



5

Site Analysis





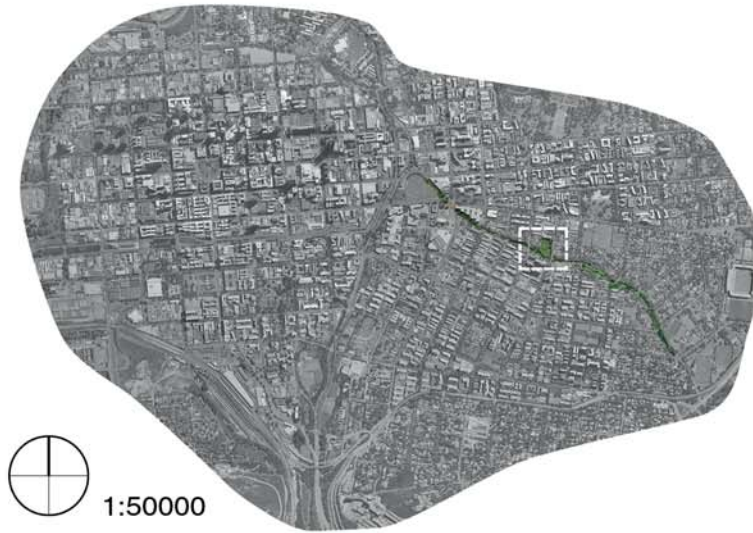
Illus. 5.2: Location of Gauteng in South Africa. Not to scale (manipulated by Author, May 2011)



Illus. 5.3: Tshwane Metropol in Gauteng. Not to scale (manipulated by Author, May 2011)



Illus. 5.4: Pretoria in Tshwane. Not to scale (manipulated by Author, May 2011)



Illus. 5.5: Aerial photo showing the site within greater Pretoria. Note how the streets run perpendicular to the Walker Spruit, based on the layout of irrigation furrows. (manipulated by Author, May 2011)

5.1 Context

Sunnyside and Arcadia are Pretoria’s only high-density, high-rise residential areas. Other high-density areas exist on the outskirts of Tshwane, such as Mamelodi, however, they are mostly one-storey buildings. Most of the ideas explored in this dissertation would be applicable in high-density, low-rise areas as well. As the author preferred to be able to do frequent site visits, Sunnyside was chosen as it is close to where the author lives.

Mamelodi is a peri-urban area, much more dynamic and in flux than Sunnyside, which is a formal, quieter neighbourhood with an established community. Here residents are detached from the ground while in Mamelodi residents have a much more tangible connection with the ground. Being removed from the

ground has an adverse effect on the psychological health of residents and increases their need for outdoor recreation spaces (Misrachi & Whitzman, 2009; Taylor, Kuo, Sullivan & Wiley, 1998).

Sunnyside as a suburb was incorporated into Pretoria in 1890. Some old houses still exist to the eastern side, while large five- to seven-storey housing blocks dominate the western and southern part of the suburb. The direction of irrigation furrows influenced the layout of the area (note how the streets run perpendicular to the Walker Spruit on Illus. 5.5.) (South Africa, Map of Pretoria and suburbs, [s.a.]).

As indicated on Illus. 5.6, the site is bordered to the South by Spruitsig Park, which consists of five apartment blocks with a total of 531 flats. De Rapper Street, a quiet one-way, separates the site from the



apartment blocks. To the north another housing block of six storeys overlook the site. On the east side, a crèche, a housing block and a church face the site. The Ring-Ting Pre-Primary school is on the west side of the site. The site is one block north of Esselen street, the economic vein of Sunnyside.

5.2 The Walkerspruit trail

The Walkerspruit trail starts in the Brooklyn suburb and was intended to become a lovely walk in the city, especially for residents in Sunnyside and Arcadia. However, most buildings turn their back on the Spruit, which is not aesthetically pleasing due to it being channelised. The channel is lined with concrete (Illus. 5.17) and base flow in June were calculated at $0.26 \text{ m}^3/\text{s}$.



