number of beds |
|---|
| 1 double bed and one sleeper couch |
| 1 double bed |
| 1 double bed, 1 sleeper couch, sleeps 4 |
| 1 double bed, 2 single beds and 1 sleeper couch |
| 1 double |
| 10 sleep with 1 couch, 1 sleep couch,1 camping cot |
| 16 (Dormitory style option also available = 19) |
| 2 double and two single |
| 2 double bed |
| 2 double bed and two single bed |
| 2 double bed sleeps 4 |
| 2 double beds and one couch sleeps 2 children |
| 22 sleep,2x single beds or 1x king size on request |
| 24 and max 1 Crib per room |
| 2x 2 beds and 5 double beds |
| 3 double bed |
| 5 double bed and two single bed |
| 5 double bed and two single beds |
| sleep 8 |
| Sleeps 58 |

A total of 288 records had number of room values, but not number of bed values. The mean number of beds per room, as determined from the 75 records for which number of room and number of bed information is available, is 2.3. This ratio was used to model the beds per room for the 288 records that had room values but no bed values. This information was then used to generate Table 3 and Table 4, which provide a summary of the number of rooms and beds per accommodation type per district.

Table 3 Number of rooms per accommodation type according to district

| Type | All * | All** | BBg* | NEn* | TBg* | TBy* | SEn* | CFs* | MKy* | HBg* |
|---|---|---|---|---|---|---|---|---|---|---|
| All types | 34.2 | 8.8 | 14.5 | 11.8 | 14.8 | 36.3 | 12.4 | 28.2 | 23.0 | 15.2 |
| Backpackers | 8.6 | 5.4 | 9.0 | 13.0 | 0.0 | 9.6 | 7.6 | 0.0 | 0.0 | 0.0 |
| Bed and Breakfast | 8.8 | 1.0 | 9.5 | 8.4 | 9.1 | 9.0 | 8.0 | 8.3 | 11.1 | 9.2 |
| Campsite | 70.0 | 36.2 | 70.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 70.0 | 70.0 |
| Caravan Park | 95.0 | 49.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 95.0 | 95.0 | 95.0 |
| Guest House | 9.7 | 1.2 | 9.9 | 9.4 | 10.0 | 10.2 | 9.7 | 10.5 | 13.0 | 9.3 |
| Holiday House | 3.7 | 10.5 | 1.0 | 12.3 | 31.0 | 4.0 | 5.1 | 0.0 | 0.0 | 2.7 |
| Hostel | 24.0 | 11.4 | 28.0 | 0.0 | 19.3 | 25.3 | 24.0 | 0.0 | 24.0 | 24.0 |
| Hotel | 101.2 | 19.1 | 90.7 | 52.5 | 91.5 | 113.2 | 72.2 | 101.0 | 76.0 | 97.4 |
| Lodge | 20.5 | 19.8 | 20.0 | 69.0 | 24.0 | 19.6 | 16.6 | 20.0 | 0.0 | 17.4 |
| Other | 3.0 | 1.4 | 3.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 |
| Resort | 83.5 | 40.9 | 60.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 26.0 | 110.7 |
| Self-Catering | 8.7 | 1.8 | 8.4 | 7.6 | 12.6 | 9.4 | 8.1 | 8.1 | 6.5 | 9.3 |
| Unknown | 8.0 | 4.1 | 8.0 | 0.0 | 0.0 | 8.0 | 0.0 | 8.0 | 8.0 | 8.0 |

* Average; ** Standard deviation
BBg = Blaauwberg, NEn = Northern, TBg = Tygerberg, TBy = Table Bay, SEn = Southern, CFs = Cape Flats, MKa = Mitchell's Plan/Khayelitsha

Table 4 Average number of beds per accommodation type according to district

| Type | All * | All** | BBg* | NEn* | TBg* | TBy* | SEn* | CFs* | MKy* |
|---|---|---|---|---|---|---|---|---|---|
| All types | 20.5 | 22.5 | 23.1 | 30.5 | 81.3 | 26.9 | 62.4 | 51.6 | 33.6 |
| Backpackers | 38.8 | 18.7 | 24.0 | 0.0 | 42.9 | 37.1 | 0.0 | 0.0 | 0.0 |
| Bed and Breakfast | 19.4 | 4.3 | 17.4 | 20.0 | 19.5 | 17.2 | 18.0 | 24.4 | 19.2 |
| Campsite | 161.0 | 73.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 161.0 | 161.0 |
| Caravan Park | 218.5 | 107.9 | 0.0 | 0.0 | 0.0 | 0.0 | 218.0 | 218.0 | 218.3 |
| Guest House | 20.0 | 5.3 | 17.1 | 19.8 | 20.7 | 20.2 | 22.0 | 28.5 | 19.3 |
| Holiday House | 8.2 | 26.4 | 20.7 | 79.0 | 8.0 | 10.1 | 0.0 | 0.0 | 6.1 |
| Hostel | 55.0 | 25.0 | 0.0 | 44.3 | 57.9 | 55.0 | 0.0 | 55.0 | 55.0 |
| Hotel | 226.2 | 56.1 | 108.4 | 159.0 | 255.6 | 161.0 | 226.0 | 170.7 | 219.7 |
| Lodge | 40.0 | 24.8 | 86.0 | 46.5 | 41.9 | 35.1 | 40.0 | 0.0 | 33.6 |
| Other | 6.0 | 2.1 | 0.0 | 0.0 | 0.0 | 6.0 | 0.0 | 0.0 | 0.0 |
| Resort | 192.3 | 91.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 60.0 | 254.3 |
| Self-Catering | 19.0 | 5.4 | 15.8 | 28.0 | 20.3 | 16.8 | 17.3 | 14.0 | 20.0 |
| Unknown | 18.0 | 8.9 | 0.0 | 0.0 | 18.0 | 0.0 | 18.0 | 18.0 | 18.0 |

* Average; ** Standard deviation
BBg = Blaauwberg, NEn = Northern, TBg = Tygerberg, TBy = Table Bay, SEn = Southern, CFs = Cape Flats, MKa = Mitchell's Plan/Khayelitsha

The values in Table 3 were used to model the number of rooms and beds for establishments that had no such records (apart from the accommodation type). Maps of these variables were then generated as shown in Figure 14 and Figure 15 respectively.

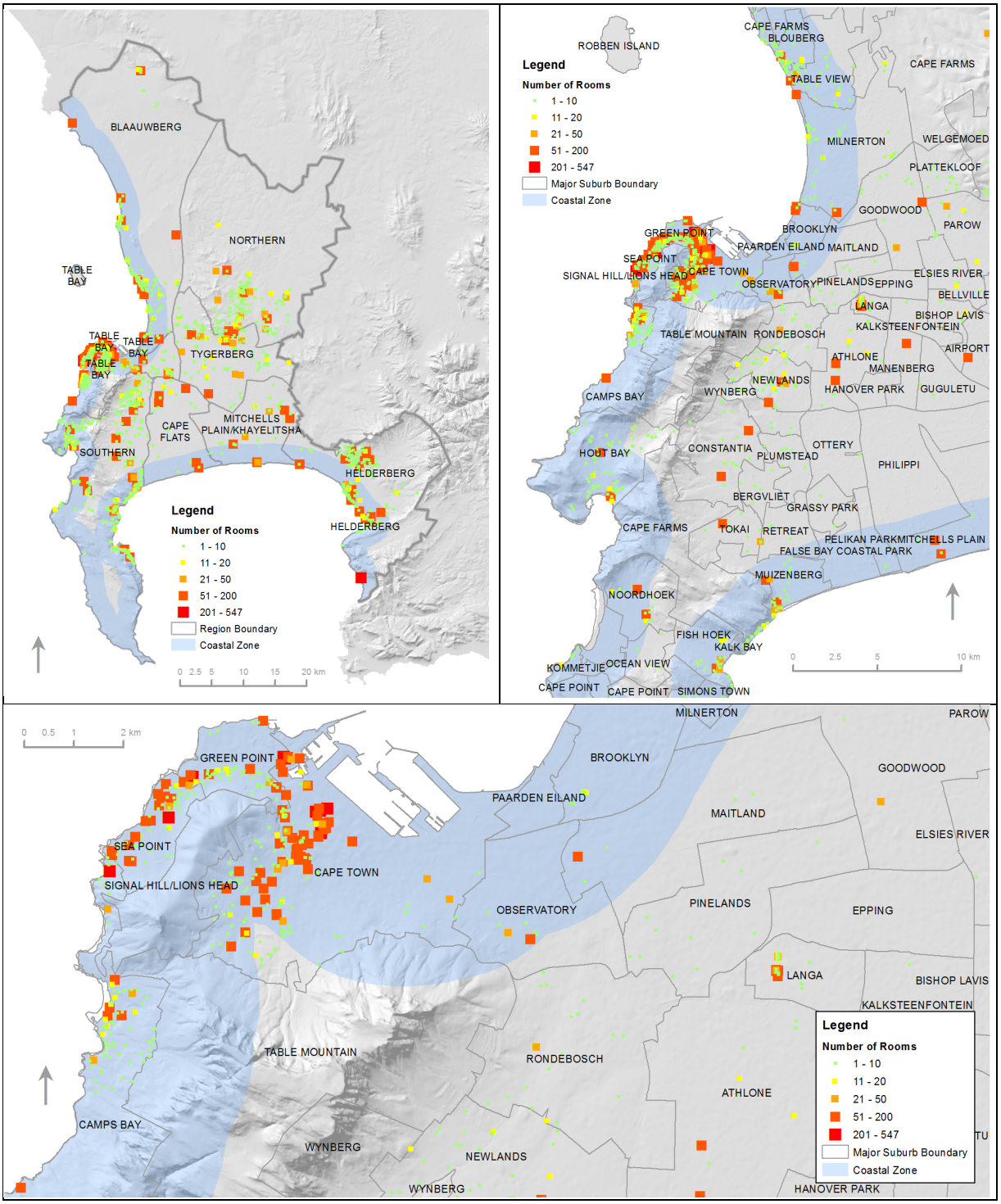



Figure 14 Number of rooms for (a) the CoCT, (b) northern peninsula, and (c) city bowl and surrounds[9]

[9] For a larger version see https://www.dropbox.com/s/c5bp5iltmcwxay3/Fig14_rooms.pdf?dl=1

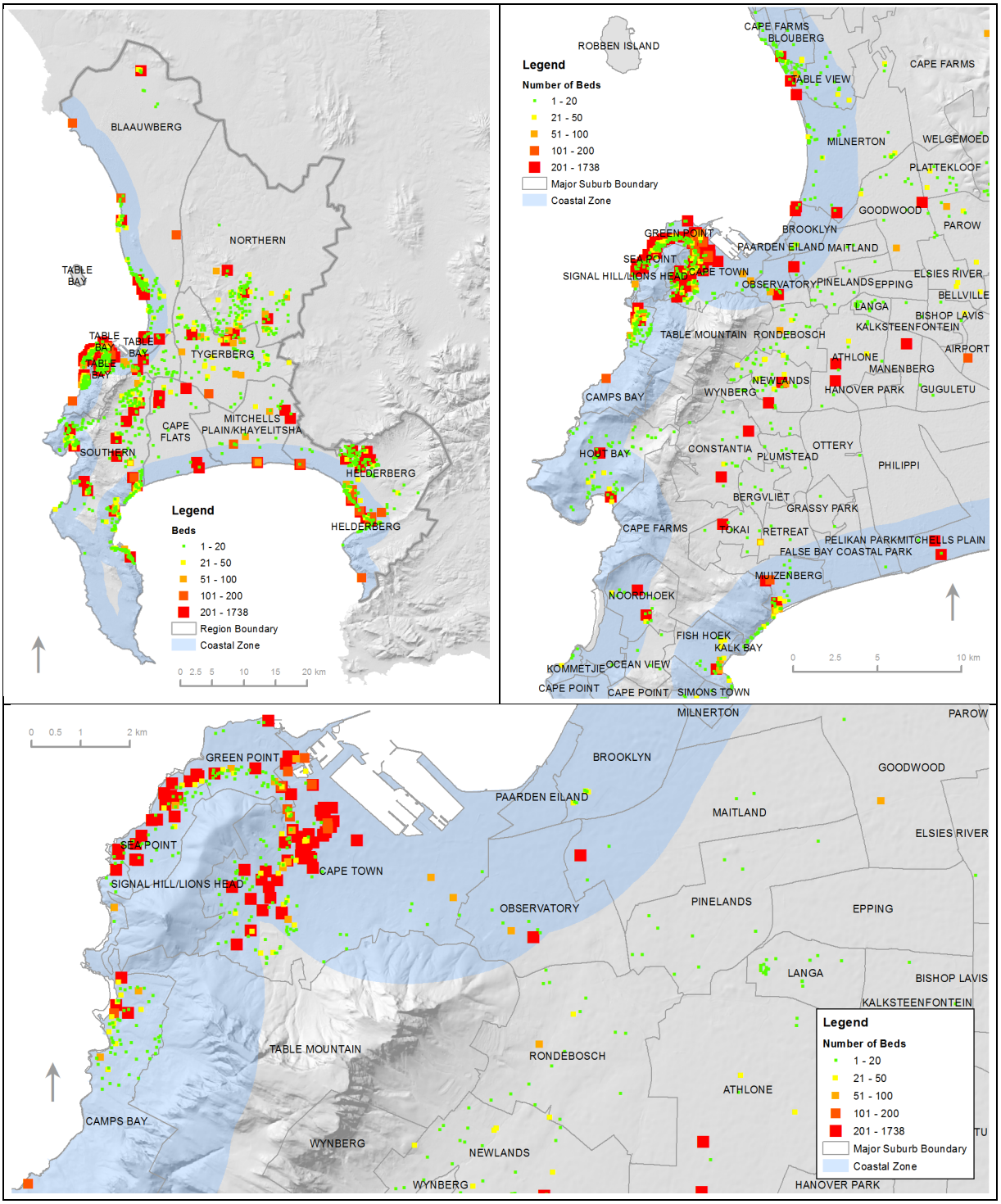



Figure 15 Number of beds for (a) the CoCT, (b) northern peninsula, and (c) city bowl and surrounds[10]

The modelled number of rooms and beds allowed for the generation of hotspot maps that consider these variables. These hotspot maps (Figure 16 and Figure 17) are substantially different from those that only considered the number of establishments (Figure 10).

[10] For a larger version see https://www.dropbox.com/s/9x7ka3cc7o027qr/Fig15_beds.pdf?dl=1

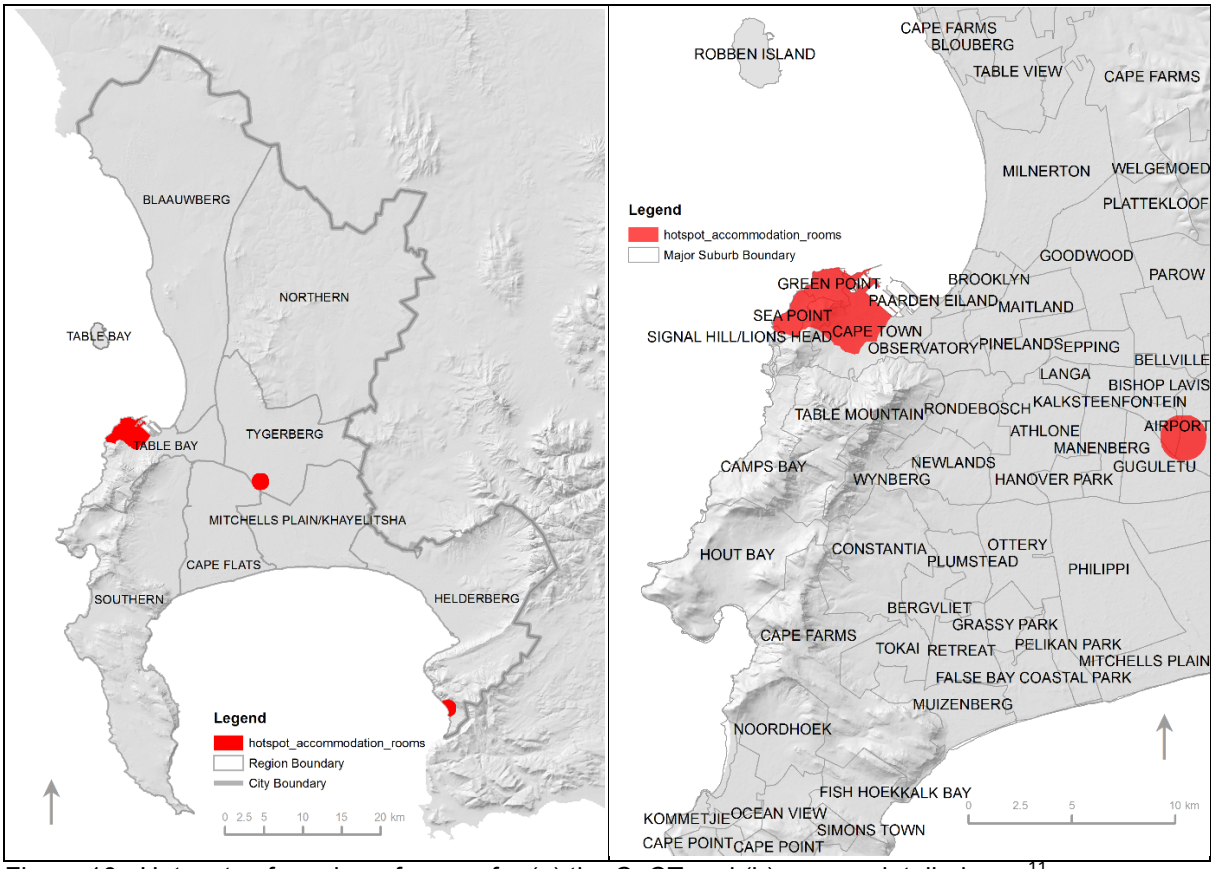



Figure 16 Hotspots of number of rooms for (a) the CoCT and (b) a more detailed area[11]

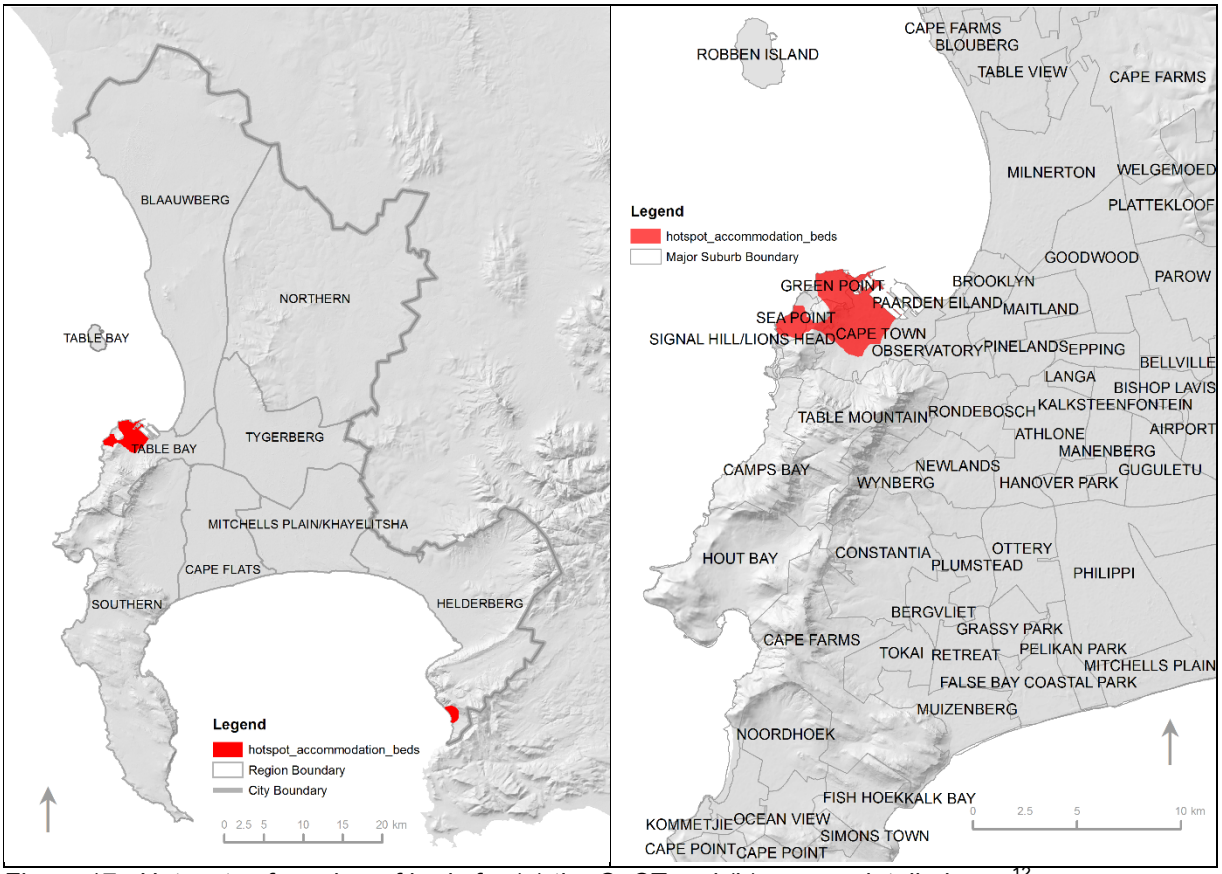



Figure 17 Hotspots of number of beds for (a) the CoCT and (b) a more detailed area[12]

[11] For a larger version see https://www.dropbox.com/s/lmmwwu0fvuty84d/Fig16_hotspot_rooms.pdf?dl=1

## 4.2 Attractions

Data of a total of 1071 attractions were used from the CoCT database. These were grouped into 12 attraction categories and then further categorised into three primary types (culture; nature and other).

The locations of attractions are provided in Figure 18, whereas Figure 19 shows the 12 attraction categories (adventure; amusement park; arts and culture; beaches; culture; day visitor resort, educational, historic; nature, parks, sport, wine estates) in relation to the wine and the scenic routes. Figure 20 shows the three primary attraction categories in relation to the scenic and wine routes.

Given the large number of attraction locations it is difficult to clearly delineate concentrations of attractions providers. The hotspot map of attractions in relations to the two route types (Figure 21) therefore provides a better representation, and hotspot concentrations are evident around the CBD and Waterfront. One can even go one step further an add another two layers of information on the map. Figure 22 shows the attraction hotspots in relation to the distribution of tourism accommodation establishments as well as the coastal zone.

Each district has a different pattern of concentration (due a range of reasons that may include topography, zoning, historic development, etc.) and there are districts that have few tourism attractions of any sort. These results emphasize the importance of a regional perspective to planners, policy analysts, and others concerned with the tourism industry.