Illus. 5.7: Homeless people appropriating park furniture. (Author, April 2011)



Illus. 5.8: Lunch goesers (Author, April 2011)



Illus. 5.9: Informal gathering space on the corner of Leyds and De Rapper Streets. (Author, July 2011)

5.3 Current users

There is constant pedestrian traffic along Leyds, Bourke and de Rapper streets. On the north-eastern corner of the site about seven homeless individuals live permanently. They wash themselves and their laundry in the Walkerspruit, drying their laundry along the banks. During the day, they use the existing street furniture to sleep on (Illus. 5.7).

Some children use the existing play equipment, and a few lunch goers were observed. At the western-most edge of the site, a natural gathering space has formed (Illus. 5.9). A tree in the space is used to pin up advertisements.

The southern part of the site has the most activity, while only homeless people use the northern part of the site (the Spruit acts as a barrier and prevents people from taking the shortest route right across the site). A few street vendors sometimes trade at the positions shown on Illus. 5.10. They are however not permanently

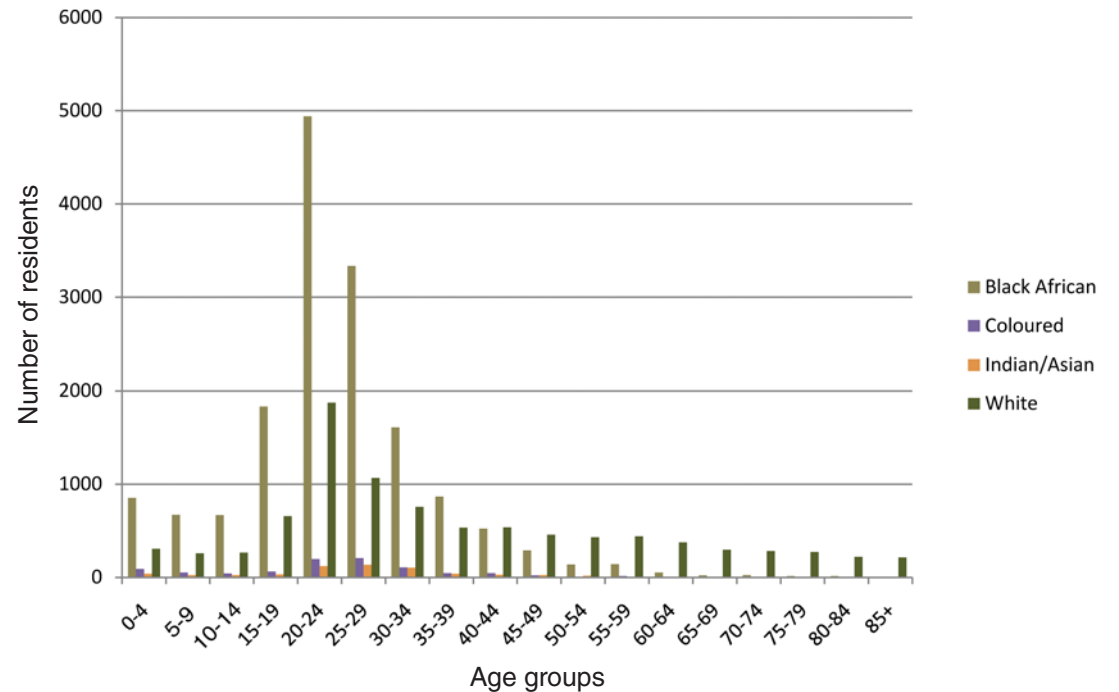


Figure 5.1: Population demographics of Sunnyside (Author, April 2011, compiled from pers. comm., Stats SA, 19 April 2011)

stationed there, but move around in Sunnyside (pers. comm., name unknown, 10 April 2011).

Sunnyside is a multicultural suburb, comprising not only South Africans but also immigrants from other countries such as Nigeria, Tanzania, Mozambique and Zimbabwe (pers. comm., Bonnie, 16 July 2011). Young people up to 30 years constitute a large part of the population (see Figure 5.1 and 5.2).