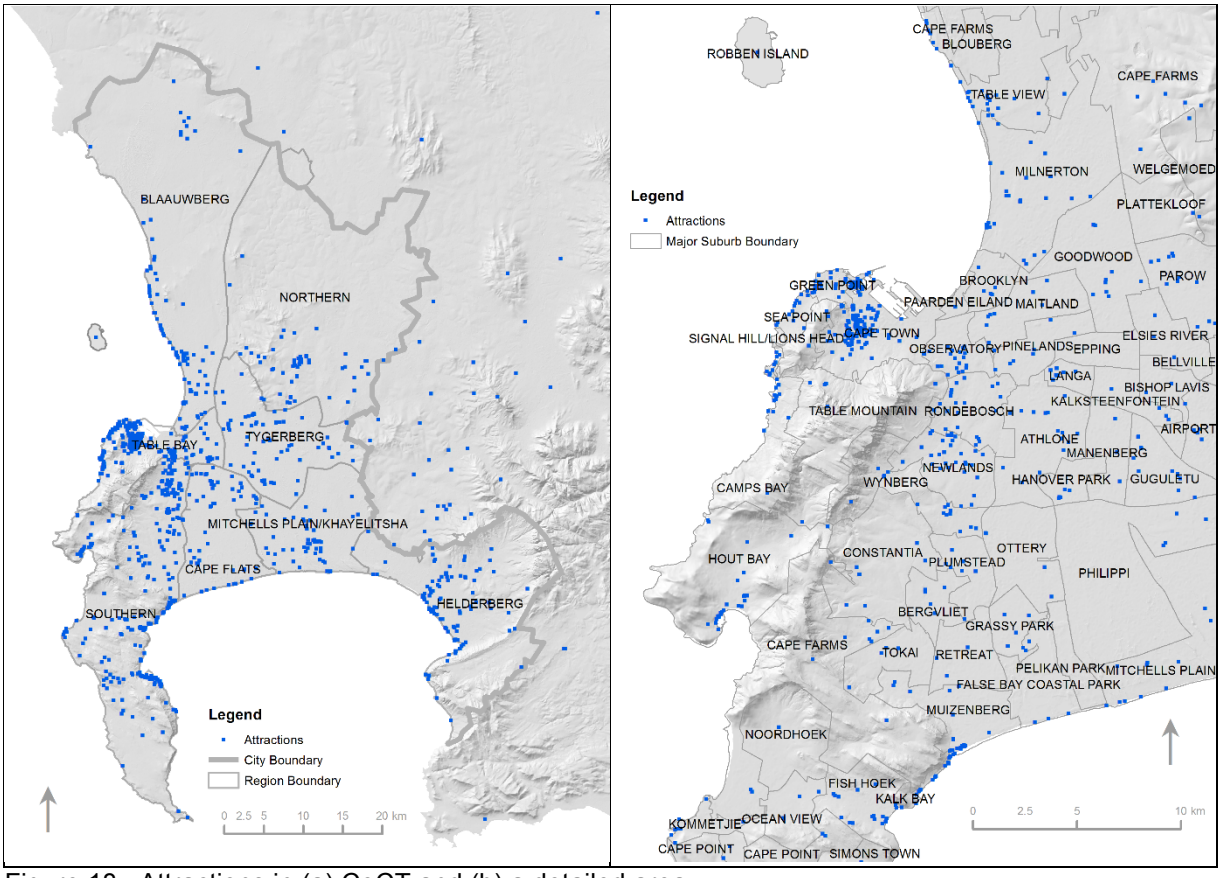



Figure 18 Attractions in (a) CoCT and (b) a detailed area

[12] For a larger version see https://www.dropbox.com/s/9slqlw3vjwo6l3b/Fig17_hotspot_beds.pdf?dl=1

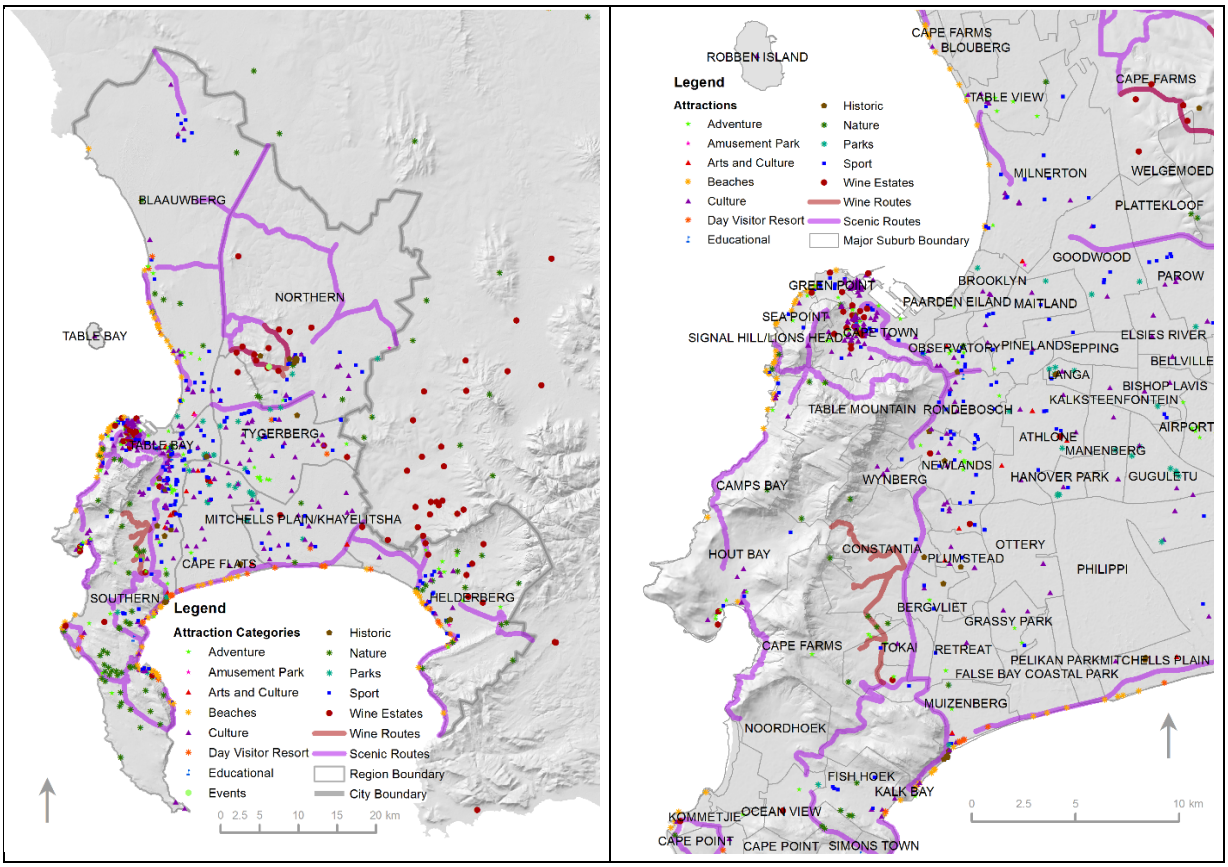



Figure 19 Attraction categories, as well as scenic and wine routes in (a) CoCT and (b) a detailed area

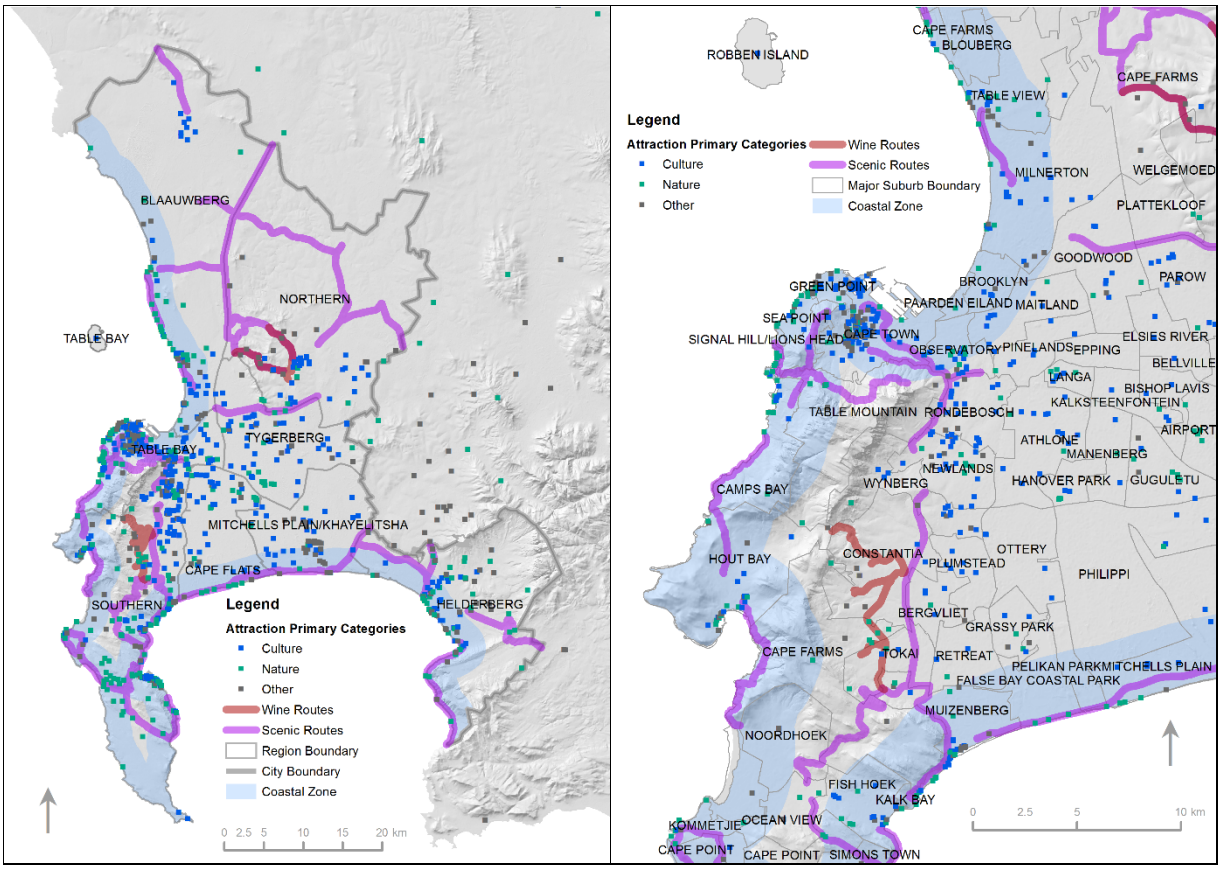



Figure 20 Primary attraction categories, as well as scenic and wine routes in (a) CoCT and (b) a detailed area

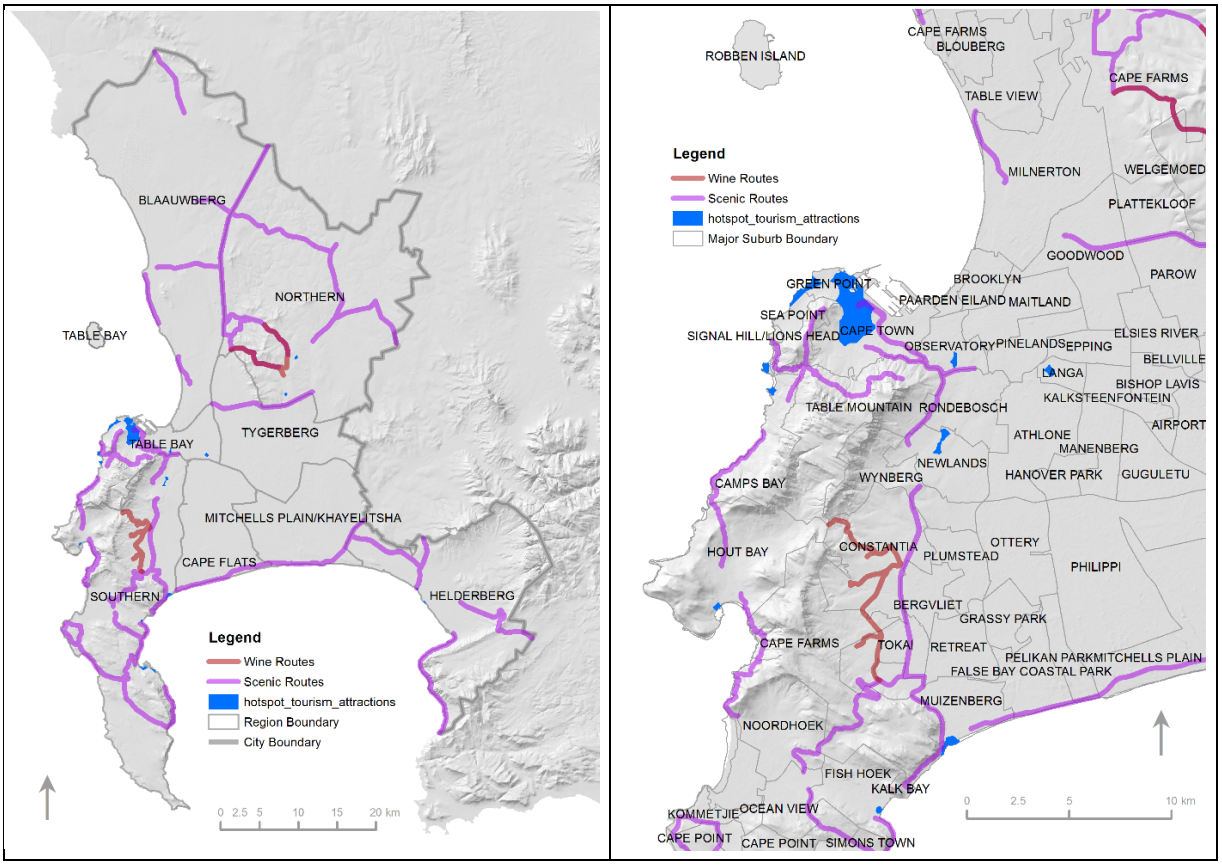



Figure 21 Tourism attraction hotspots, as well as scenic and wine routes in (a) the CoCT and (b) a more detailed area

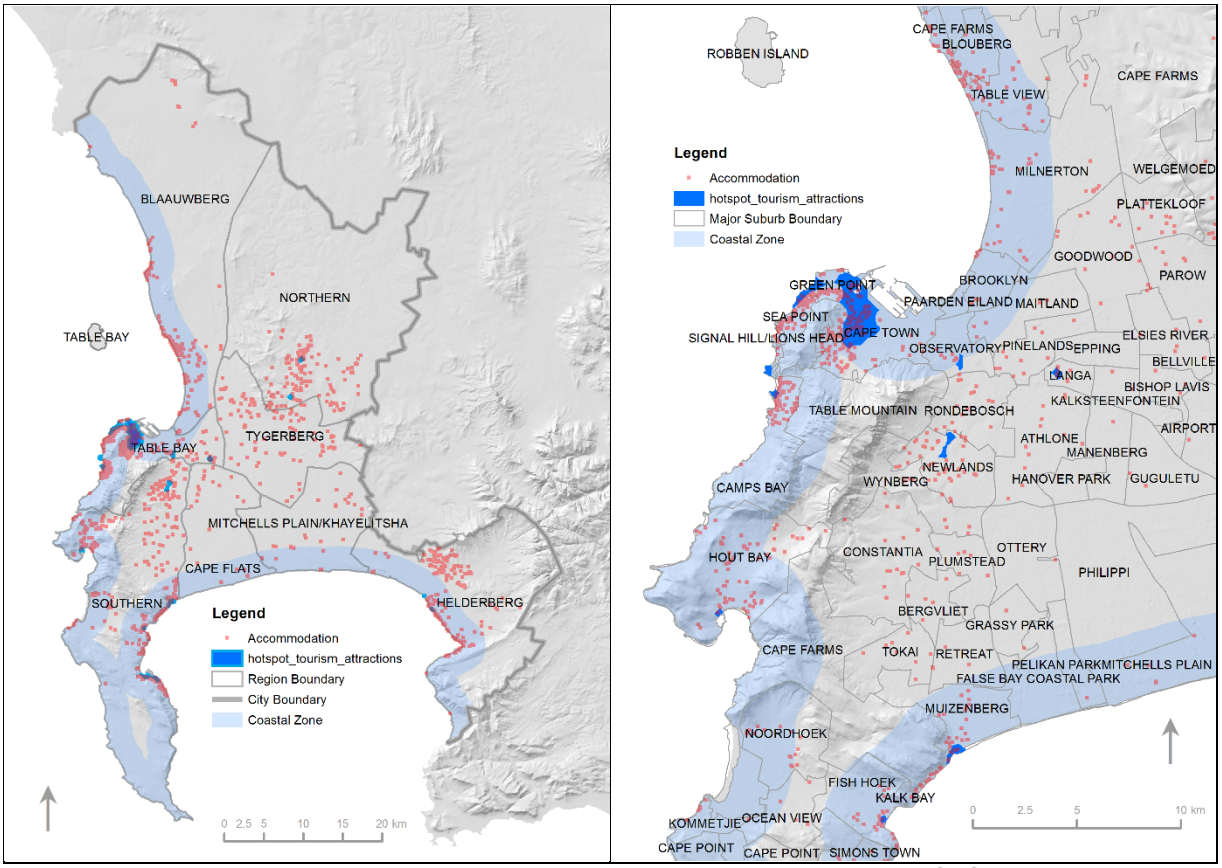



Figure 22 Tourism attraction hotspots in relation to accommodation in (a) the CoCT and (b) a more detailed area

The data of the 2011 study of Standish and White (2014) was used to map the ranking of attractions most visited (Table 5 and Figure 23) and revenue (Table 5 and Figure 24) generated at the top 19 attractions in the CoCT. The grouping in the top ranked local attraction type, namely, local winelands, is probably misrepresentation of the actual visitation and importance of this category in Durbanville. Nevertheless, it is very interesting to note that the local winelands is the highest ranked and second biggest revenue earner to the CoCT's tourism economy as attraction, notwithstanding the fact that the city is located in such close proximity to the Cape Winelands (Stellenbosch, Paarl, Franschhoek, etc.).

Table 5 Major attraction rankings and revenue

| Attraction | Rank (visits) | Revenue |
|---|---|---|
| Local Winelands (Constantia and Durbanville) | 1 | R 1 697 613 284 |
| Cape Point | 2 | R 83 843 192 |
| V&A Waterfront | 3 | R 5 054 787 477 |
| Kirstenbosch Gardens | 3 | R 48 454 010 |
| Table Mountain & Cable Way | 5 | R 130 421 896 |
| Township Tours | 6 | R 10 902 107 |
| Bo Kaap | 6 | R 1 481 131 |
| Robben Island | 8 | R 76 446 111 |
| Camps Bay | 9 | R 581 858 327 |
| Boulders Beach (Penguin Colony) | 10 | R 39 365 426 |
| Hout Bay | 11 | R 154 895 545 |
| Clifton Beaches | 12 | R 36 813 349 |
| Chapman's Peak Drive | 12 | R 34 829 156 |
| District Six | 14 | R 3 212 582 |
| Castle of Good Hope | 15 | R 6 488 938 |
| Simons Town | 16 | R 107 638 832 |
| Muizenberg | 16 | R 27 997 849 |
| SA Museum & Gallery | 16 | R 10 567 179 |
| Company Gardens | 19 | R 2 247 944 |

Figure 25 shows the Thiessen polygons of the major attractions. By definition, all points within a Thiessen polygon will be closest to its centre (attraction). Thiessen polygons are often used in geography as surrogates for source areas, but in this context, it cannot be used as such given that tourists move freely between polygons. However, it does offer an interesting visualization of the remoteness and sparseness of some of the major attractions (i.e. those with large Thiessen polygons) and the density of some attractions (e.g. cluster of small Thiessen polygons in and around the CBD). Figure 25 also shows the relationship between accommodation providers and the major attractions, with purple indicating intersection between major attractions, the coastal zone and accommodation providers.

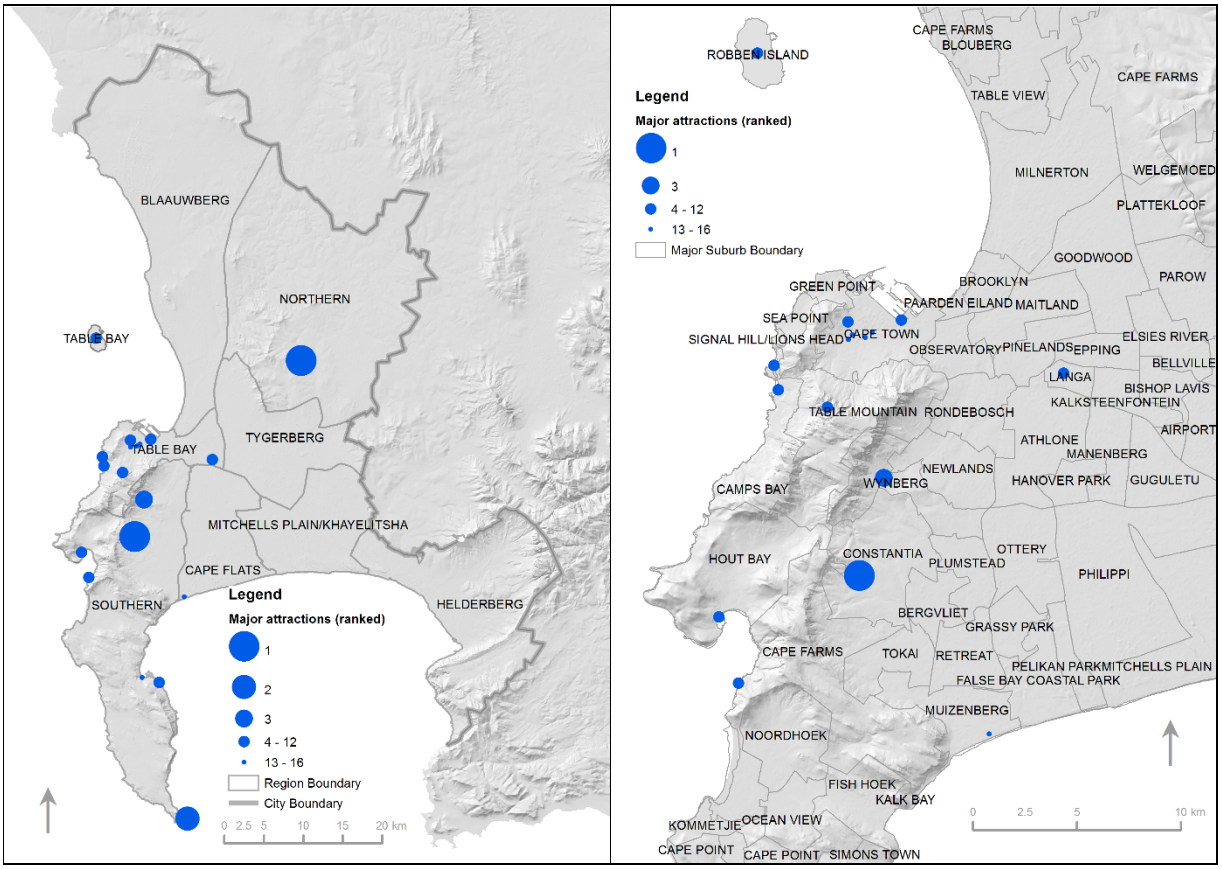



Figure 23 Main tourism attractions (ranked according to visits) in (a) the CoCT and (b) a more detailed area

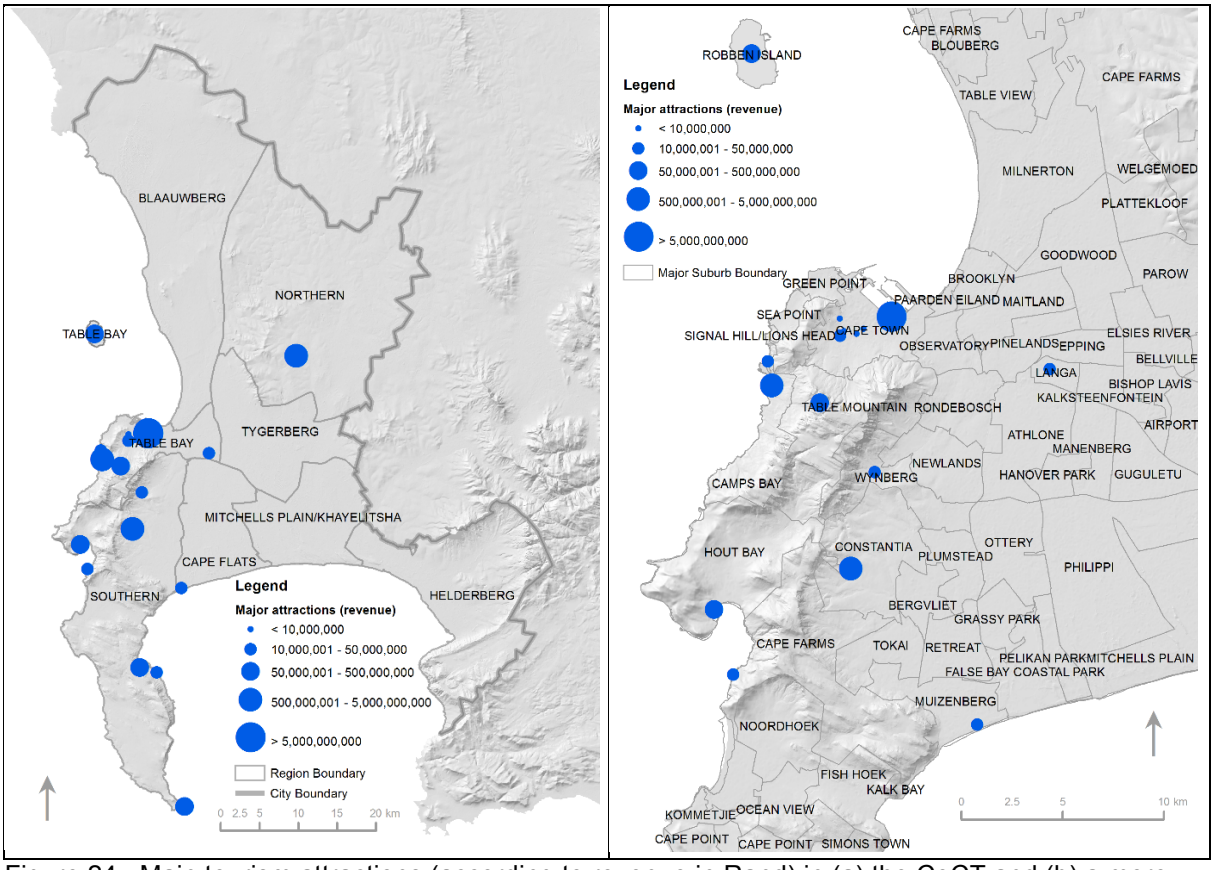



Figure 24 Main tourism attractions (according to revenue in Rand) in (a) the CoCT and (b) a more detailed area

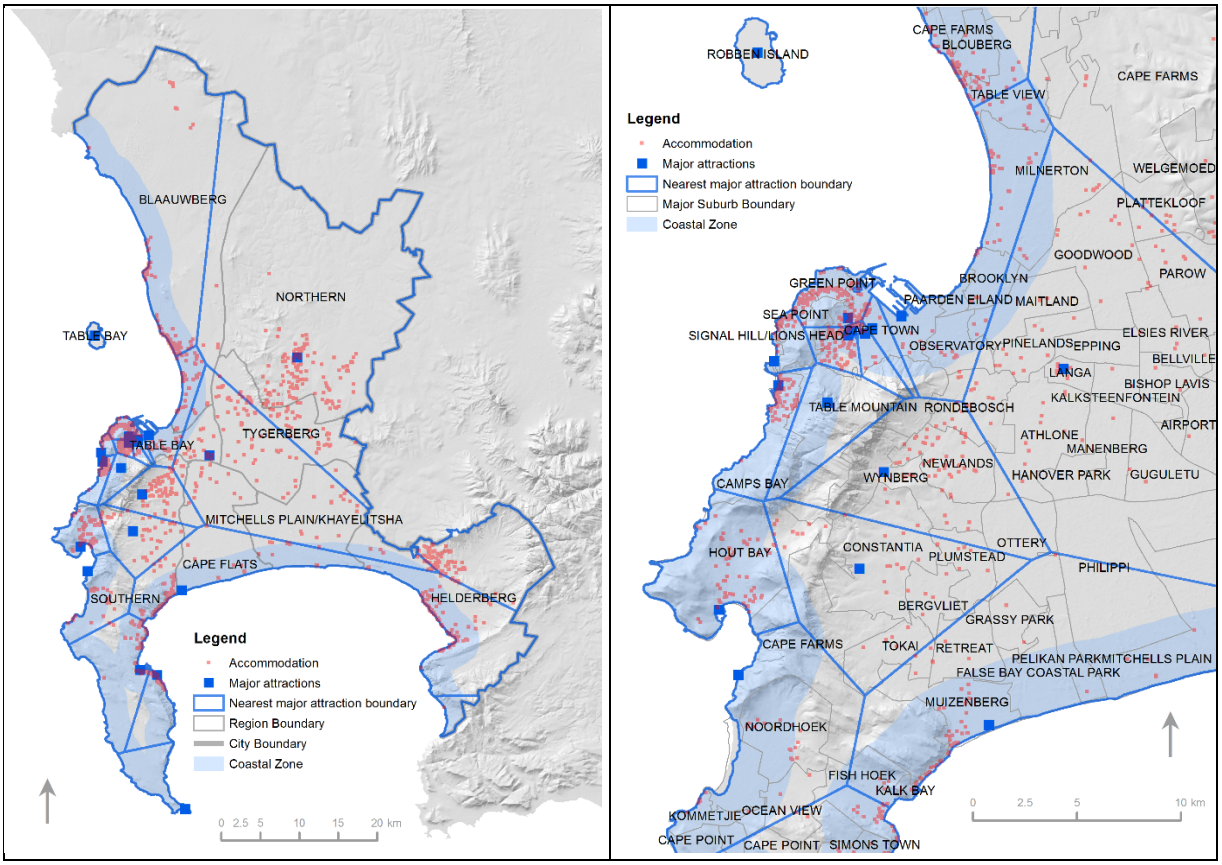



Figure 25 Main tourism attractions and their Thiessen polygons compared to accommodation in (a) the CoCT and (b) a more detailed area[13]

## 4.3 Services

The locations of tourism services can be seen in Figure 31, while the hotspots for these are evident in Figure 32. Another usefulness of a mapping exercise is to see, by applying common sense, if mapped data are reflecting the reality. It is very clear from the maps that the database of the CoCT is far from complete. By looking at the restaurants for example, it is unlikely that there are only 13 restaurants in the Southern Suburbs. It seems that the Lighthouse restaurant database (Figure 27) is more comprehensive, but only of value along the coast.

[13] For a larger version see https://www.dropbox.com/s/b2plrsmvsg454l8/Fig25_Main_attractions.pdf?dl=1

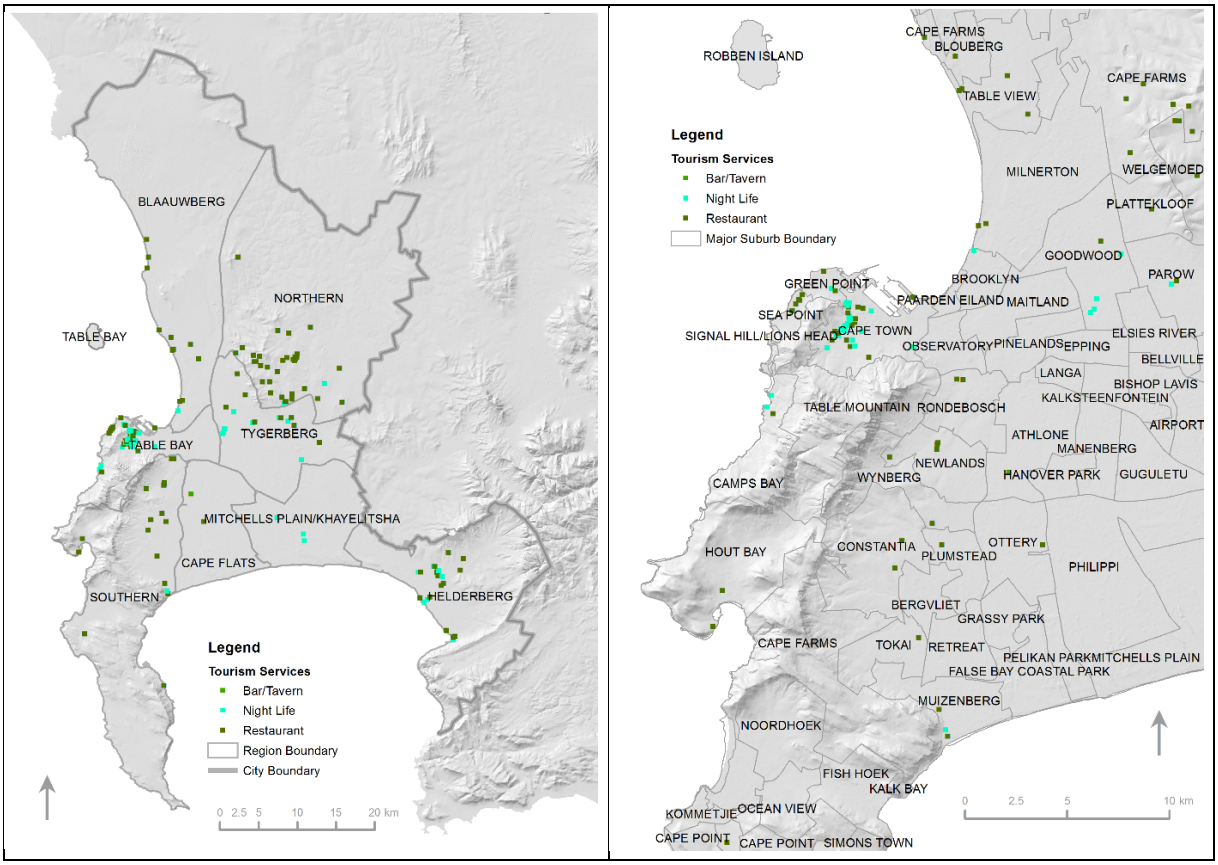



Figure 26 Tourism services in (a) CoCT and (b) a detailed area

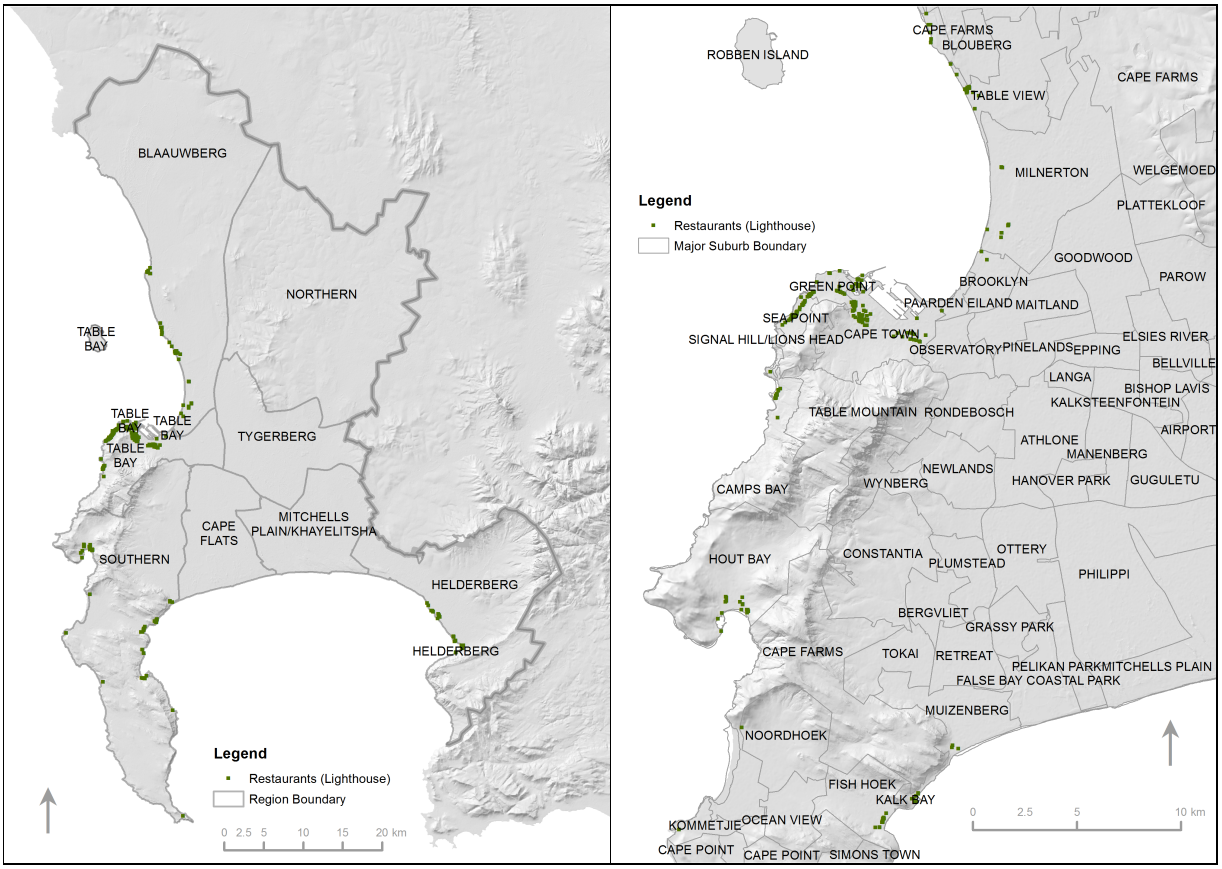



Figure 27 Restaurants according to Lighthouse database in (a) CoCT and (b) a detailed area

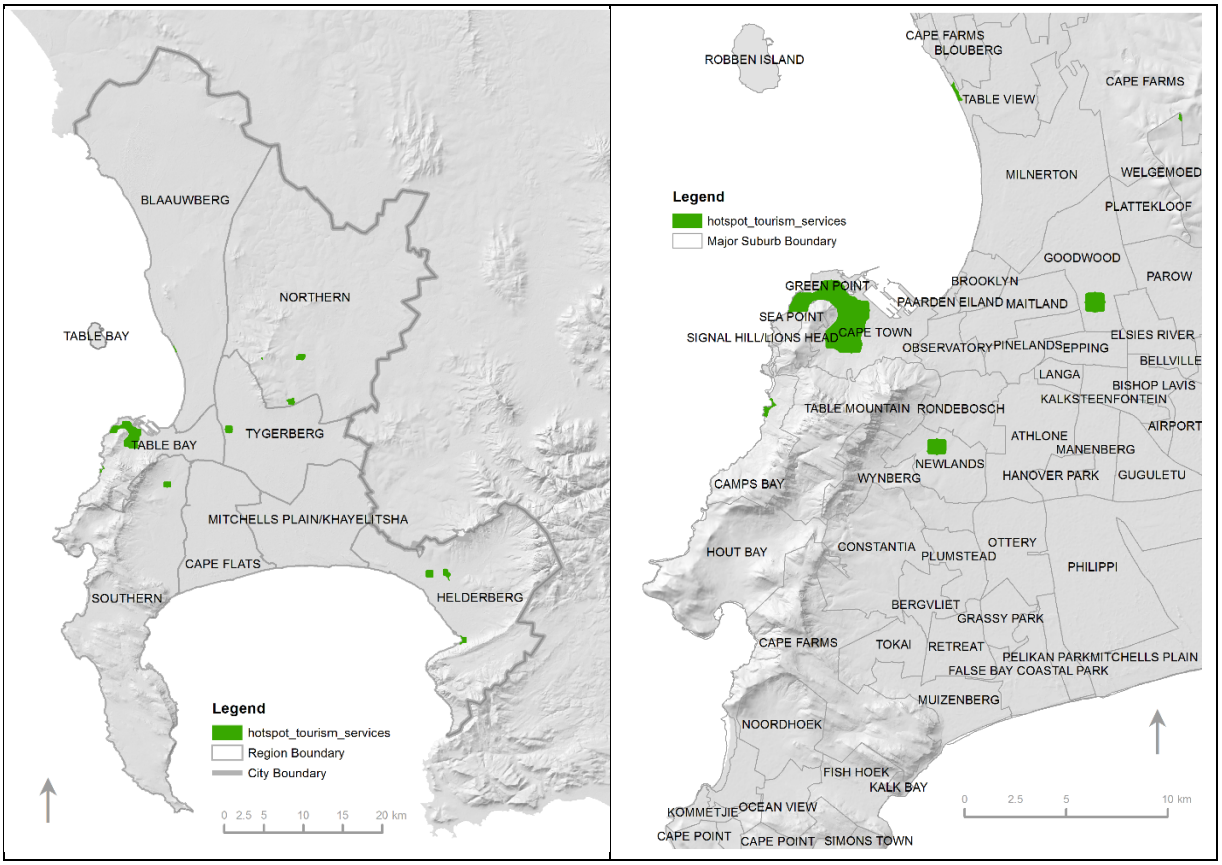



Figure 28 Tourism service hotspots of (a) the CoCT and (b) a more detailed area

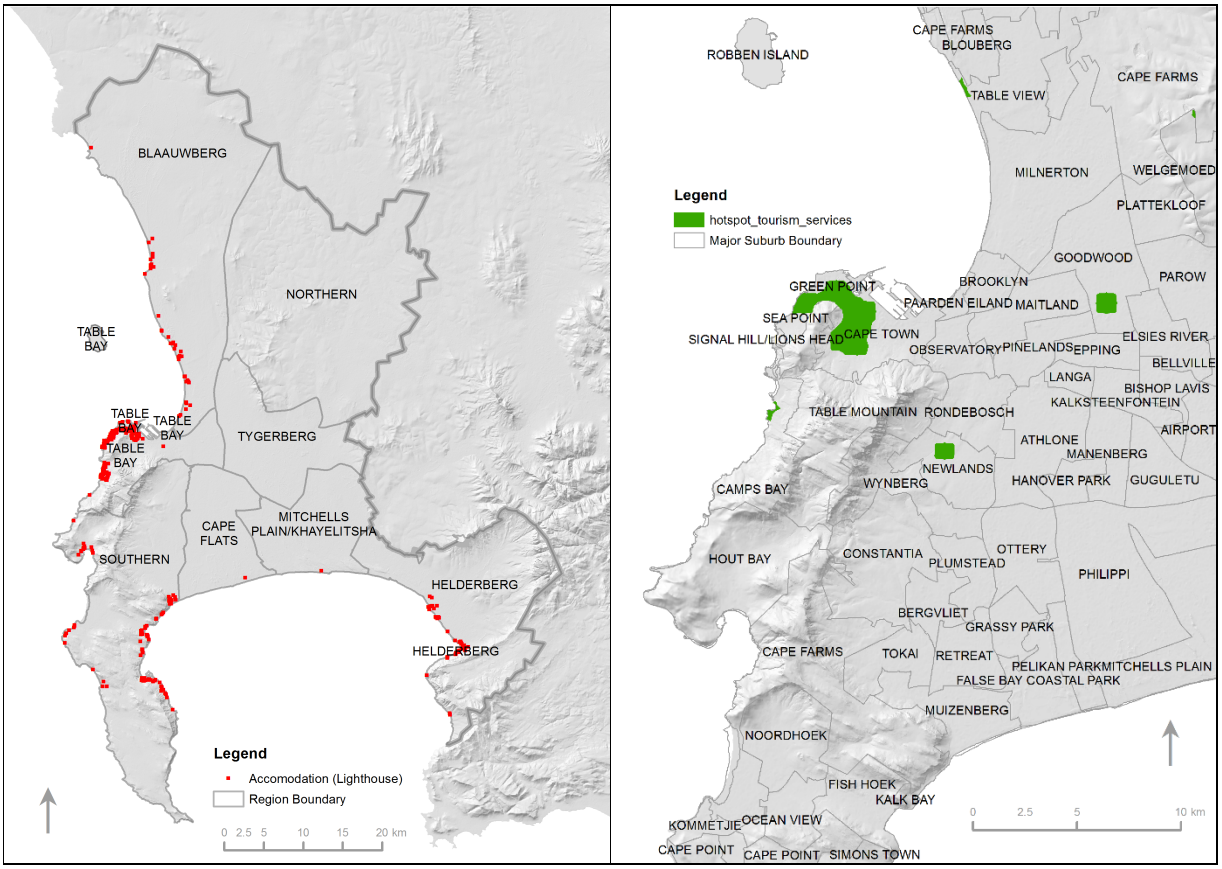



Figure 29 Lighthouse (a) accommodation and (b) restaurant data

### 4.4 Source markets per district

Statistics for the occupancy of accommodation per district was obtained from the Accommodation Performance Review (Cape Town Tourism 2017: 7) and mapped accordingly (Figure 30). The geography of visitor accommodation occupancy shows that the Atlantic Seaboard, Inner City as well as the northern area of the Southern District are the most popular for international tourists. The outlying districts are more popular among domestic visitors with the Helderberg district the most popular for this group of visitors.

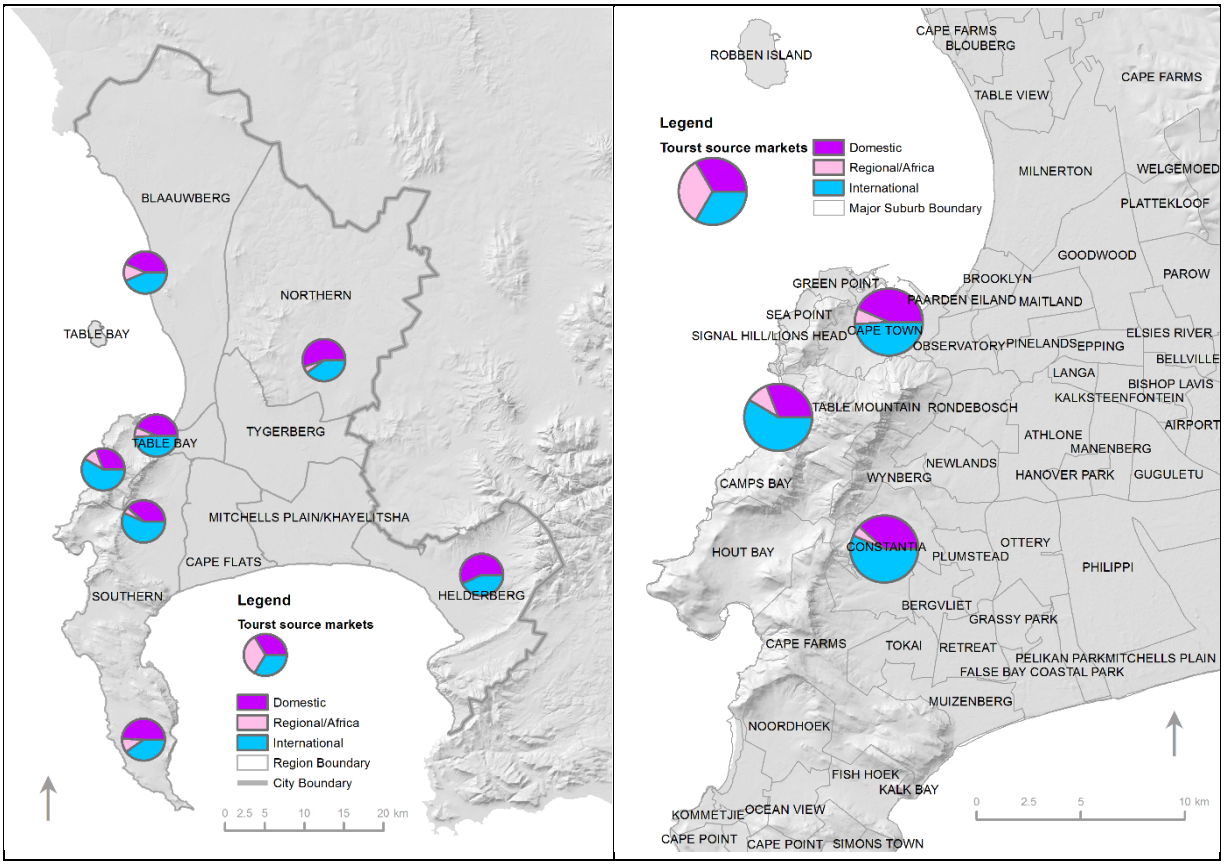



Figure 30 Source markets of tourists in (a) the CoCT and (b) a more detailed area

The hot spot maps are ideal for answering the questions related to how accommodation is concentrated and how they relate to the major attractions. They can also be used to analyse accessibility to roads and public transport. The hot spot maps were consequently used as a foundation for additional analyses relating to the latter in the next section.

# 5 ACCESSIBILITY ANALYSES

Accessibility analyses is useful for understanding the “real” distances between tourism products, activities and transport infrastructure. For instance, it might be useful to know to what extent tourism attractions are within walking distance from accommodation providers, or, to what extent attractions are accessible via public transport.

Euclidean distance (i.e. “as the crow flies”) is often used as a surrogate for accessibility, but in urban areas, travel is generally restricted along roads and pathways (referred to as “Manhattan space” in the GIS literature). In this project, accessibility was determined by forcing travel along roads and by assuming that a traveller will first move towards the nearest road, and then move along roads to their destination. This was implemented in ArcGIS by making use of the *Cost Distance* and *Euclidean Allocation* tools.

The accessibility analysis can be applied to identify accommodation providers, attractions and services that are far away from public transport. Public transport and facilities used in the mapping thereof included: (a) railway stations, (b) Golden Arrow bus stops, (c) MyCity Bus bus stops, and (d) all stations and bus stops combined for the CoCT area (see Figure 35).

For instance, Figure 32 shows that many accommodation providers are more than 20 minutes walk (1000m) from any form of public transport, which means that some employees and guests will find it difficult to reach their places of accommodation or employment. Similar observations can be made about many tourism attractions and services.

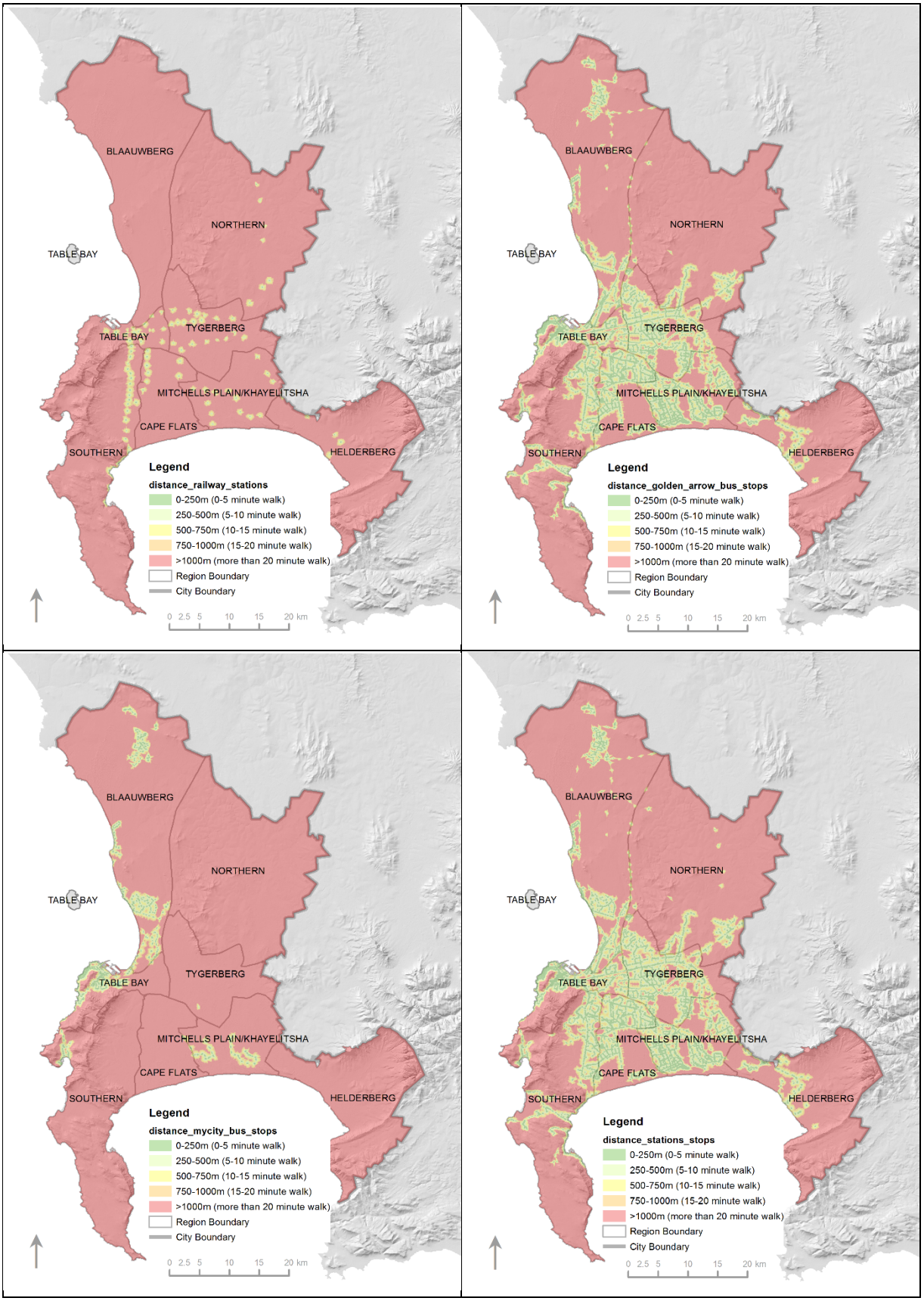



Figure 31 Distances from (a) railway stations, (b) Golden Arrow bus stops, (c) MyCity Bus bus stops, and (d) all stations and bus stops combined for the CoCT area

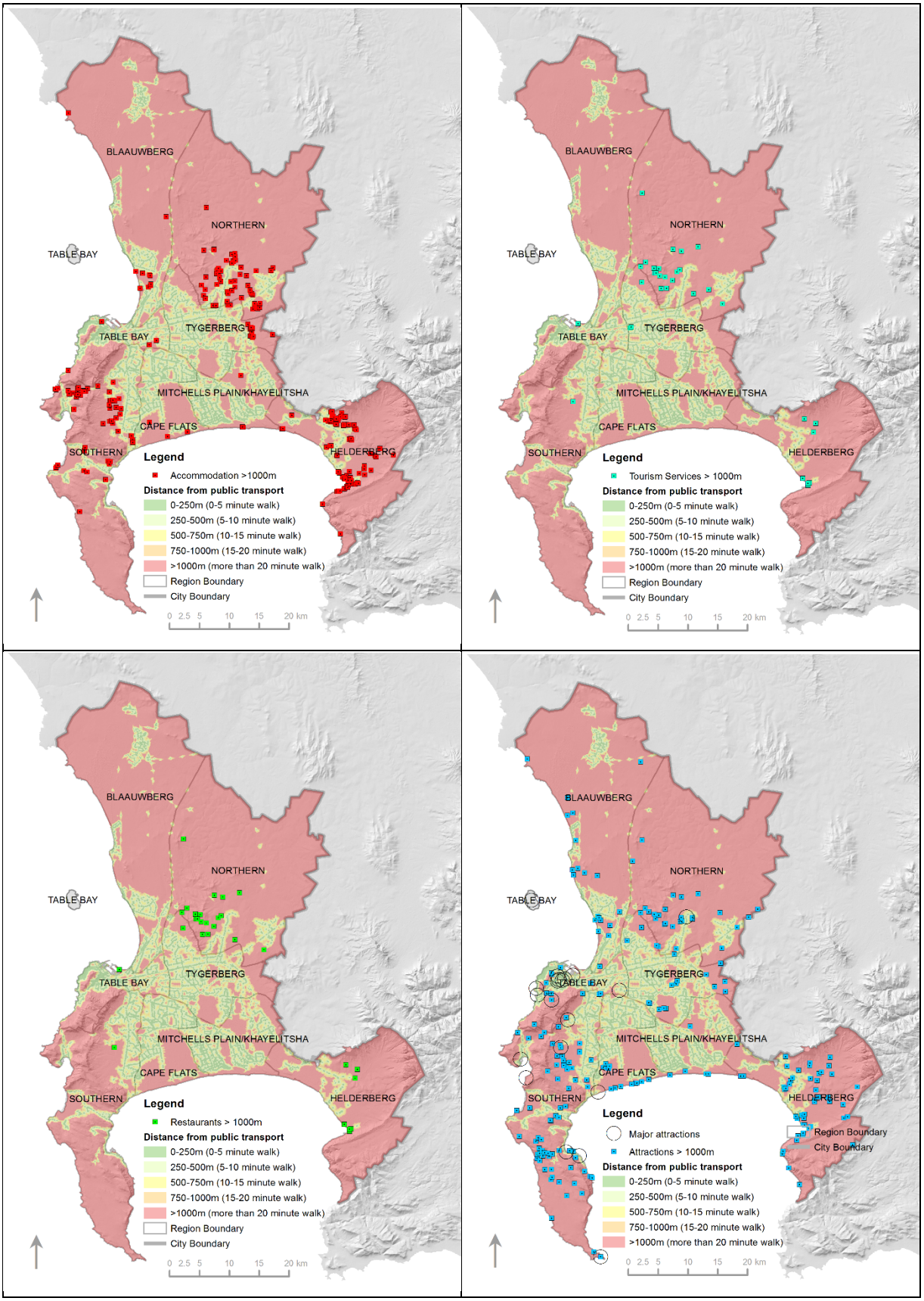



Figure 32 Locations of (a) accommodation, (b) tourism services (restaurants, wine/dine, bar, nightlife), (c) restaurants, and (d) tourist attractions that are further than 1000m away from public transport in the CoCT area

CoCT's MyCiti represents the first metropolitan transport service financed and regulated at the metropolitan level. Although the rolling out of all the phases of MyCiti is far from

complete it can be seen in Figure 33 that a large number of (and by implication large areas) of the city's tourism accommodation, restaurants, tourism services and attractions are not covered by the MyCiti network.

Further analysis of the frequencies of MyCiti routes in the Blaawberg District were mapped by Baffi, Donaldson and Spocter (2017) to see to relationship between the frequency of trips and proximity to tourism accommodation establishments (Figure 34). In general, the MyCiti routes with the most scheduled daily weekday bus trips tend not to be close to accommodation establishments. This includes the Du Noon–Table View–Civic Centre–Waterfront route (264 scheduled daily weekday trips) and the Marine Circle–Table View–Parklands route (226 scheduled daily weekday trips). Conversely, it is the routes with fewer scheduled daily trips that tend to be closer to tourist accommodation establishments. The implication is that tourists would have to wait longer before journeying to the Cape Town CBD, for example.

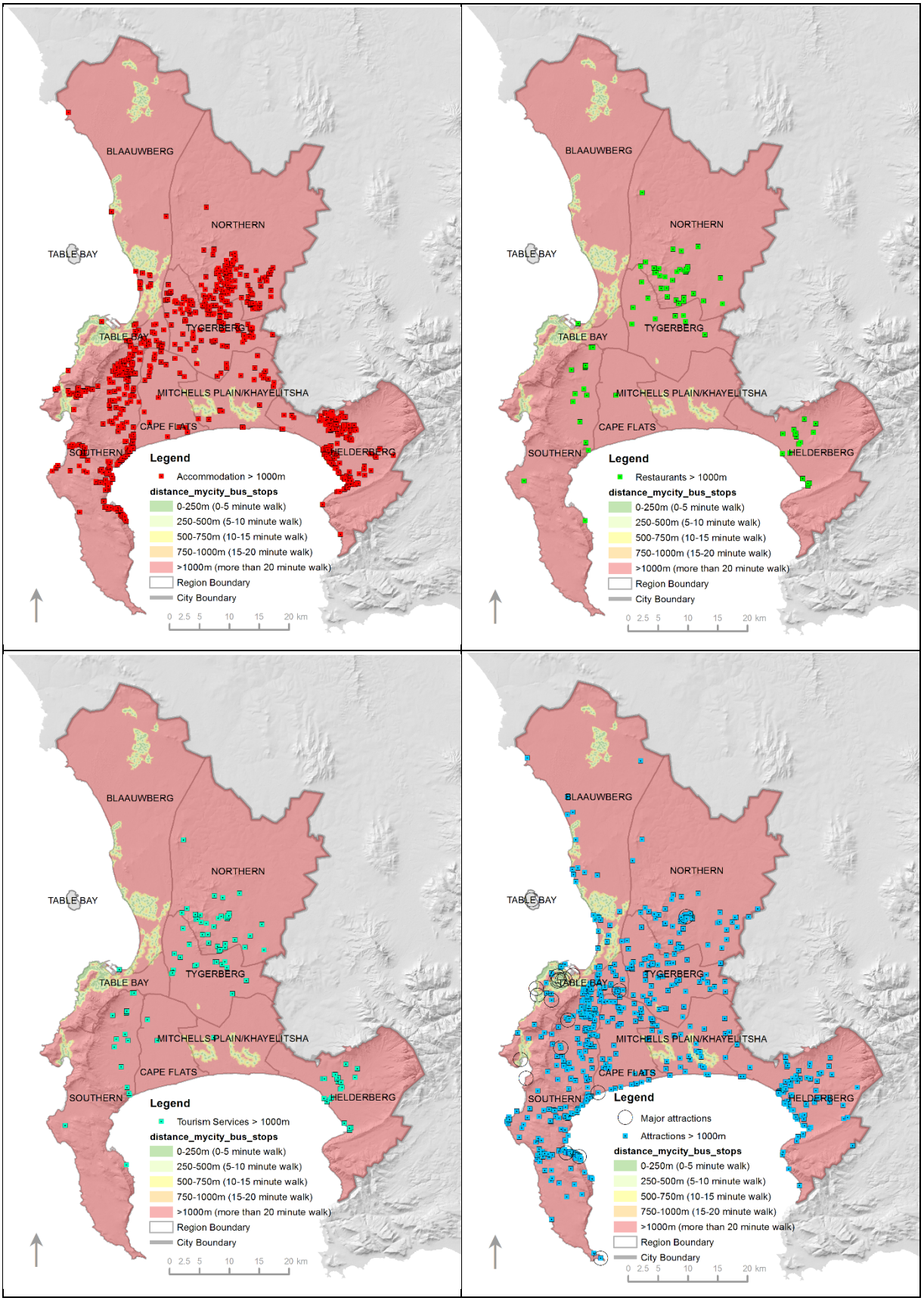



Figure 33 Distances of (a) accommodation, (b) restaurants, (c) tourism services, and (d) attractions from MyCity Bus bus stops

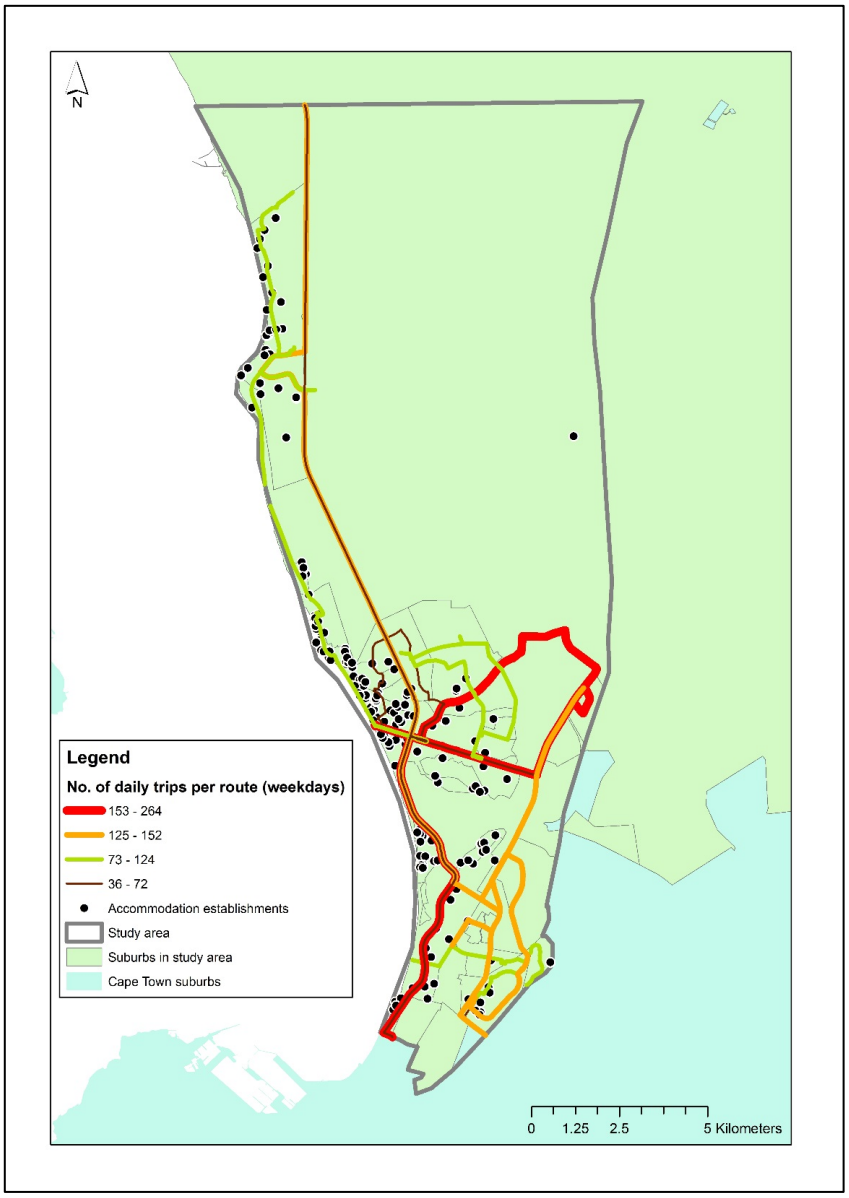



Figure 34 Number of daily weekday trips per MyCiti routes in relation to tourism accommodation

In this section mapping was done to illustrate accessibility of tourism infrastructure and facilities in relation to public transport networks. In the next section a series of maps will illustrate how legal requirements (zoning) of tourism accommodation establishments can be used to identify areas where illegal practices may be occurring.

# 6 ZONING ANALYSES

Zoning as a town planning tool primary serves to spatially segregate uses that are thought to be incompatible. In practice, zoning is also used to prevent new development from interfering with existing uses and/or to preserve the "character" of areas. Zoning therefore aims to promote the health, safety, morals, and general welfare of the community, to protect and conserve the value of buildings, and encourage the most appropriate use of the land in areas.

The City of Cape Town's Development Management Scheme (DMS) forms part of its 2015 Municipal Planning By-law, and is a legal tool used to determine the use of rights of a property by giving it a particular zoning category. It also lays down development parameters and restrictions for each type or property. In the CoCT (2015: 24) Municipal Planning By-Law it is stated that: "(1) All land within the geographic area of the City must have a zoning. (2) A zoning may apply to a land unit or part thereof, and a zoning need not follow cadastral boundaries." The purpose for which land may be used for and the development rules applicable to that land use category is thus integral to zoning procedures. Definitions of all tourism related accommodation and other tourism land use types provided in the By-Law are defined below:

**Bed and breakfast establishment** means a dwelling house or second dwelling in which the owner of the dwelling supplies lodging and meals for compensation to transient guests who have permanent residence elsewhere; provided that: (a) the dominant use of the dwelling house concerned remain for the living accommodation of a single family; and (b) the property complies with the requirements contained in this development management scheme for a bed and breakfast establishment.

**Boarding house/Backpackers** means a building where lodging is provided, and may incorporate cooking, dining and communal facilities for the use of lodgers, together with such outbuildings as are normally used therewith; and includes a building in which rooms are rented for residential purposes, youth hostel, backpackers' lodge, guest house, home for the aged, handicapped or orphaned and residential club; but does not include a hotel, dwelling house, second dwelling or group house.

**Conference facility** means a place of commercial nature where information is presented and ideas or information exchanged among groups of people or delegates whose normal place of work is elsewhere, and may include overnight accommodation and the supply of meals to delegates.

**Guest house** means a dwelling house or second dwelling which is used for the purpose of supplying lodging and meals to transient guests for compensation, in an establishment which exceeds the restrictions of a bed and breakfast establishment, and may include business meetings or training sessions by and for guests on the property.

**Hotel** means a property used as a temporary residence for transient guests, where lodging and meals are provided, and may include: (a) a restaurant or restaurants; (b) conference and entertainment facilities that are subservient and ancillary to the dominant use of the property as a hotel; and (c) premises which are licensed to sell alcoholic beverages for consumption on the property; but does not include an off-sales facility, dwelling house or dwelling unit.

**Self-catering** – no definition provided in the bylaw.

**Tourist accommodation (Resorts)** means a harmoniously designed and built development, used for holiday or recreational purposes, whether in private or public ownership, which:

(a) consists of a single enterprise in which overnight accommodation is supplied by means of short-term rental or time sharing only; and

(b) may include the provision of a camping site or mobile home park; but does not include a hotel.

**Tourist facilities** means amenities for tourists or visitors such as lecture rooms, restaurants, gift shops, restrooms and recreational facilities, but does not include a hotel or tourist accommodation.

The permitted tourism land use (e.g. B&B, guest house, etc.) within each zoning category (e.g. general residential or agricultural zoning, etc.) and their allowed use types (primary use, additional use and consent use) are summarised in Table 6 (information was extracted from the CoCT 2015 Municipal By-Law). Individual property zoning regulations can be looked up on the CoCT's useful website:

http://www.capetown.gov.za/work%20and%20business/planning-portal/online-planning-and-building-resources/online-zoning-viewer

Table 6 Zoning scheme relating to tourism accommodation

| Zoning Category | Primary Use | Additional Use | Consent Use |
|---|---|---|---|
| Agricultural Zoning | | Bed & Breakfast | Guesthouse, Hotel, Tourist Accommodation (resort), Tourist Facility |
| Community Zoning 1 | | | |
| Community Zoning 2 | | | Boarding House / Backpackers, Conference Facility |
| General Business 1-7 | Boarding House / Backpackers, Hotel, Conference Facility | | |
| General Industry 1-2 | | | |
| General Residential 1 | | | |
| General Residential 2-6 | Boarding house / Backpackers, Guesthouse, | | Hotel, conference facility |
| Local Business 1 | Boarding House / Backpackers | Bed & Breakfast | Guesthouse |
| Local Business 2 | Bed & Breakfast, Boarding House / Backpackers, Guesthouse | | Hotel, Conference Facility |
| Mixed Use 1-3 | Boarding House / Backpackers, Hotel, Conference Facility | | |
| National Port Zone | Land Uses as set out in approved Port development framework plan. | | |
| Open Space 1 | | | Tourist Accommodation as determined by SDP (resort) |
| Open Space 2 | | | Tourist Facility |
| Open Space 3 | | | Tourist Facility |
| Risk Industry | | | |
| Rural Zoning | | Bed & Breakfast | Guesthouse, Tourist Accommodation (resort), Tourist Facility |
| Single Residential 1 | | Bed & Breakfast | Guesthouse |
| Single Residential 2 | | Bed & Breakfast | Boarding House/ Backpackers, Guesthouse |
| Transport Zoning 1 | | | Hotel, conference facility |
| Transport Zoning 2 | | | |
| Utility Zoning | | | |

*Self-catering permitted in Boarding houses / flats **Conference facility is defined as including "overnight accommodation and the supply of meals to delegates" (MPBL, 2015).

The CoCT database is not only useful to extract data to map spatial patterns, it is also useful to generate descriptive statistics to assist in interpreting the maps. Figure 35 to Figure 38 shows the areas where bed and breakfast, guesthouse, hotel and boarding house/backpacker accommodation are permitted according to the By-Law. Figure 35 shows that several existing B&Bs are located in areas where they are not permitted (mostly

residential). At closer scrutiny of the individual cases it was noted that many of these “B&Bs” are in actual fact operating as guest houses, which are permitted in residential areas (with consent). The areas where guest houses are permitted is shown in Figure 36. The fact that more areas are allowed for guest houses than B&Bs is counter intuitive. Figure 37 shows that the areas where hotels are permitted are limited and that several existing hotels are located within areas where they are not permitted. Similarly, Figure 38 shows where boarding houses and backpackers are permitted, and the few cases where such establishments are located outside of their zoning categories.

It was not possible to produce maps for conference and tourism facilities, as the current tourism database does not currently differentiate (categorize) these types of establishments. It should also be noted that many establishments types (e.g. self catering, holiday houses/flats) were not included in the above analyses as they are not clearly defined in the zoning scheme.

One should keep in mind that the spatial accuracy of the tourism database is low and that a small offset in position can cause an establishment to be highlighted as being located in an area that is not permitted. Thematic errors (e.g. misclassifications) in the tourism database can also cause an establishment to be highlighted as being located in an area where it is not permitted. At best, this exercise of identifying where establishments are located relative to the zoning scheme should be viewed as a demonstration of how this data can potentially be used. A better use of the zoning maps would be to identify areas where future establishments are permitted (or not).

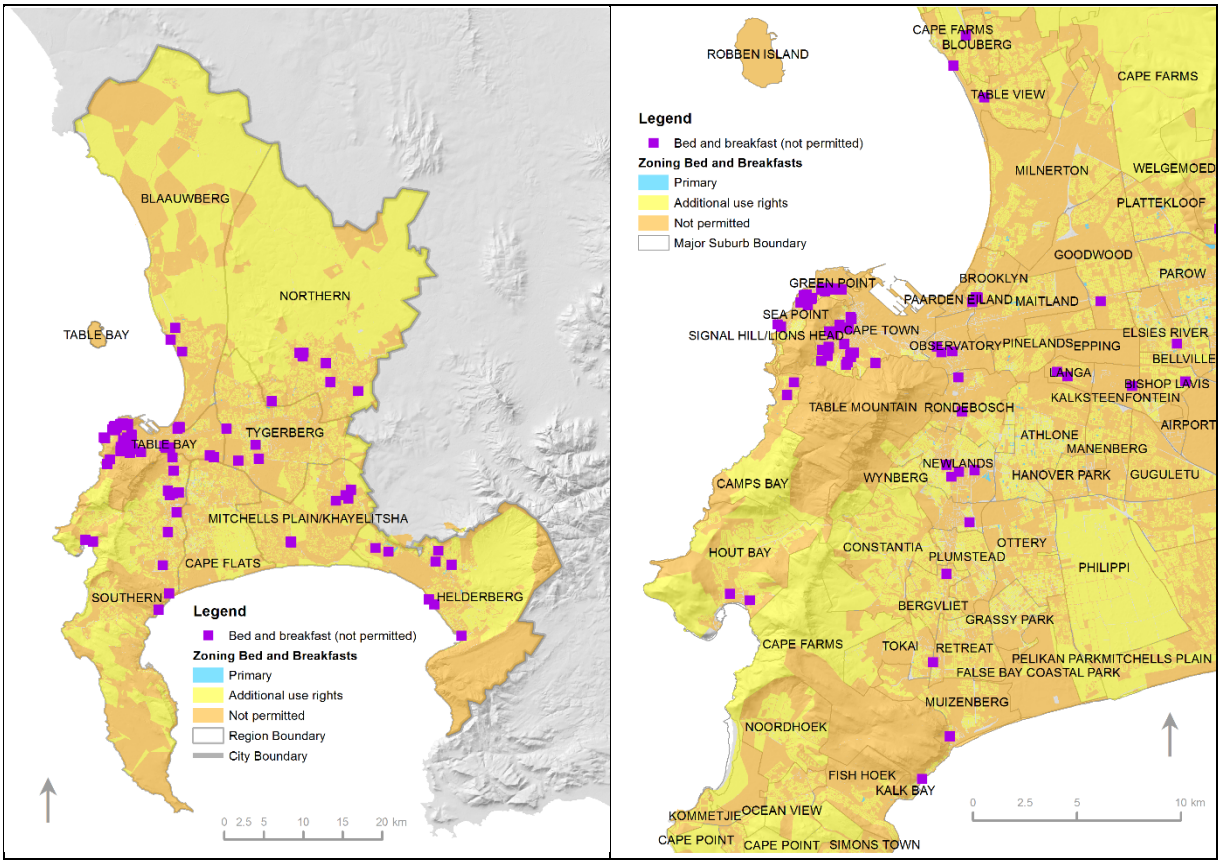


Figure 35 Areas zoned for bed and breakfast accommodation, and establishments located in areas that are not permitted

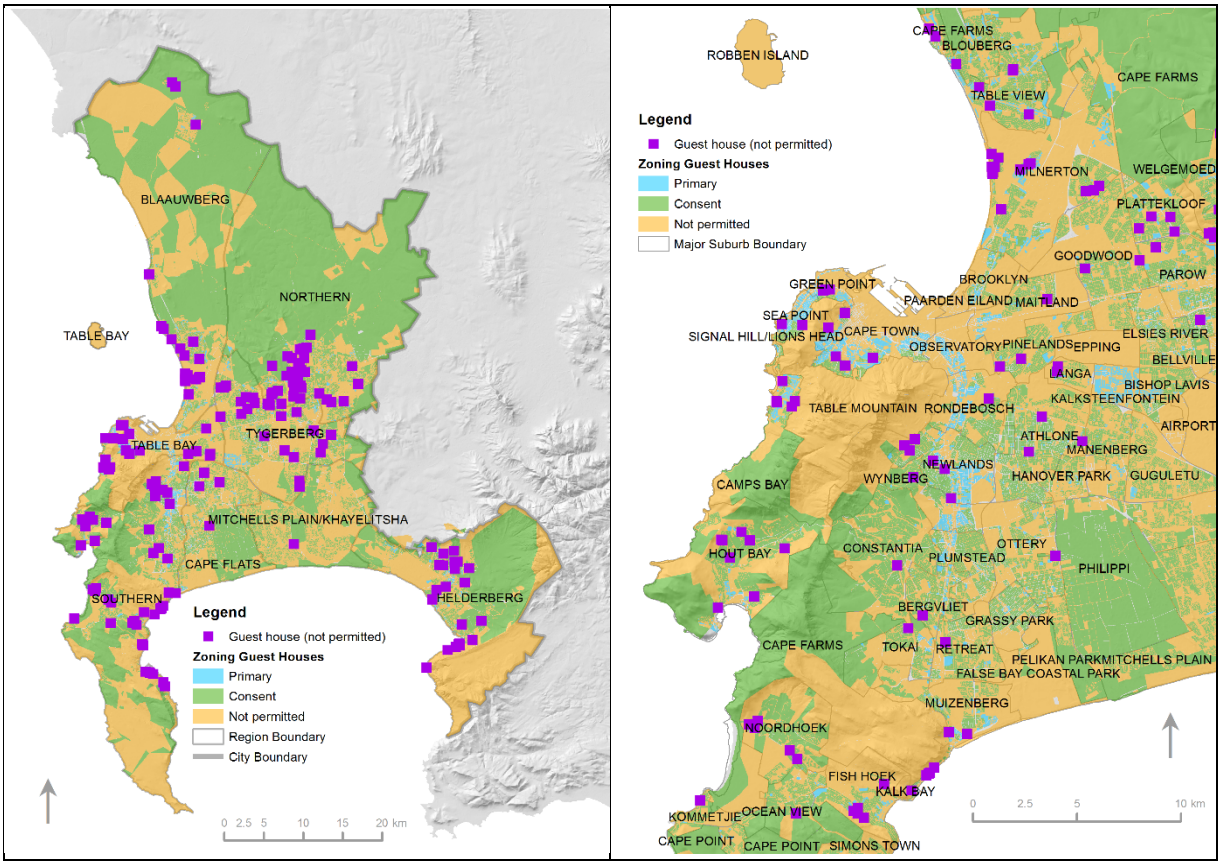



Figure 36 Areas zoned for guest house accommodation

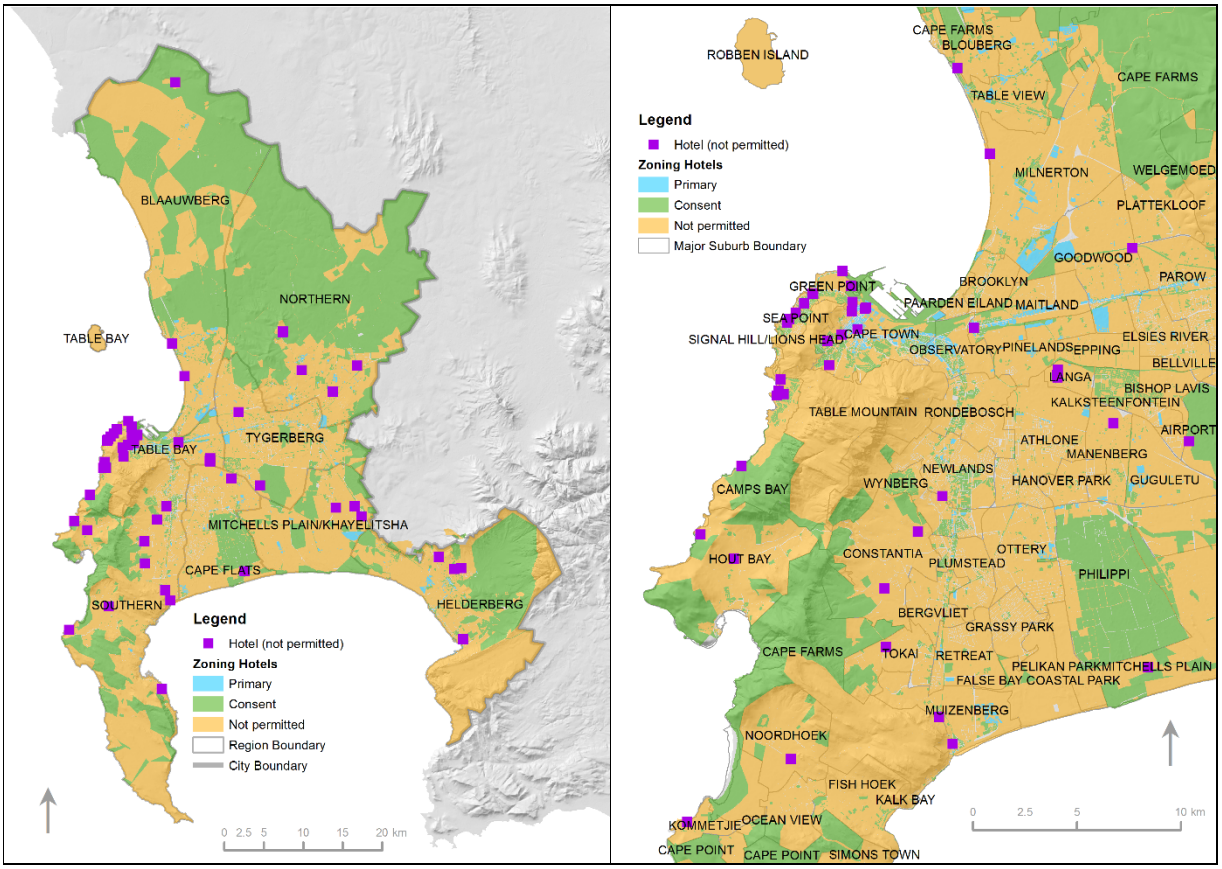



Figure 37 Areas zoned for hotel accommodation

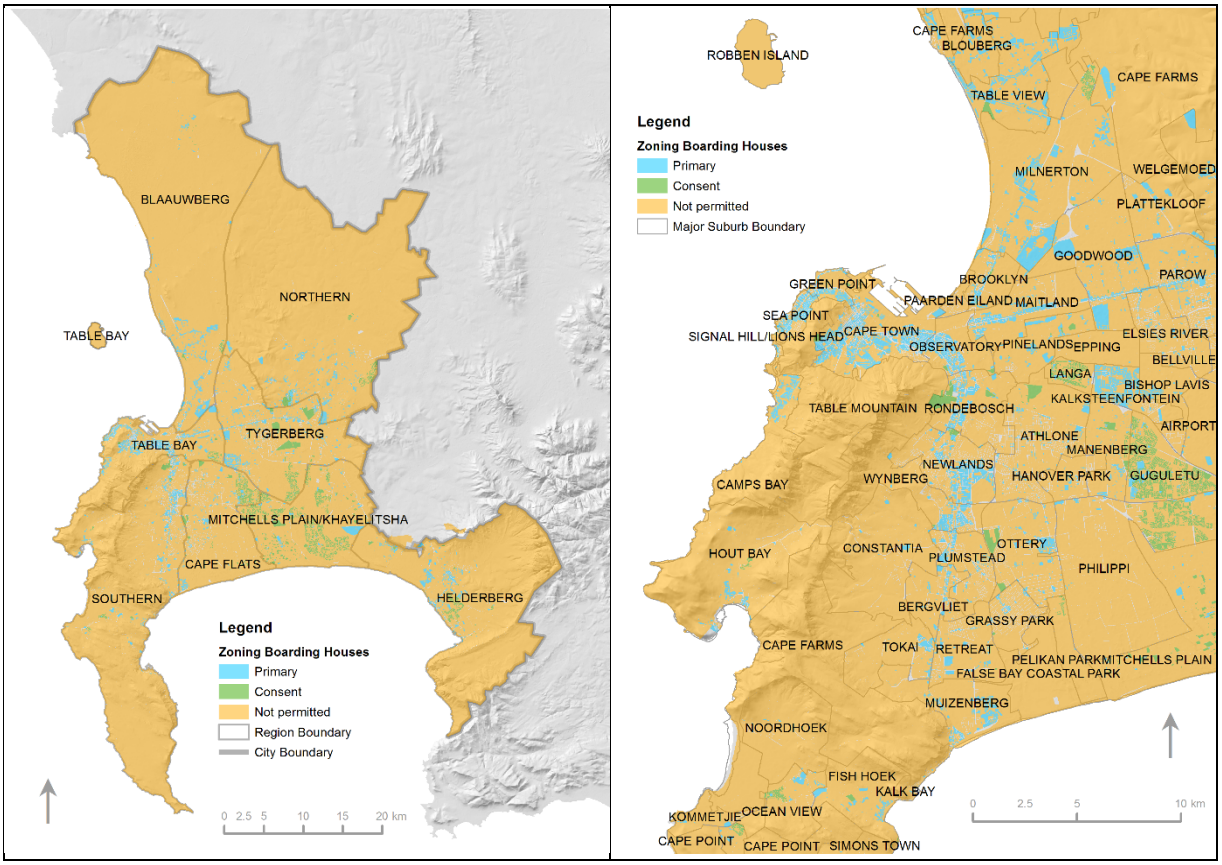



Figure 38 Areas zoned for boarding house accommodation

# 7 RESORTS

The CoCT owns and manages 13 resorts (Figure 36a) and they are located in six of the nine city-wide planning districts. All resorts, apart from Kuilsrivier Caravan Park, are located within the coastal zone (Figure 39a). According to the CoCT all resorts are located along the scenic routes identified in the City Resorts Project (Grant Thornton, 2009). However, if one overlays the locations of the resorts in relation to the scenic routes of the CoCT's database it is seen that two of the resorts are not located on a scenic route (Figure 39b).

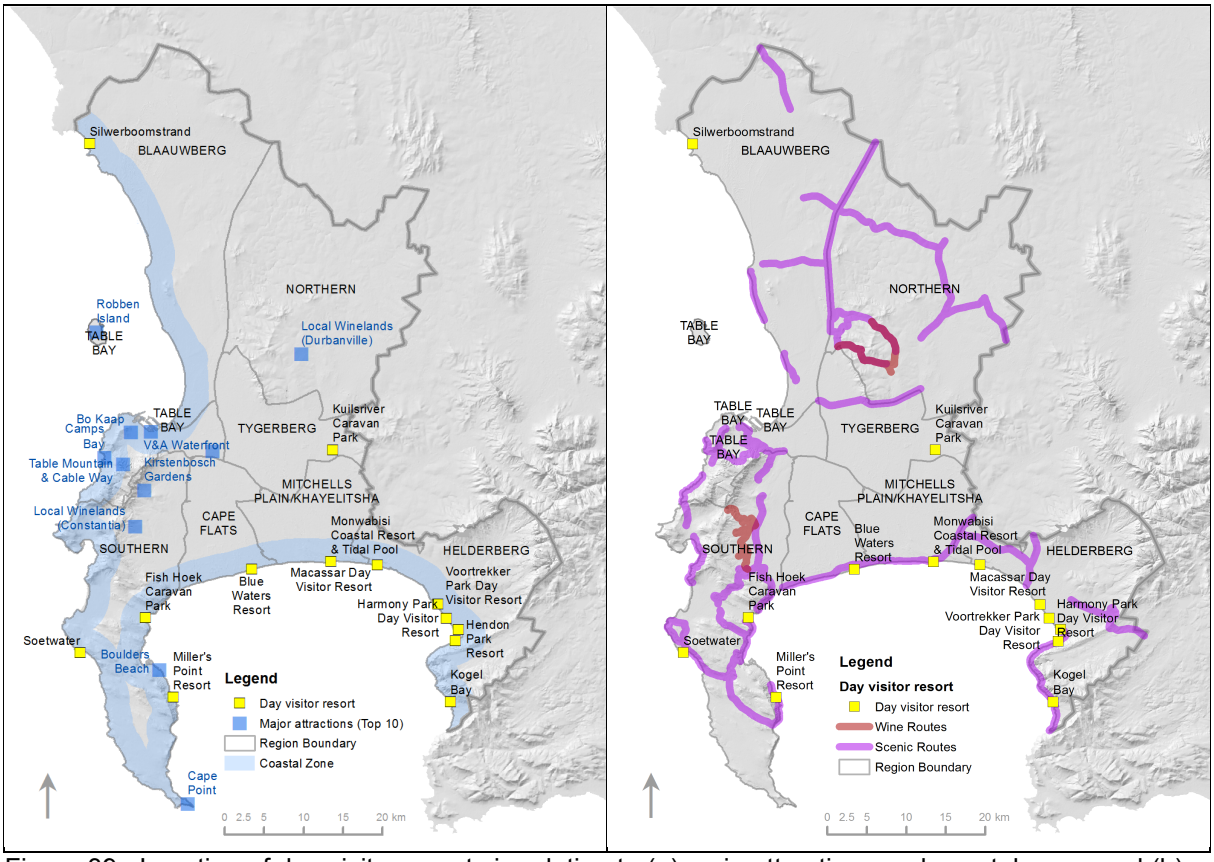


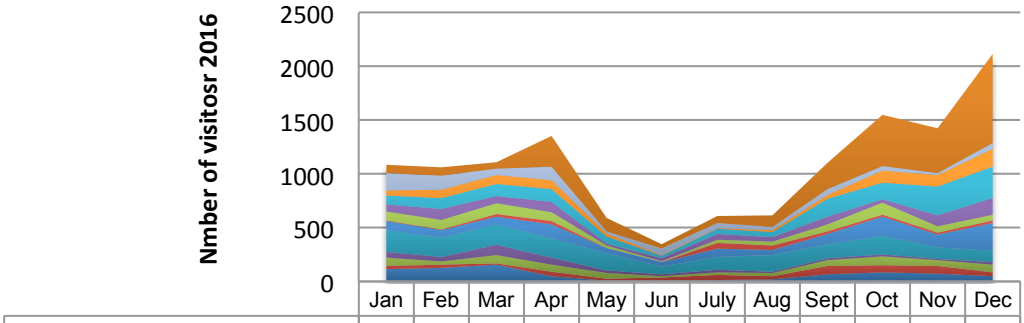

Figure 39 Location of day visitor resorts in relation to (a) main attractions and coastal zone; and (b) wine and scenic routes

The Kogel Bay, Millers Point, Soetwater and Hendon Park resorts were recommended as high prioritised resort development areas in the Grant Thornton study of 2009. Figure 40 shows the recorded visitors to the resorts for each month between January and December 2016 and

Figure 41 overall visits for the year.

Figure 42 presents the spatial context of visitation according to resort type (Figure 42a-c) as well as overall visitor statistics for 2016 (see Figure 42d). It is seen that two of the four high prioritised resorts received the most visitors in 2016 (Kogel Bay and Hendon Park received between 1774-2790 visitors), followed by eight resorts that received between 631-1500 visitors.

The majority of resorts are located quite a distance from the 19 main tourism attractions (Figure 43). In terms of accessibility via public transport, it is only three that are very inaccessible: Silwerstroomstrand, Kogel Bay and Soetwater (Figure 43).




| | Jan | Feb | Mar | Apr | May | Jun | July | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KOGEL BAY RESORT | 80 | 72 | 63 | 284 | 123 | 39 | 62 | 107 | 244 | 476 | 416 | 824 |
| VOORTREKKER PARK RESORT | 159 | 133 | 56 | 125 | 15 | 61 | 49 | 29 | 49 | 37 | 15 | 56 |
| SOETWATER RESORT | 51 | 75 | 86 | 86 | 33 | 5 | 7 | 20 | 41 | 115 | 110 | 168 |
| SILWERSTROOM RESORT | 81 | 102 | 114 | 118 | 65 | 27 | 46 | 45 | 165 | 157 | 265 | 288 |
| MONWABISI RESORT | 63 | 101 | 62 | 93 | 15 | 25 | 58 | 43 | 70 | 27 | 102 | 155 |
| MILLERS POINT RESORT | 86 | 92 | 102 | 84 | 24 | 5 | 25 | 39 | 66 | 114 | 64 | 54 |
| MACASSAR RESORT | 4 | 3 | 24 | 34 | 4 | 5 | 53 | 37 | 25 | 17 | 14 | 28 |
| KUILS RIVER RESORT | 84 | 76 | 72 | 128 | 47 | 40 | 81 | 49 | 93 | 177 | 121 | 251 |
| HENDON PARK RESORT | 201 | 179 | 192 | 181 | 161 | 71 | 120 | 153 | 132 | 172 | 105 | 107 |
| HARMONY PARK RESORT | 56 | 38 | 96 | 61 | 20 | 18 | 24 | 12 | 17 | 22 | 14 | 27 |
| FISH HOEK RESORT | 79 | 29 | 74 | 67 | 55 | 13 | 19 | 31 | 57 | 80 | 54 | 73 |
| BLUE WATERS RESORT | 27 | 33 | 11 | 40 | 19 | 30 | 50 | 28 | 77 | 68 | 69 | 33 |
| ZANDVLEI RESORT | 116 | 125 | 159 | 52 | 7 | 6 | 14 | 22 | 65 | 84 | 74 | 50 |

Figure 40 Monthly number of visitors to day resorts during 2016

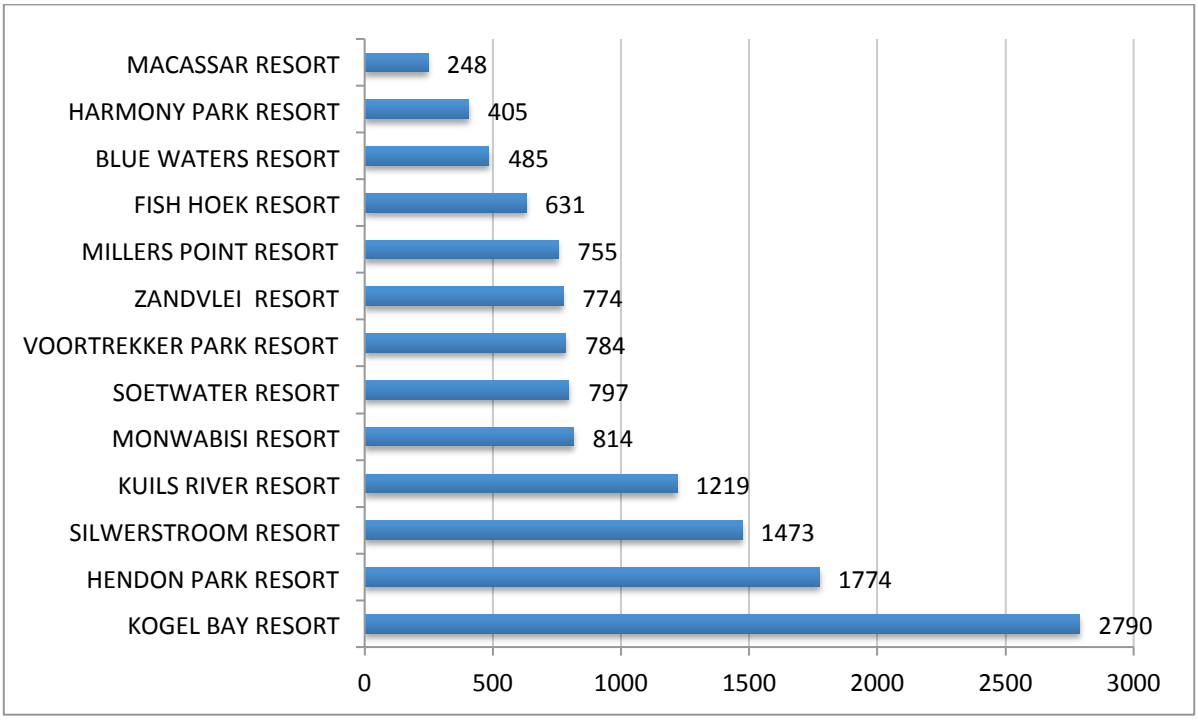



Figure 41 Total number of visitors to CoCT resorts in 2016

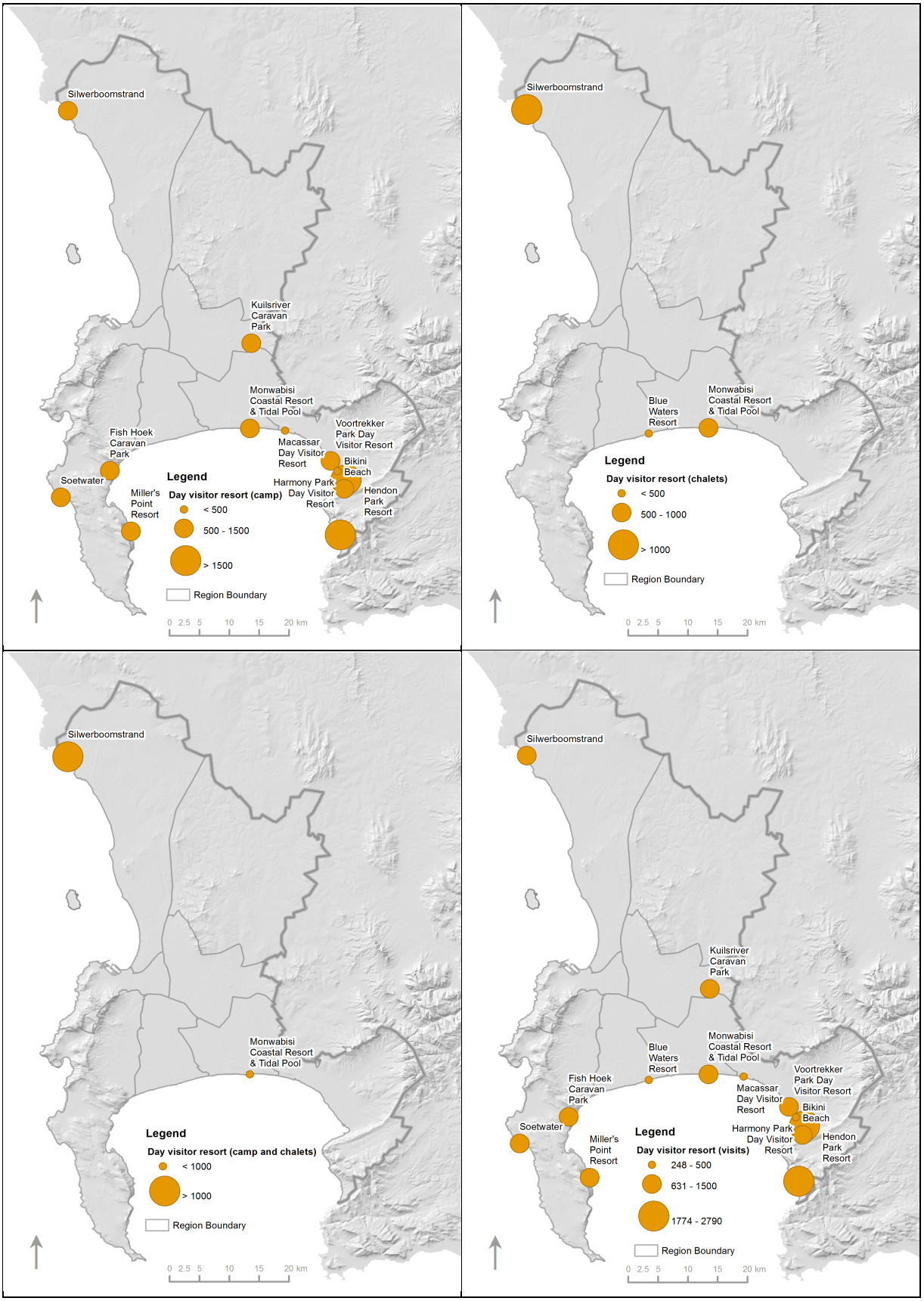



Figure 42 Occupancy of day visitor resorts offering (a) camping, (b) chalets, (c) camping and chalets; (d) shows total visitors

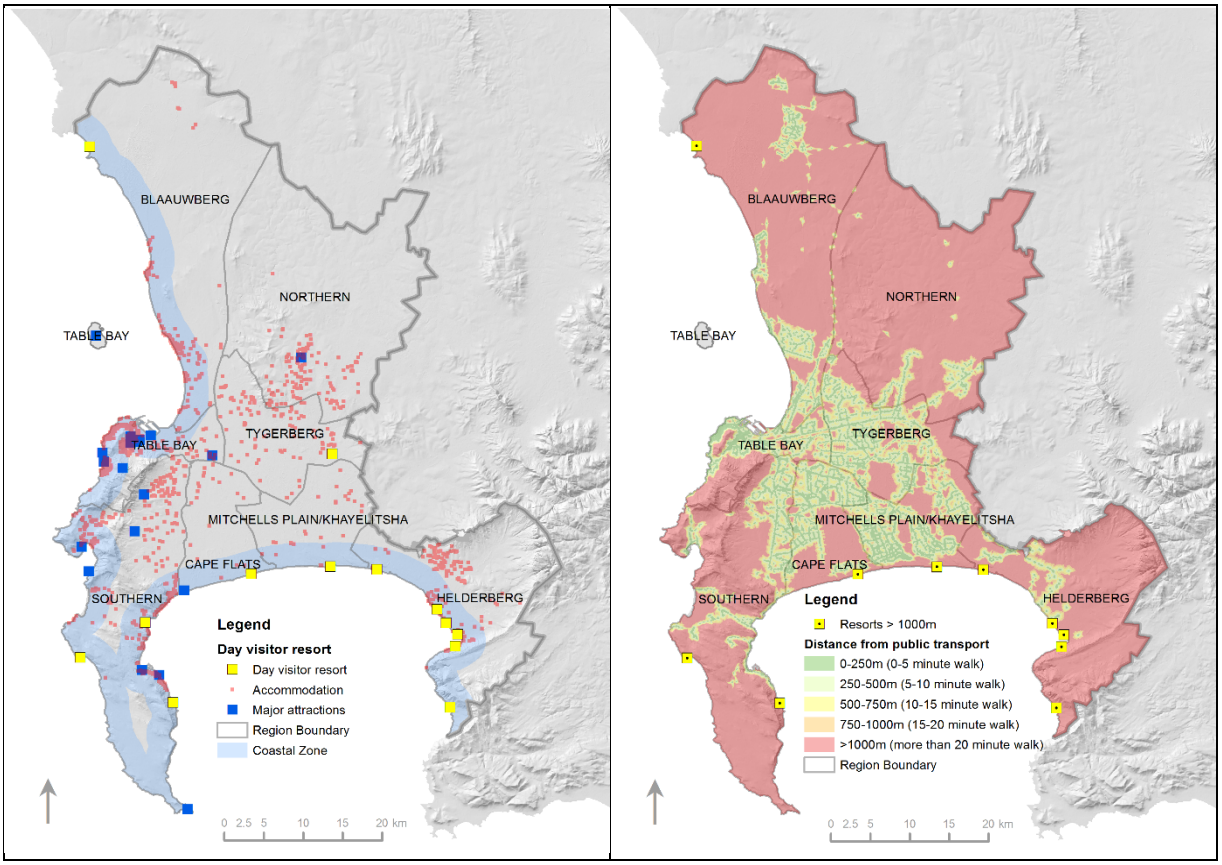



Figure 43 Day visitor resorts (a) location in relation to coastline, accommodation and major attractions; and (b) distance from nearest public transport (excluding minibus taxi routes)

The zoning of resorts are restricted to consent use and mostly prohibited in the main built-up areas of the city (Figure 44).

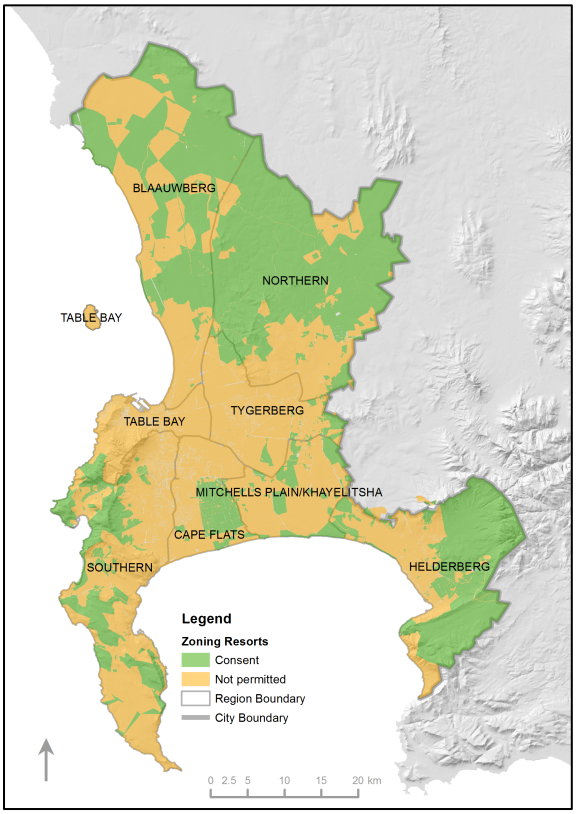



Figure 44 Areas where resorts are permitted as consent use and where it is prohibited

# 8 LANGA

As a result of the Native Urban Areas Act of 1923, Langa developed as the first formally designed township in the Western Cape. Langa township is, therefore, not surprisingly, considered Cape Town's premier township tourism area.

The CoCT has identified in its 2012-2017 IDP that they will develop Fa portfolio of cultural infrastructure to improve communities' ability to produce and consume culture, and enhance opportunities for the development of community culture, new works and tourism in Langa (City of Cape Town, 2012-2017). The Langa Heritage Route and the development of a cultural district in Langa in the vicinity of the Pass Office Museum and the Guga S'thebe Arts and Cultural Centre is one such key project.

Heritage sites in the precinct include the Langa Memorial, which commemorates the 50th anniversary of the PAC launch of its Positive Action Campaign that targeted the pass laws, and the Langa Township Heritage Museum or Dompas Museum which was once a pass office and court in the apartheid era (the museum atmosphere is a mixture of abuse, sadness, defiance and triumph – (www.crossculturalfoundation.or.ug/Downloads/.../Robinson%20paper.docx. no date).

The CoCT (2015: 24) Municipal Planning By-Law makes provision for overlay zoning as follows:

> (3) The City may, by amendment of the development management scheme, on its own initiative adopt a new overlay zoning or amend or remove an existing overlay zoning.
> (4) In respect of each overlay zoning, except a subdivisional area overlay zoning, the City must publish in the Provincial Gazette –
> (a) which specified area or land units have the overlay zoning;
> (b) a reference to a map available on the City's website that depicts which specified area or land units have the overlay zoning; or
> (c) a statement that no specified area or land unit has the overlay zoning.
> (5) The City may at any time designate a specified area or land unit to have an overlay zoning, or to no longer have an overlay zoning, by following the process in the development management scheme and must publish the designation in the Provincial Gazette.
> (6) The City is not required to follow the process in the development management scheme contemplated in subsection (5) when publishing a notice contemplated in subsection (4) if the area or land unit specified in the notice has the same or a substantially similar overlay zoning as it does when this By-Law comes into operation.

In 2014 the CoCT motivated for the declaration of a Heritage Protection Overlay Zone (HPOZ), in terms of the Cape Town Zoning Scheme (2013) over the historic core of Langa (CoCT: Environment and Heritage Resources Management Branch, 2014). The area for the proposed Heritage Area status (Figure 45) covers the historic core of Langa as well as a heritage route, which extends from the historic entrance to Langa from Bhunga Ave into Washington, across Lerotholi to the Robert Sobuke Memorial and the Old Flats. This heritage route also includes the route from the old train station to the Main Barracks.

Large portions of Langa are already proposed by SAHRA as grade 1 (of national interest) (Figure 46). The proposed CoCT grades are shown in Figure 47 and essentially implies that the whole of Langa be considered a heritage area.

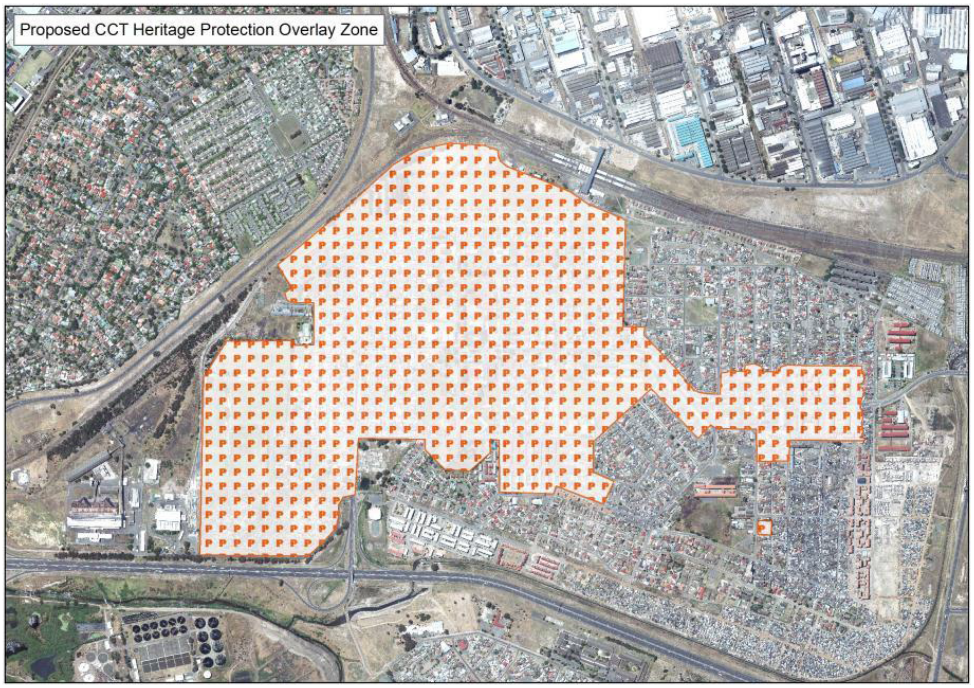



Figure 45 Area to be considered for Heritage Area status (proposed Heritage Protection Overlay zone) (CoCT: Environment and Heritage Resources Management Branch, 2014)

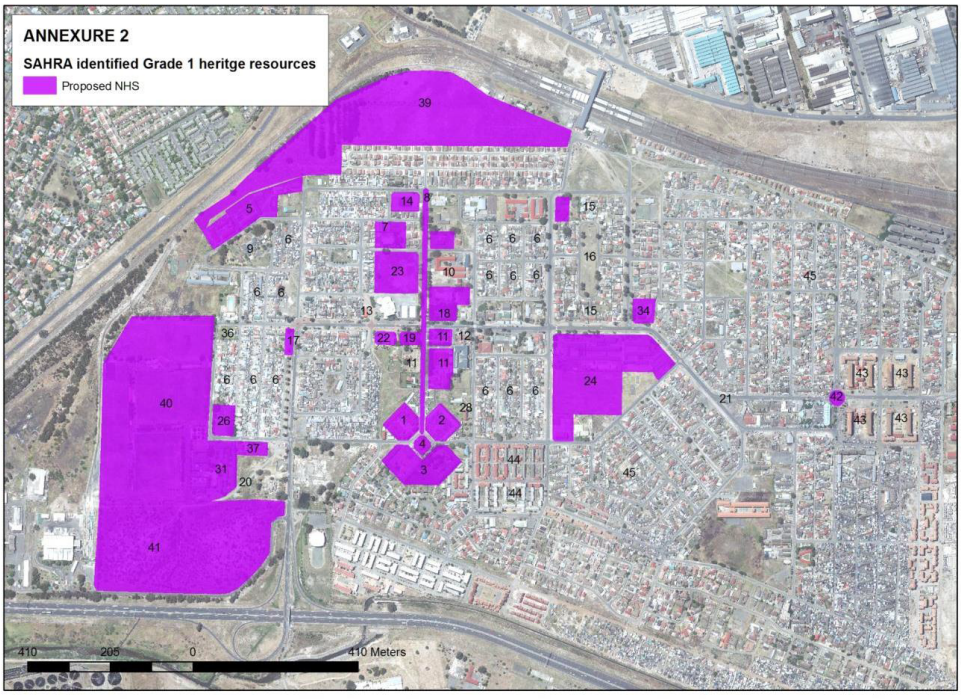



Figure 46 SAHRA grade 1 heritage resources (CoCT: Environment and Heritage Resources Management Branch, 2014)

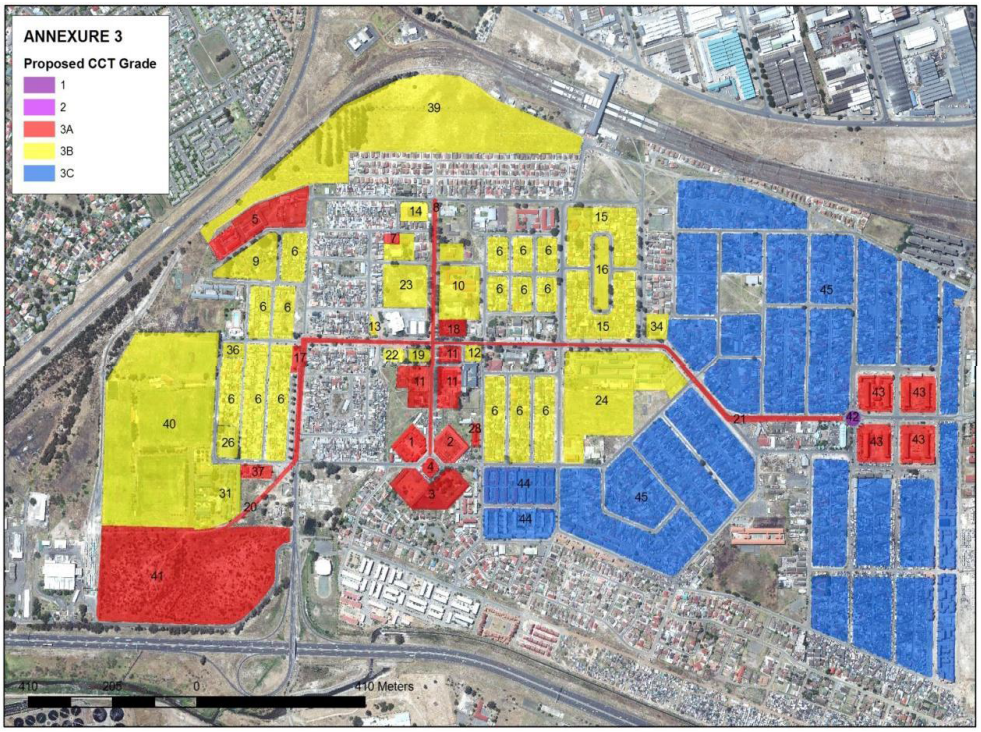



Figure 47 CoCT heritage grades (CoCT: Environment and Heritage Resources Management Branch, 2014)

Notwithstanding the heritage status of the precinct, very few tourism accommodation and attractions are listed on the CoCT database and the mapping thereof can be seen in Figure 48.

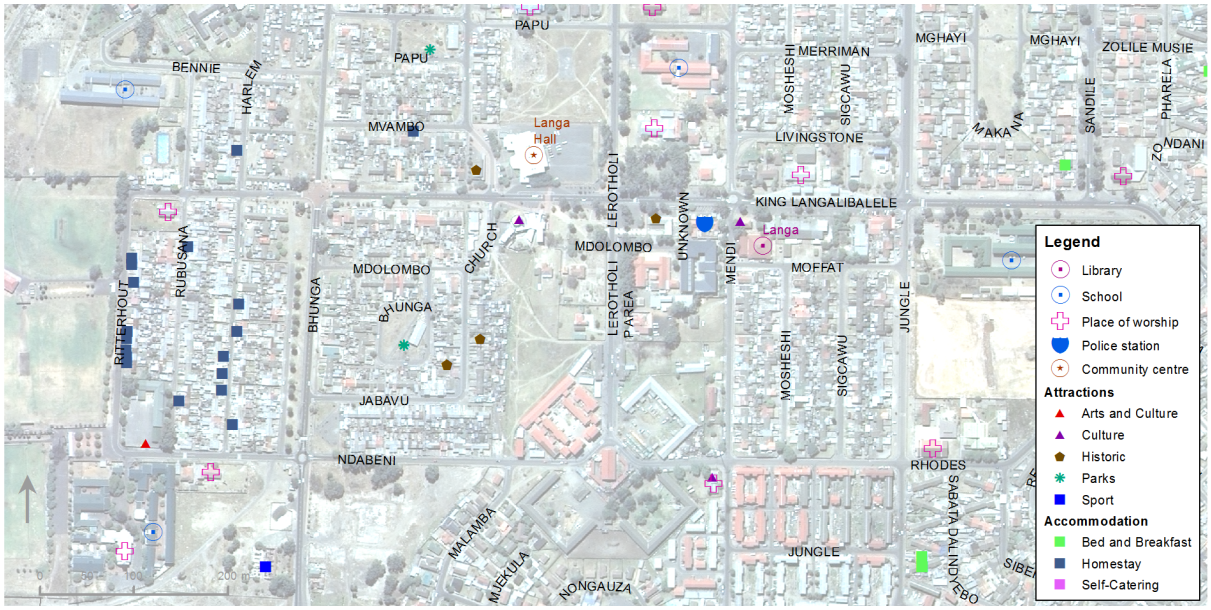



Figure 48 Tourist accommodation and attractions in Langa

Figure 49 to Figure 52 are maps showing a combination of features and their spatial relations and include the distance to public transport locations (Figure 49 – MyCiti; Figure 50 – Railway Stations; Figure 51 – Golden Arrow Bus Stops; Figure 52 – minibus taxi stops) and that of the three primary attraction groups as well as tourism accommodation places. One can see in Figure 49 that the nearest MyCiti Bus route to Langa is in the Observatory area. However, Langa has a railway station (Figure 50) and most of the area is within 10-

minute walk of a Golden Arrow bus stop (Figure 51). The suburb is also accessible by minibus taxis (Figure 52), particularly the core area where most accommodation is being provided. When all the forms of public transport is combined (Figure 53) it is clear that Langa is relatively well served by public transport, albeit not public transport aimed at tourists.

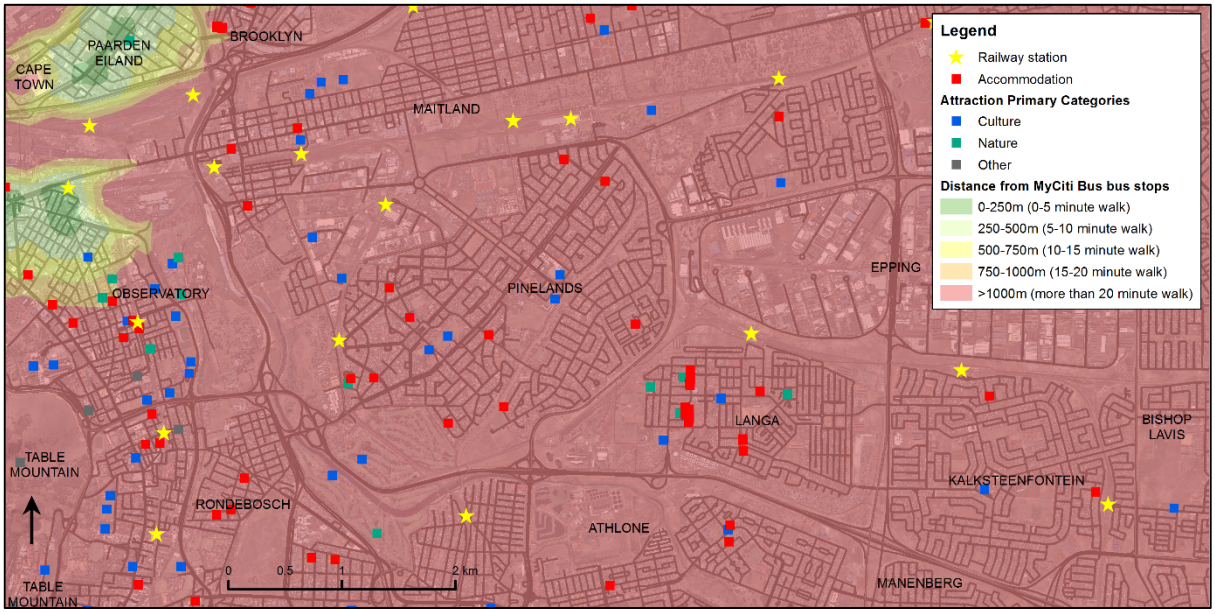


Figure 49 Tourism accommodation and attractions in Langa in relation to distance from MyCity Bus bus stop

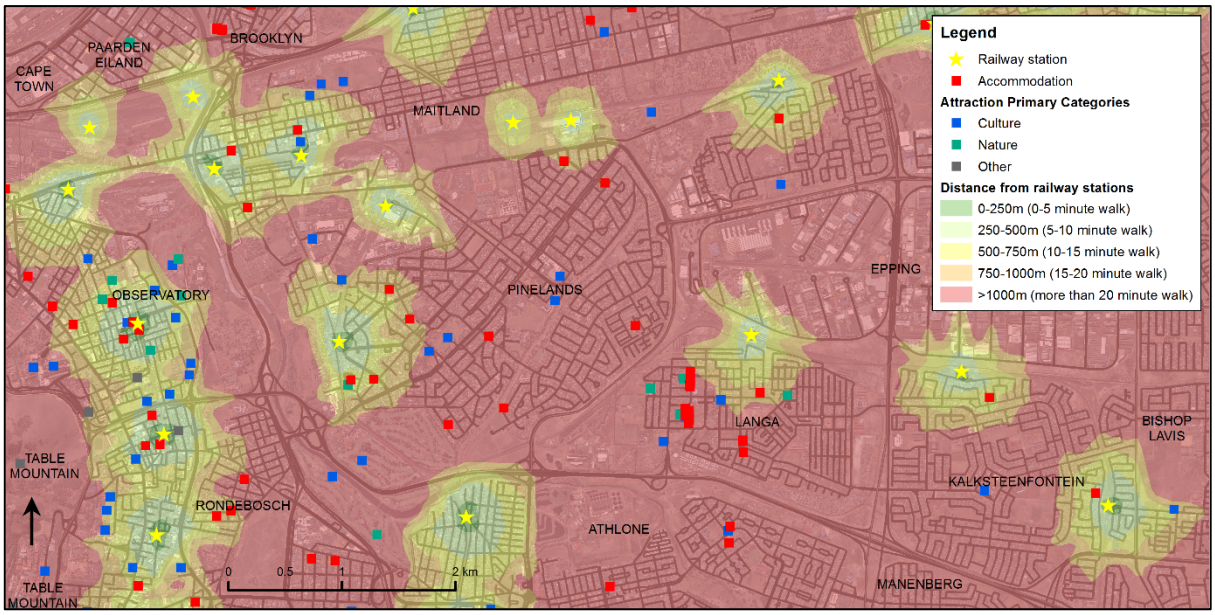


Figure 50 Tourism accommodation and attractions in Langa in relation to distance from railway stations

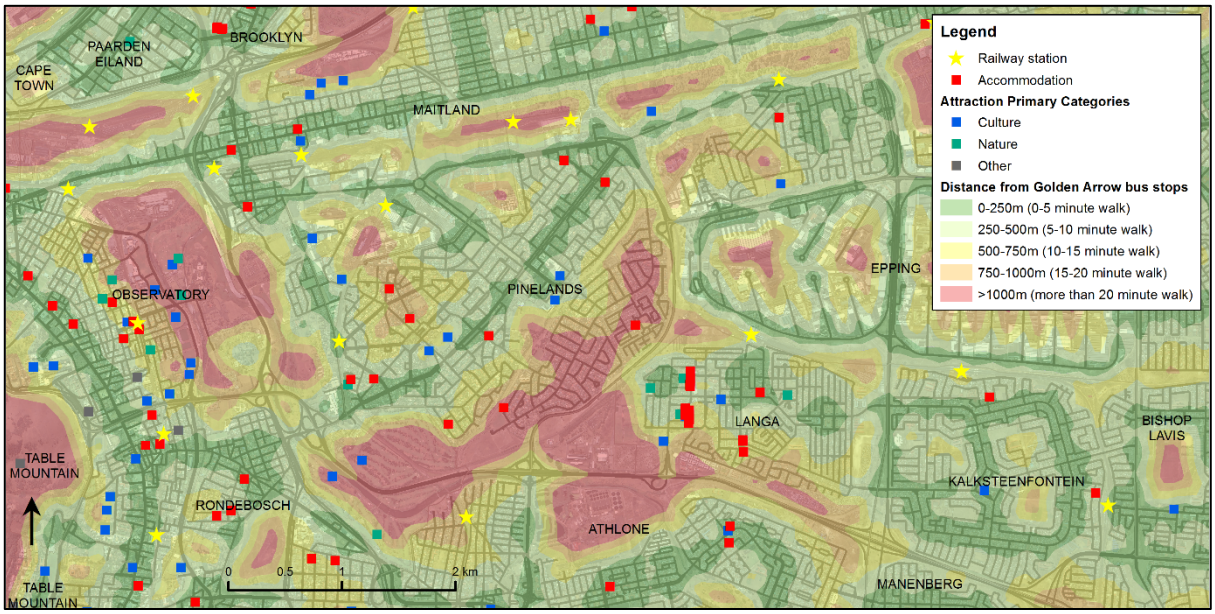



Figure 51 Tourism accommodation and attractions in Langa in relation to distance from Golden Arrow bus stops

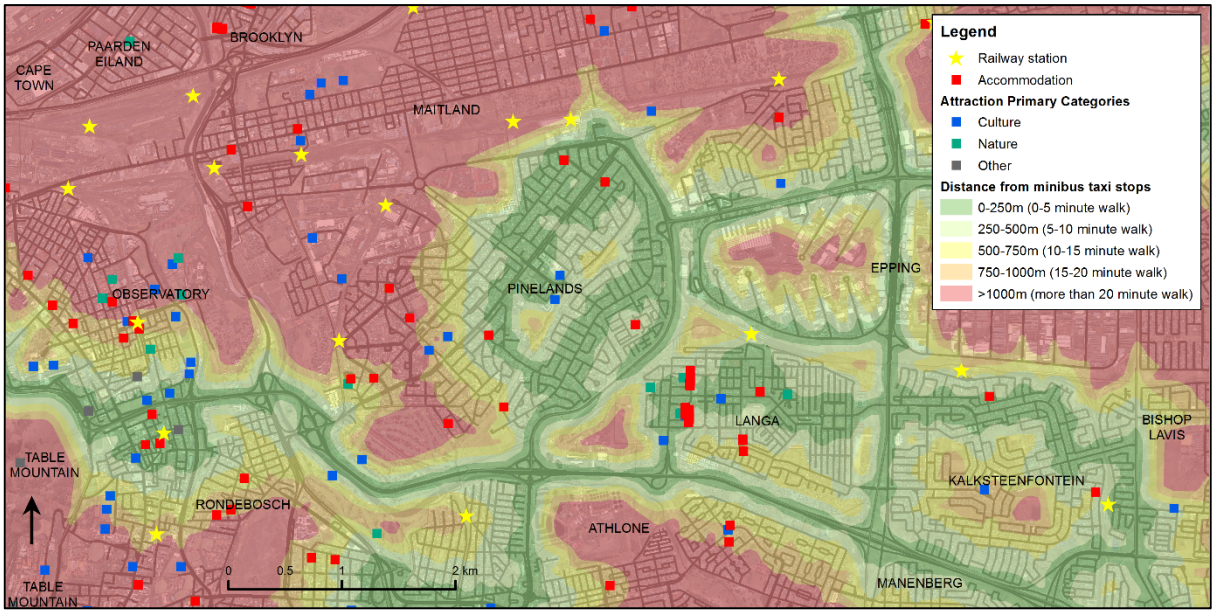



Figure 52 Tourism accommodation and attractions in Langa in relation to distance from minibus taxi stops

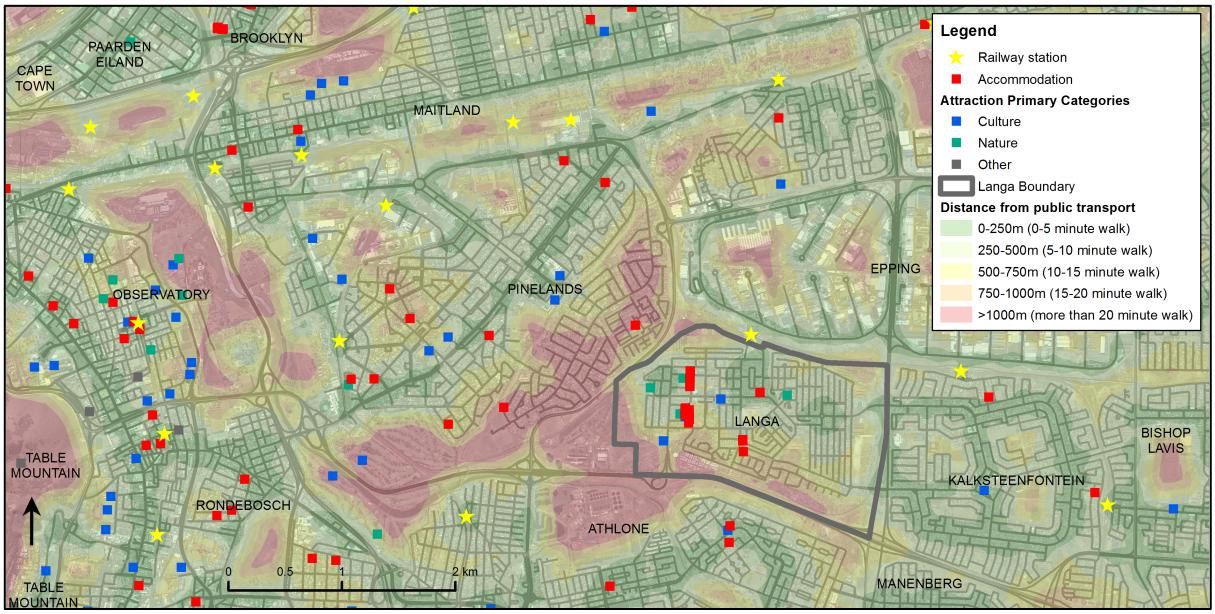


Figure 53 Tourism accommodation and attractions in Langa in relation to distance from public transport (excluding minibus taxis)

Figure 54 shows the size of accommodation establishments. For most of the establishments no information about the number of rooms or beds were available. Figure 54 thus represents an estimation of the number of beds based on the type of accommodation (refer to Section 4.1.2 for an explanation). According to the CoCT database, several of the establishments in Langa are classified as hotels, which causes an unlikely situation that some of these establishments have capacity for more than 200 guests. It is advised that the actual classification and capacity of these establishments be determined in order to carry out more meaningful analyses.

Figure 54 Size of establishments according to number of beds in Langa

Parking in Langa is challenging. As seen in Figure 55 the best parking available for busses is located behind the Langa Hall.

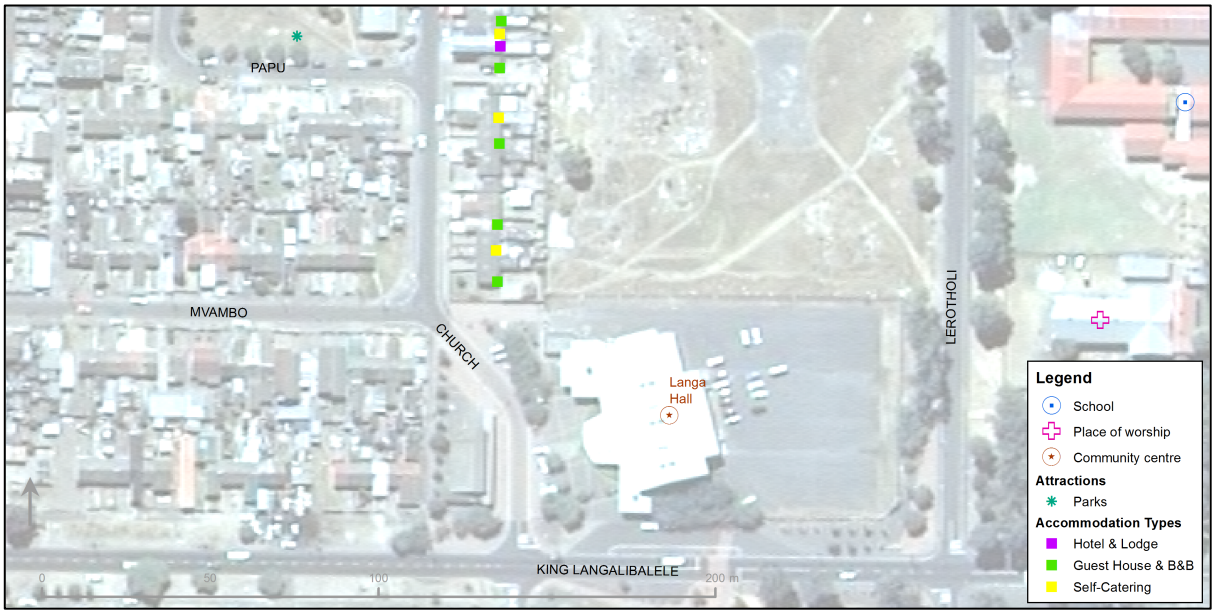


Figure 55 Parking situation in and around accommodation providers and the Langa Hall

# 9 DURBANVILLE

Whereas Langa is identified as a strategic tourism development area by the CoCT, Durbanville on the other hand is not generally equated as a tourism space per se. The suburb is located in the Northern District of the CoCT and according to the vision of the District Plan it is a district “where opportunities for integrated development are explored and utilised to the fullest, inclusive of the development opportunities for employment centres. Concurrently, effort is made to enhance the quality and opportunities of the existing built environment and rural hinterland in order to develop a district with a unique character” (City of Cape Town, 2012: 14). Opportunities for tourism development does exist, especially in the rural hinterland of the district. Figure 56 is confirmation of the limited extent of tourism accommodation and attractions in Durbanville. Unlike Langa, the area has an eroded historical core – Figure 56. Most accommodation types are guesthouses (probably catering for the business tourist). A hotspot map shows that there is a cluster in the northern parts of the Durbanville CBD (Figure 57). Overnight visitors to the area tend to be domestic visitors (see Figure 30).

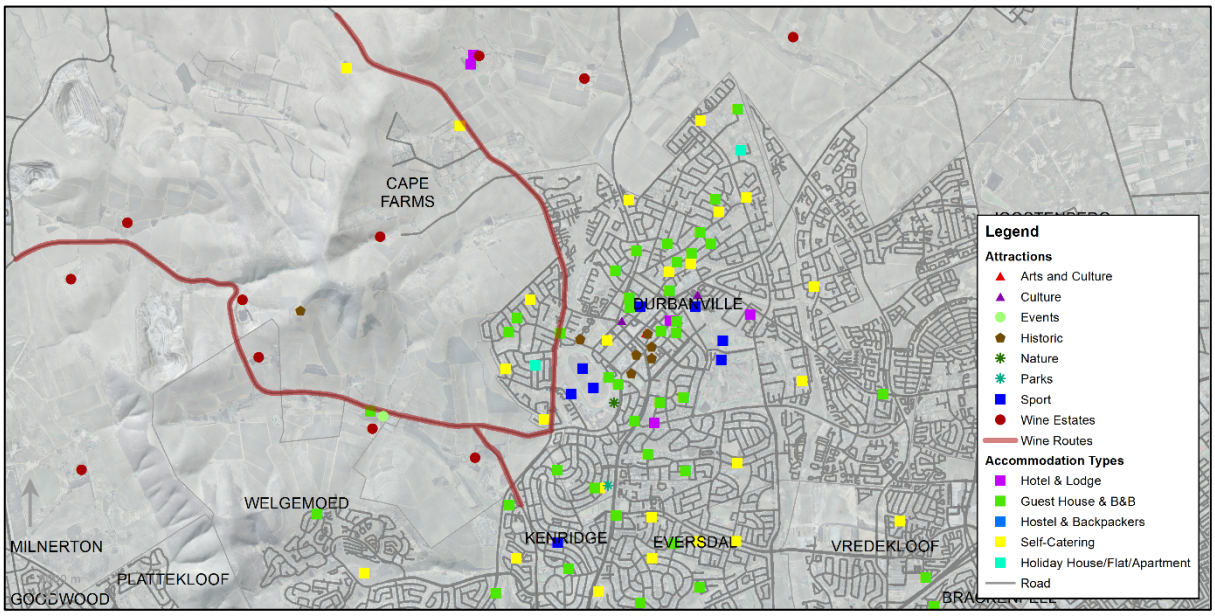



Figure 56 Tourism accommodation and attractions in Durbanville

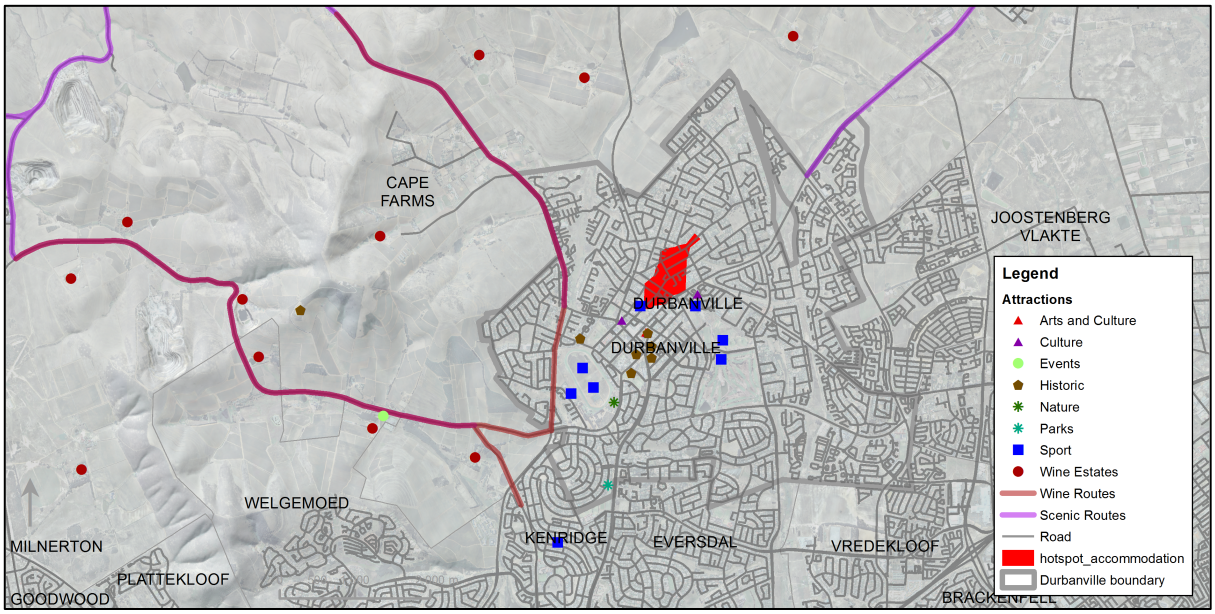



Figure 57 Tourism accommodation hotspot in Durbanville

The interrelations between accessibility in terms of various public forms of transport, accommodation and primary attraction types can be seen in 58 to Figure 64. It is clear that there is a disconnect between Milnerton (MyCiti Bus) and Durbanville (Figure 58) while Figure 59 demonstrates that Durbanville is not accessible by rail, with the closest stations in Brackenfell and Kraaifontein. Durbanville is, however, accessible by bus (Golden Arrow), with a route along Durban Road (Figure 60). There is no bus route from Brackenfell and Kraaifontein to Durbanville. This gap is filled by minibus taxis (Figure 61). Public transport access from Philadelphia (north) and Joostenberg (north-west) is only available by minibus taxi. Minibus taxis also plays a critical role at local level and covers most of the suburb (Figure 61). This is also evident when all forms of transport are combined (Figure 63 and Figure 64)

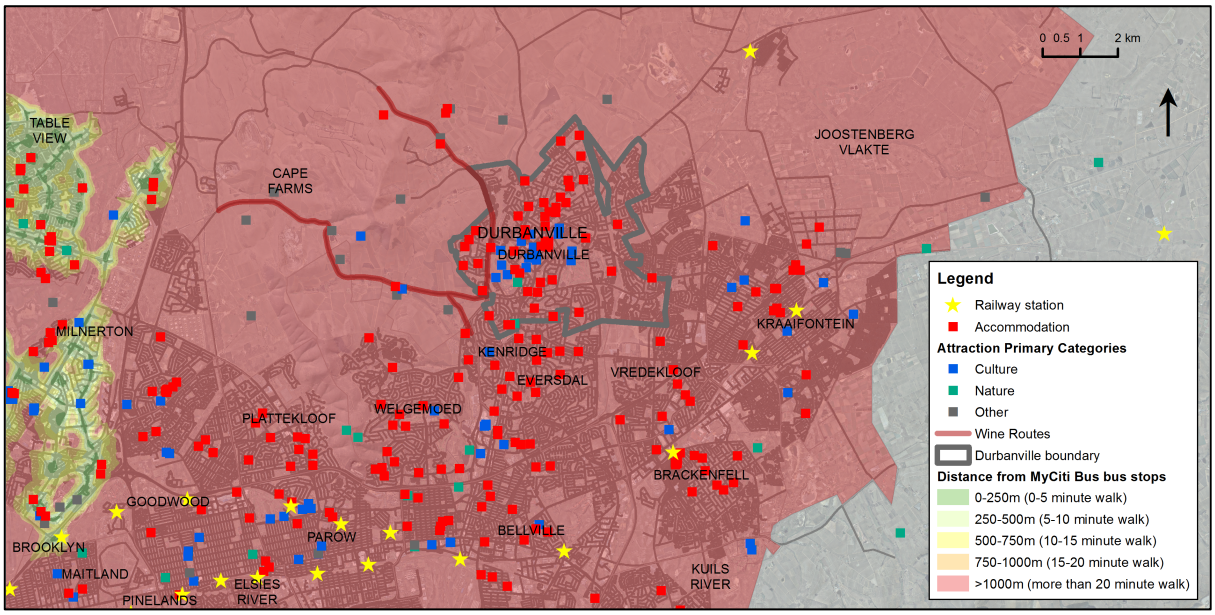



Figure 58 Tourism accommodation and attractions in Durbanville and surrounding area in relation to MyCiti Bus

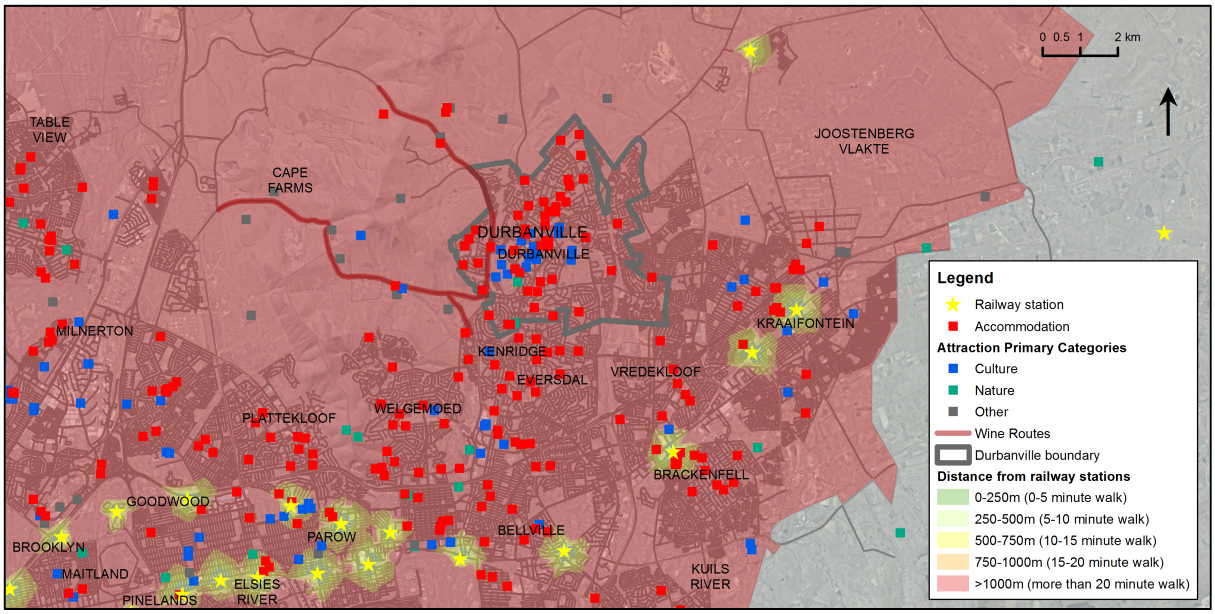



Figure 59 Tourism accommodation and attractions in Durbanville and surrounding area in relation to distance from railway stations

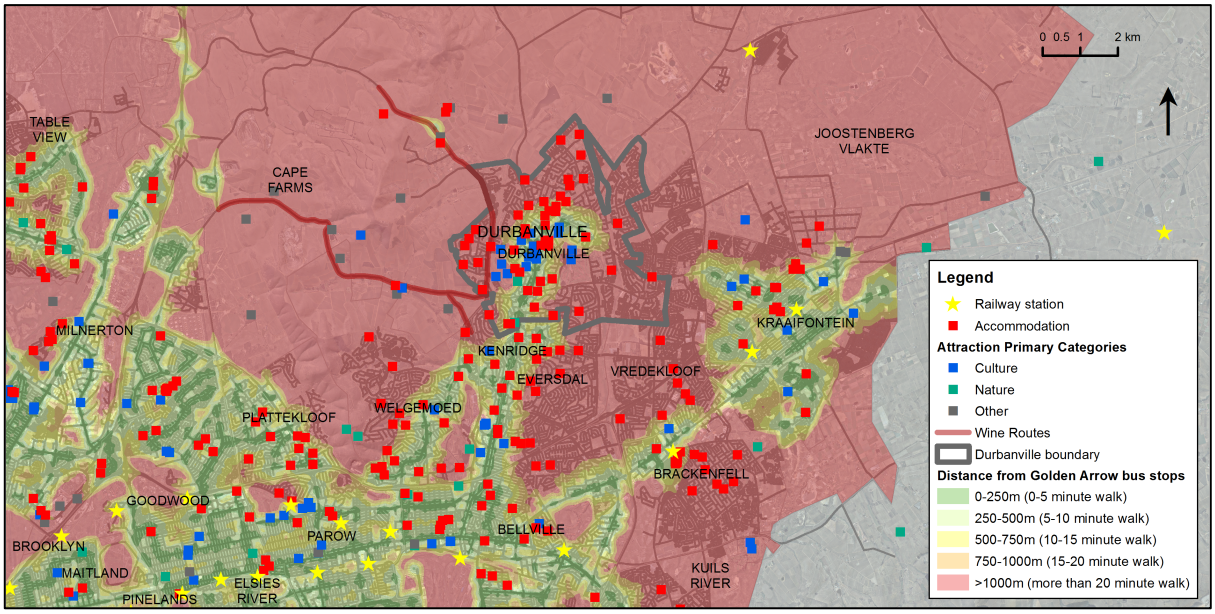



Figure 60 Tourism accommodation and attractions in Durbanville and surrounding area in relation to distance from Golden Arrow bus stops

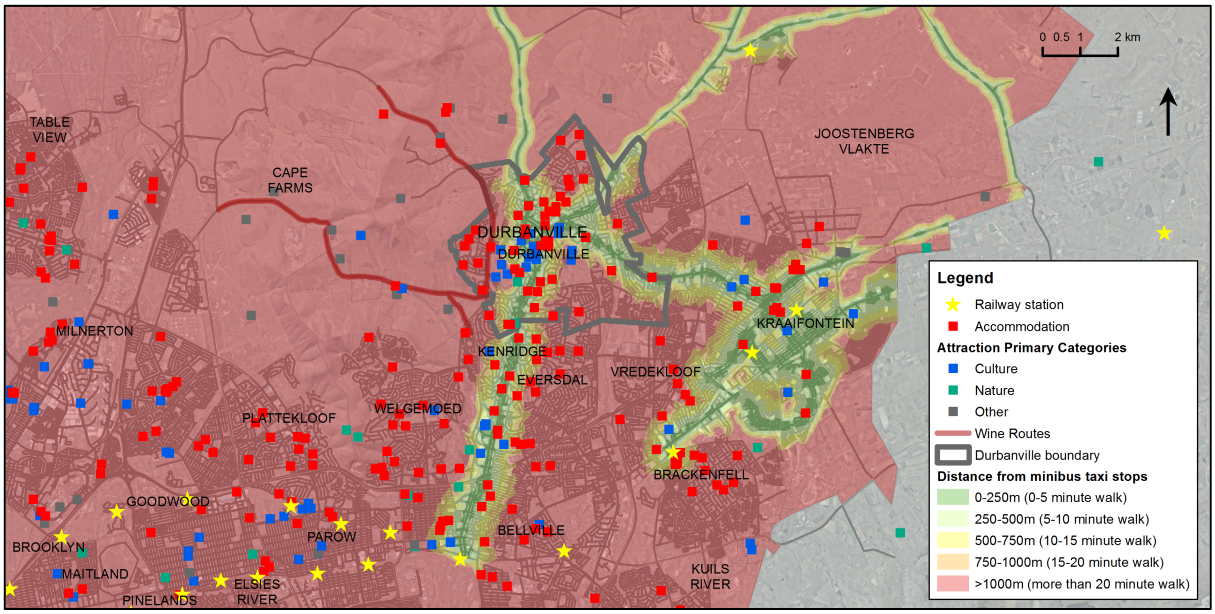



Figure 61 Tourism accommodation and attractions in Durbanville and surrounding area in relation to distance from minibus taxi stops

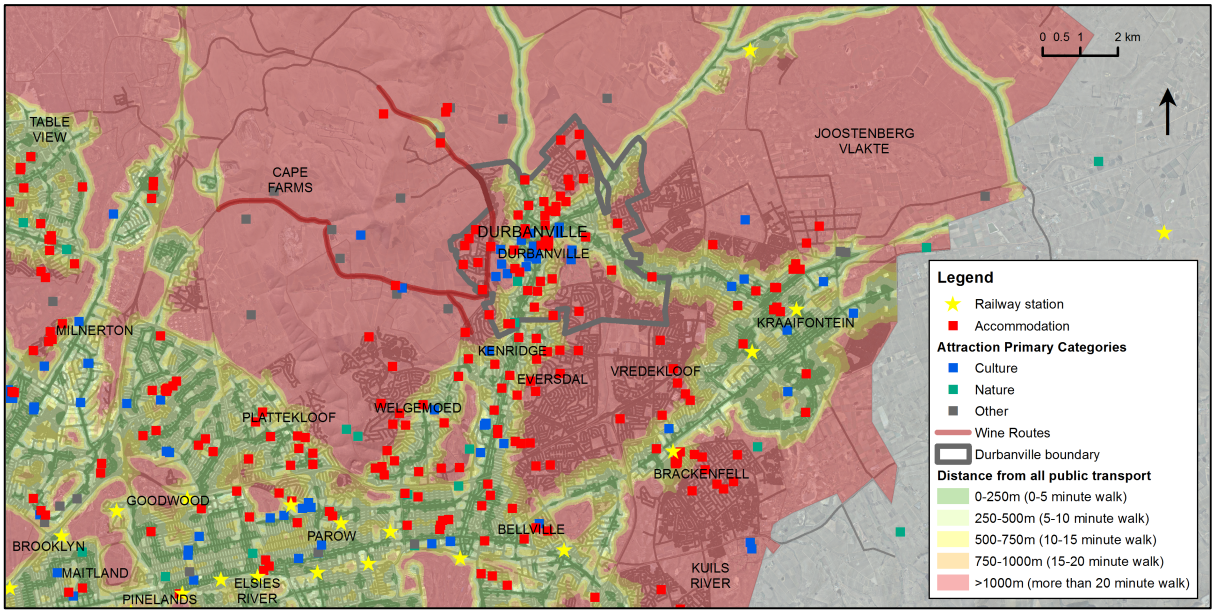



Figure 62 Tourism accommodation and attractions in Durbanville and surrounding area in relation to distance from all public transport

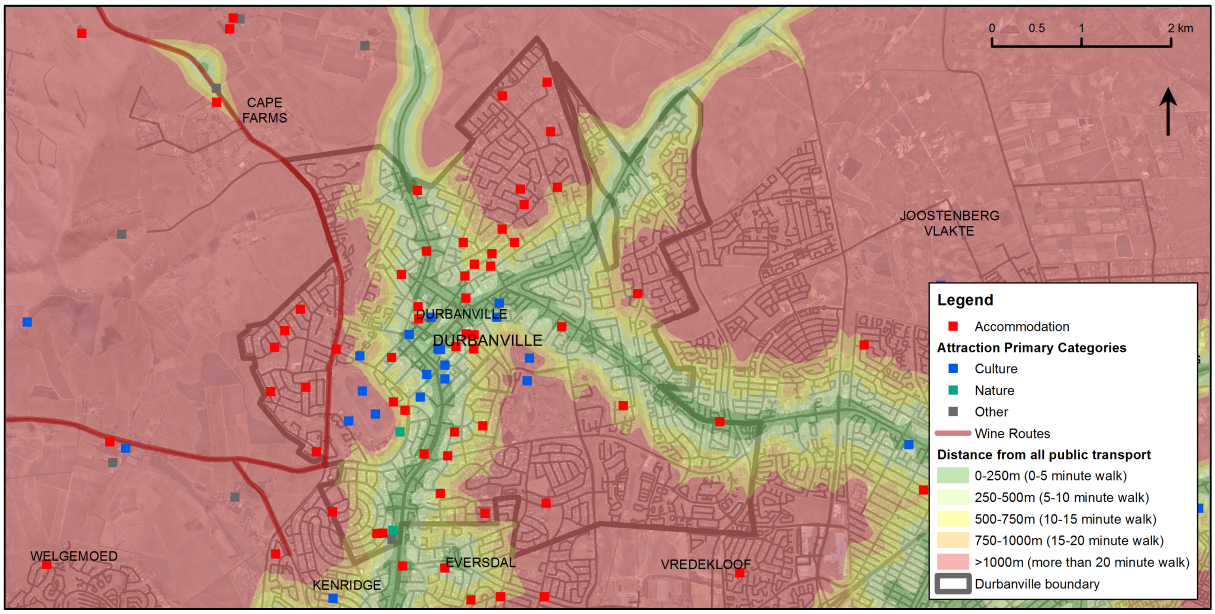



Figure 63 Tourism accommodation and attractions in Durbanville in relation to distance from all public transport

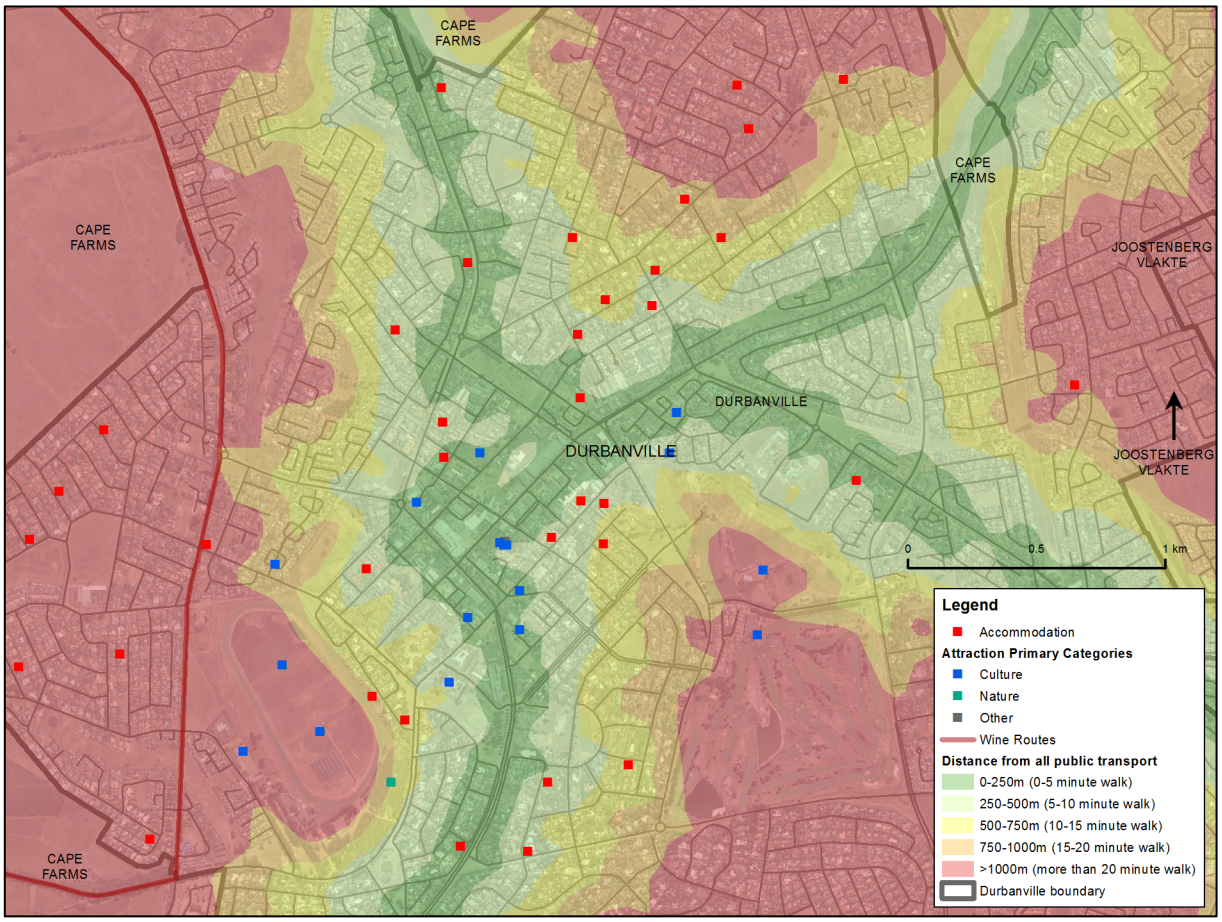



Figure 64 Detail of tourism accommodation and attractions in Durbanville in relation to distance from all public transport

The size of establishments according to number of rooms and number of beds (Figure 65 and Figure 66) affirms the low tourism accommodation footprint. Majority of establishments can only accommodate up to 20 guests at a time.

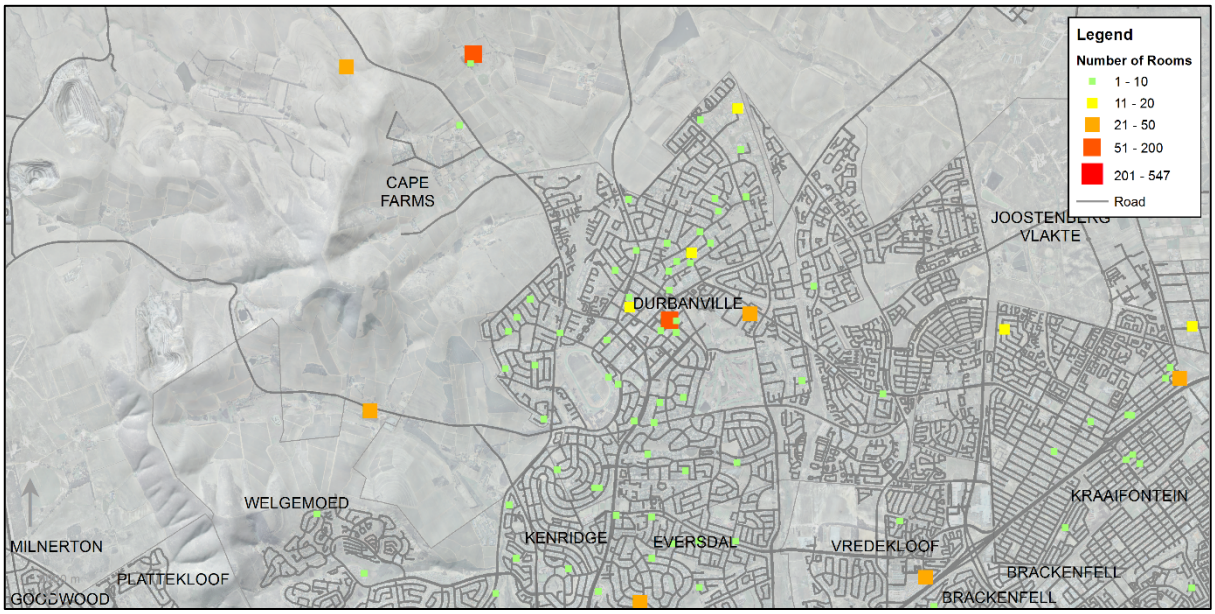


Figure 65 Size of establishments according to number of rooms in Durbanville

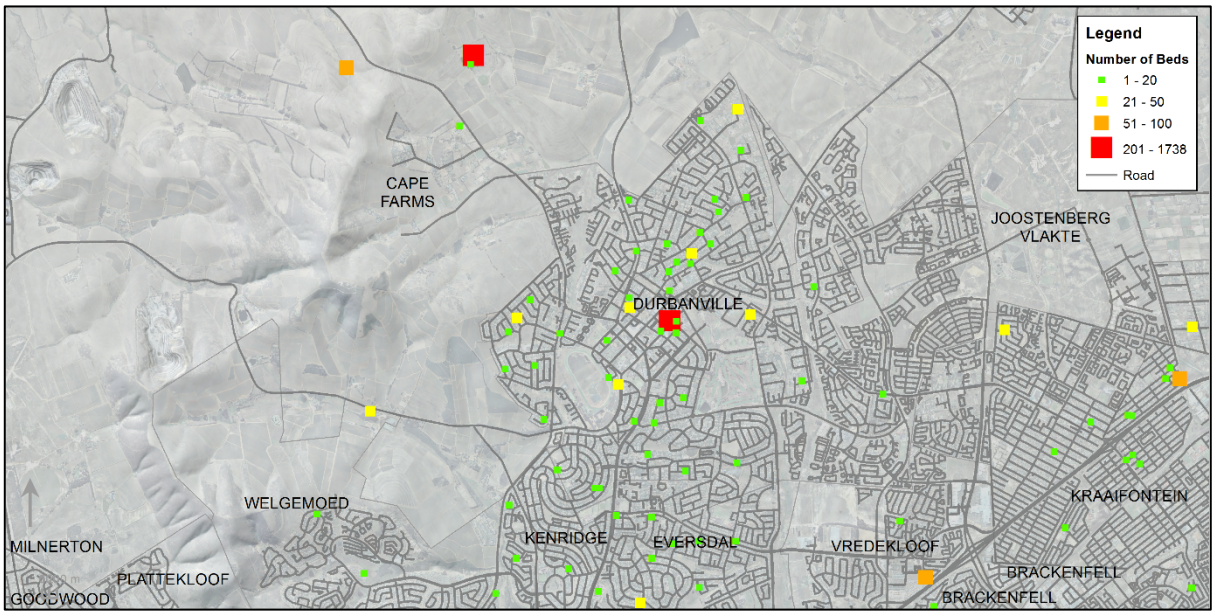


Figure 66 Size of establishments according to number of beds in Durbanville

The District Plan further states that the “strength of the Durbanville Rural Hinterland lies in its diversity and rich history. The challenge lies in protecting these strong points in an accommodating manner that still allows development whether it be related to tourism or other employment generating activities” (Ibid, 171).The District Plan makes provision for permitting tourism-related land uses as auxiliary uses to complement bona-fide farming activities. Some of these include agro-tourism (rural restaurants, guest accommodation, game lodges); urban activities such as function venues and restaurants; and tourist-related and adventure activities i.e. mountain biking, hiking, horse riding trails, etc. that should be encouraged in support of agricultural activities.

Figure 67a-c confirms the B&B, guest house and hotel zoning restrictions and permissions. According to the mapped data there are some illegal accommodation establishments but these will have to be individually scrutinized for errors. For the greater part of Durbanville hotels are not permitted outside the Durbanville CBD area as a primary land use type. This typically resembles the traditional modernist planning principles.

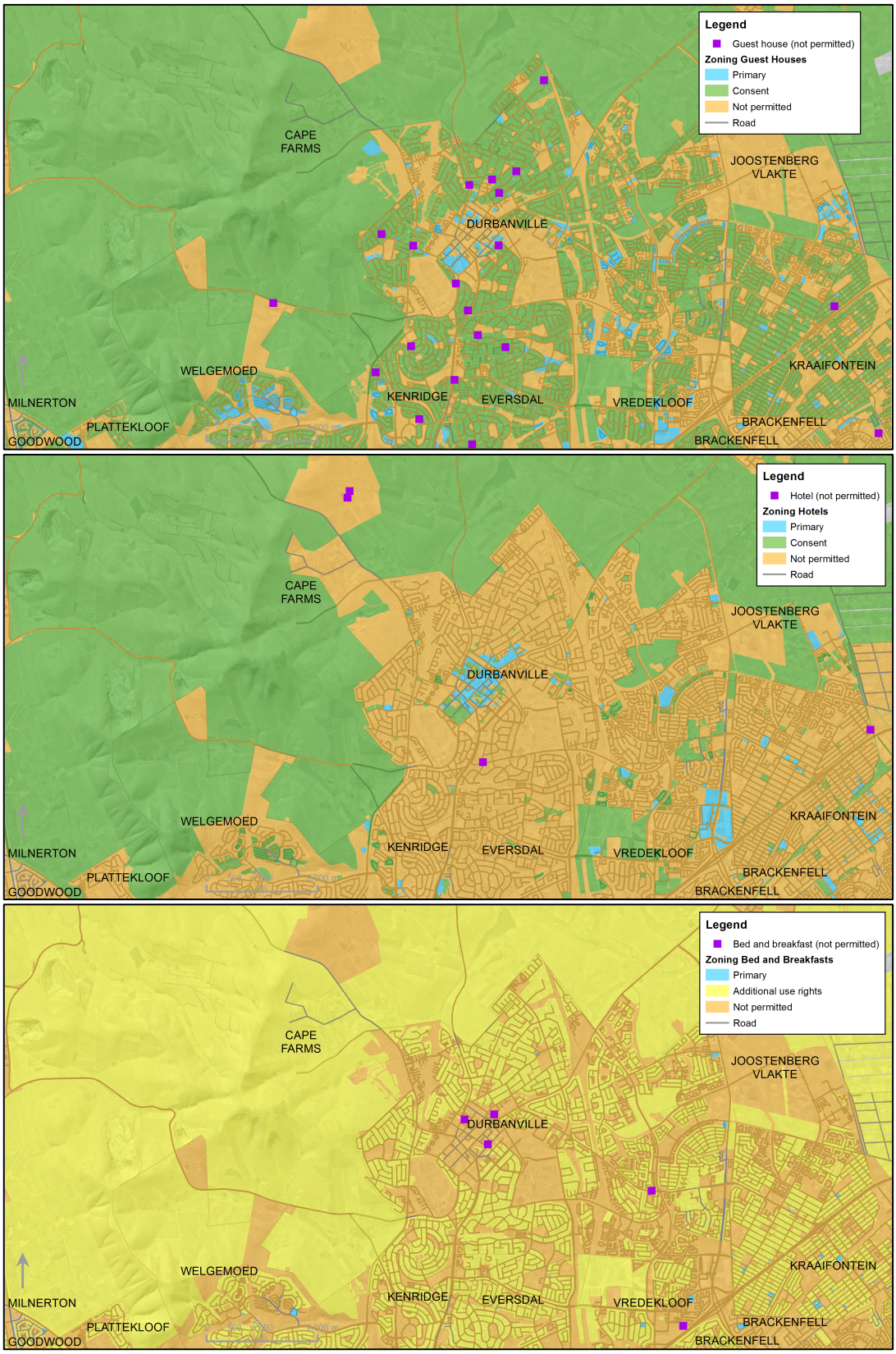



Figure 67 (a) Guest house zoning (b) Hotel zoning (c) B&B zoning

# 10 SOME OVERARCHING OBSERVATIONS ABOUT GIS AND TOURISM MAPPING

Tourism is an industry with important geographical qualities. The main aim of the study was to illustrate how tourism-related data readily available from the CoCT's Information & Knowledge Management Department can be used geographically in GIS to map singular or multiple variables. In broad brushstrokes, the following observation s in terms of the data output as well as using GIS in general can be made:

- Whether one is mapping tourism accommodation (according to a range of types), attractions and services, zoning or accessibility via a range of public transport modes it is crucial for the data to be correct and updated. Maps to illustrate spatial patterns are useful only if the data used to compile the maps are accurate and updated. It was seen in this study that the CoCT's database is not perfect. Attractions and services data is a case in point.
- Although the quality and quantity of spatially referenced information is continuing to increase, there is concern over its commodification and access, along with implications for privacy (Hall, 2017). A case in point is made by Visser regarding data used in the Airdnd website.
- The observed statistical pattern is off course best interpreted by considering change over time.
- From studying the maps in the report, it is clear that there is much overlap between the spatial distribution of accommodation providers, attractions and services. However, there are also notable differences between the hotspot maps. These differences warrant further analyses and interpretation on a local (smaller) scale.
- By looking at spatial distribution of tourism places and spaces alone it would be erroneous, to deduce that investment in urban tourism facilities should only be channelled into areas of concentrations. A pattern of clustering of hotels for allows for healthy rival or competition amongst the hotels which give room for the sustainability of the hotels and helps in the marketing of the hotels. Clustering of multiple variables (accommodation, services, attractions) can also be used to identify and demarcate what is known as Recreation Business Districts (RBDs).
- GIS can also be used to demonstrate tourism impacts on various industrial sectors in a time-series and spatial format that allows the development of scenarios for predicting what the effect of a change in a certain variable(s) will be in the destination. For this you would need an up-to-date facility inventory and accurate data on resource use.
- GIS can be used in connection with the issue of environmental justice (namely the fact that tourism may not benefit all segments of society equally). It also involves developing an inventory of resources in order to identify conflicting but also complementary land uses and activities, available infrastructure, and natural resources (ACIL Tasman, 2008).
- GIS can be proven valuable for studying the effects of changing land use by virtue of being able to not only record tourism resources with a given district/area but also being able to illustrate the effects of developments, such as the construction of new transport networks or resorts, on other elements in the system.

To conclude, according to Hall (2017) “there is a recognition that model-based analysis is but part of a wider process of management and planning rather than the central feature of planning. Therefore, spatial analysis still needs to be placed within the broader context of tourism planning and policy and the different interests it may serve.

# 11 REFERENCES


ACIL Tasman, 2008. The Value of Spatial Information. The impact of modern spatial information technologies on the Australian economy. Prepared for the CRC for Spatial Information & ANZLIC – the Spatial Information Council 2008

Baffi, S., Donaldson, R. & Spocter, M. 2017. Transport and tourism: The MyCiti experience in Cape Town. Paper presented at the annual CoCT tourism conference.

Cape Town Tourism, 2017. Accommodation Performance Review.

City of Cape Town, 2012-2017. Five-year integrated development plan 2012 – 2017 2016/17. Review and amendments.

City of Cape Town. 2012. Northern District Plan. Spatial development plan & environmental management framework technical report.

City of Cape Town: Environment and Heritage Resources Management Branch. 2014. Heritage area designation report (CCT) and application for exemption of heritage permissions under section 38 (9) or section 48 (3) NHRA act 25 of 1999 (HWC). Working Document.

Deng, J & Dyre, D. 2009. Linking Tourism Resources and Local Economic Benefits: A Spatial Analysis in West Virginia. Research paper 2009-6. Recreation, Parks, and Tourism Resources Program, West Virginia University.

Grant Thornton. 2009. Evaluation of City Owned Resorts. Study done for CoCT.

Hall, M. 2017. Spatial analysis: A critical tool for tourism geographies. [Accessed online 4 July 2017] http://www.academia.edu/371657/Spatial_analysis_A_critical_tool_for_tourism_geographies.

Hsueh, Ya-Hui & Tseng, Hsiu-Yuan. 2013. Exploring the Clustering Location of Accommodation Units through the Tourism Development in the Cing Jing area of Taiwan. *International Journal of Basic & Applied Sciences* 13: 34-43.

Li, M., Fanga,L., Huangb, X. & Goha, C. 2015. A spatial–temporal analysis of hotels in urban tourism destination. *International Journal of Hospitality Management* 45: 34–43.

Shoval, N., Mckercher, B., Ng, E. & Birenboim, A. 2011. Hotel location and tourist activity in cities. *Annals of Tourism Research* 38(4): 1594–1612.

Smith, S.L.J. 1987. Regional analysis of tourism resources. *Annals of Tourism Research* 14: 254 –273.

Standish, B. & White, J. 2014. Ranking Tourist Attractions in Cape Town. Study done for CoCT.

Tobler, W. 1970. A computer movie simulating urban growth in the Detroit region. *Economic Geography* 46: 234–40.

Tourism and Urban Research Unit cc. 2015. Report on cultural nodes in Cape Town. Project R031500465 done for the City of Cape Town: Department of Arts and Culture.

Van Doren, CS & Gustke, LD. 1982. Spatial analysis of the US lodging industry, 1963-1977. *Annals of Tourism Research* 9: 543-563.

Visser, G., Erasmus, I. & Miller, M. 2017. Airbnb: The emergence of a new accommodation type in Cape Town, South Africa. *Tourism Review International* (in press).

Wall, G., Dudycha, D. & Hutchinson, J. 1985. Point pattern analyses of accommodation in Toronto. *Annals of Tourism Research* 12: 603-618.

www.crossculturalfoundation.or.ug/Downloads/.../Robinson%20paper.docx. Date unknown. Heritage as a driver of social and Capital wealth: heritage as a driver for development. The Cape Town Heritage Trust – Heritage Square and the West City Revitalisation Process.

# APPENDIX A

Fields (attributes) contained in City of Cape Town Tourism Database.

| Name | Type | Length |
|---|---|---|
| OBJECTID | OID | 4 |
| SHAPE | Geometry | 0 |
| UNQ_ID | String | 50 |
| NAME | String | 100 |
| ERF_NMBR | String | 50 |
| ADRS | String | 150 |
| SCTN_NAME | String | 50 |
| SBRB_NAME | String | 50 |
| PSTL_CODE | String | 50 |
| CNTC_NMBR | String | 50 |
| EML_ADRS | String | 256 |
| CTGR | Integer | 4 |
| SUB_CTGR | Integer | 4 |
| DSRP | String | 256 |
| NMBR_OF_RMS | String | 50 |
| NMBR_OF_BEDS | String | 50 |
| AREA_HCTR | String | 50 |
| CTT_MBR | Integer | 4 |
| PRKG_AVLB | Integer | 4 |
| CNFR_AVLB | Integer | 4 |
| RSTR_AVLB | Integer | 4 |
| UNVR_ACS | Integer | 4 |
| MBSP_CODE | String | 50 |
| DATE_OF_MBSP | Date | 8 |
| TYPE_OF_ACRD | Integer | 4 |
| RATE | String | 50 |
| BEE_STS | String | 50 |
| NMBR_OF_VST | Double | 8 |
| SRC | Integer | 4 |
| SPCL_PRJT | String | 50 |
| RPT_LINK | String | 256 |
| STS | Integer | 4 |
| STS_CMNT | String | 200 |
| DATE_VRFD | Date | 8 |
| SUB_SUB_CTGR | Integer | 4 |
| OWNR | String | 100 |
| NMBR_DBL_BEDS | String | 50 |
| NMBR_SNGL_BEDS | String | 50 |
| NMBR_SLPR_CHS | String | 50 |
| TYPE_UNVR_ACS | Integer | 4 |
| DSCR_TYPE_UNVR_ACS | String | 256 |
| DSCR_SUB_SUB_CTGR | String | 256 |
| DSCR_TYPE_ACRD | String | 256 |
| NMBR_STNG | Double | 8 |
| TYPE_OWNR | Integer | 4 |
| DSCR_TYPE_OWNR | String | 50 |
| TYPE_PRKN | Integer | 4 |
| DSCR_TYPE_PRKN | String | 256 |

| Field Name (Shapefile) | Field Name (CSV) | Alias Name |
|---|---|---|
| NAME | NAME | Name |
| ERF | ERF | Erf Number |
| ADR | ADR | Address |
| SECTION | SECTION | Section Name |
| SBRB | SBRB | Suburb Name |
| POST_CD | POST_CD | Postal Code |
| CNTC_NO | CNTC_NO | Contact Number |
| CNTC_DTL | CNTC_DTL | Contact Details (Email) |
| CTGR | CTGR | Category |
| SUB_CTGR | SUB_CTGR | Sub Category |
| DSCR | DSCR | Description |
| NO_ROOMS | NO_ROOMS | Number of Rooms |
| NO_BEDS | NO_BEDS | Number of Beds |
| AREA_HA | AREA_HA | Area Hectares |
| CTT_MBR | CTT_MBR | CTT Member |
| PARKING | PARKING | Parking Available |
| CONFERENCE | CONFERENCE | Conference Available |
| RESTAURANT | RESTAURANT | Restaurant Available |
| UNVR_ACS | UNVR_ACS | Universal Access |
| ACRD | ACRD | Type of Accreditation |
| RATE | RATE | Rate |
| SORCE | SORCE | Source |
| PRJT | PRJT | Special Project |
| REPORT | REPORT | Report Link |
| STATUS | STATUS | Status |
| VERIFIED | VERIFIED | Date Verified |
| SUB_SUB_CT | SUB_SUB_CT | Sub-Sub Category |

## APPENDIX B

Sub-categories contained in the SUB_CTGR field of the City of Cape Town Tourism geodatabase for accommodation, attractions and services.

| SUB_CTGR | ACCOMMODATION |
|---|---|
| 0 | Unknown |
| 1 | Hotel |
| 2 | Guest House |
| 3 | Bed and Breakfast |
| 4 | Self-Catering |
| 5 | Resort |
| 6 | Caravan Park |
| 7 | Campsite |
| 8 | Hostel |
| 10 | Backpackers |
| 11 | Farm Accommodation |
| 12 | Other |
| 13 | Game Reserve |
| 14 | Lodge |
| 9 | Holiday House |
| 15 | Holiday Flat/Apartment |
| 16 | Homestay |
| 17 | Caravan and Camping Site |

| SUB_CTGR | ATTRACTIONS |
|---|---|
| 0 | Unknown |
| 1 | Events |
| 2 | Sport |
| 3 | Adventure |
| 4 | Beaches |
| 5 | Culture |
| 6 | Historic |
| 7 | Arts and Culture |
| 8 | Educational |
| 9 | Wine Estates |
| 10 | Parks |
| 11 | Gardens |
| 12 | Nature |
| 13 | Amusement Park |
| 14 | Day Visitor Resort |
| 15 | Other |

| SUB_CTGR | SERVICES |
|---|---|
| 0 | Unknown |
| 1 | Conference Centre |
| 2 | Tourism Visitor Centre |
| 3 | Transport |
| 4 | Health |
| 5 | Health and Fitness |
| 6 | Media |
| 7 | Restaurant |
| 8 | Retail |
| 9 | Retail and Office |
| 10 | Tour Guide |
| 11 | Tour Operator |
| 12 | Tours and Experiences |
| 13 | Trade and Investment |
| 14 | Travel Agents |
| 15 | Wine and Dine |
| 16 | Shopping |
| 17 | Entertainment |
| 18 | Bar/Tavern |
| 19 | Other |
| 20 | Night Life |
| 21 | Parking |