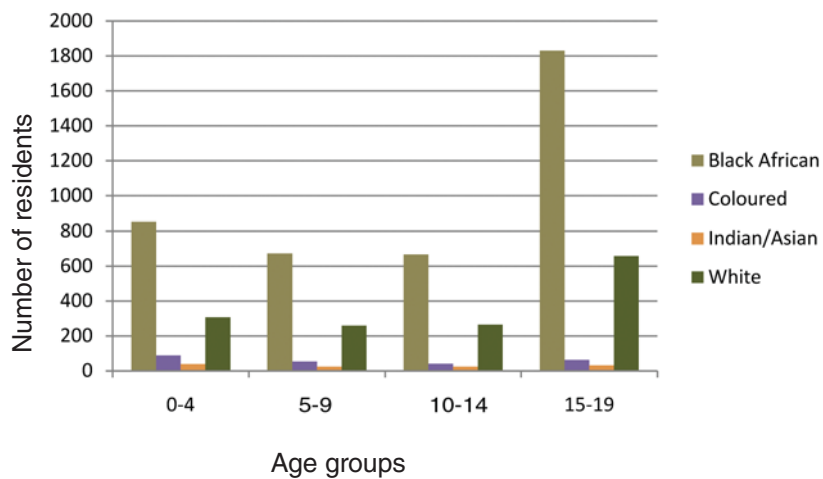





Figure 5.2: Demographics of children in Sunnyside (Author, April 2011, compiled from pers. comm., Stats SA, 19 April 2011)



Illus. 5.10: Movement and access on site (Author, April 2011)

Legend

-  street vendors
-  current circulation routes
-  no access

Illus. 5.11: Vegetation found on site
(Author, May 2011)



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5.4 Biophysical characteristics

5.4.1 Vegetation

The area is classified as disturbed urban temperate bushveld (UP, Department of Geography, 2011), as well as Gauteng Shale Mountain Bushveld by Mucina and Rutherford (2006: 466-467). Prominent plants found in this vegetation type are for example *Senegalia caffra*, *S. karroo*, *Combretum molle*, *Dombeya rotundifolia*, *Protea caffra*, and *Vangueria infausta*.

The site has several alien plants: *Tipuana tipu*, *Jacaranda mimosifolia*, *Cestrum laevigatum* (Category 1), *Phytolacca dioica*, *Quercus robur* and *Pinus*

canariensis (see Illus. 5.11). According to the National Environmental Management Act (“NEMA”), Act 107 of 1998, Category 1 plants need to be removed and destroyed immediately. Category 2 plants do not need to be removed. However, a permit is needed to grow them, and then only for commercial industrial purposes. Category 3 plants also do not need to be removed, but no new plants may be propagated and reproduction of the plant must be controlled.

Legend	
<u>Indigenous trees</u>	
<i>Senegalia karroo</i>	
<i>Ekebergia capensis</i>	
<i>Combretum erythrophyllum</i>	
<i>Sersea lancea</i>	
<i>Ehretia rigida</i>	
<u>Exotic trees</u>	
<i>Pinus canariensis</i> (Category 2)	
<i>Tipuana tipu</i> (Category 3)	
<i>Jacaranda mimosifolia</i> (Category 3)	
<i>Quercus robur</i>	
<i>Phytolacca dioica</i> (Category 3)	
Dead trunks of <i>Phoenix canariensis</i>	

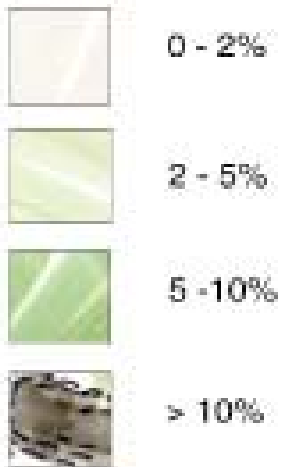
Besides the trees shown on Illus. 5.11 the surface of the site is covered with *Cynodon dactylon* and *Pennisetum clandestinum* (kikuyu, Category 1) lawn, with some low-growing weeds. There are several dead trunks of *Phoenix canariensis* palms. They were planted in the 1920's at the same time as the palms planted along University Road, but have all been killed by a virus between 2005 and 2011.

5.4.2 Geology: Shale. Since this rock type can be very soft, other stabilizing materials may need to be added when structures are built on it.

5.4.3 Soil: The soil on the site consist of 34% Hutton and 22% Avalon form. These soils drain well, therefore it is good agricultural soil. They have moderate soil erosion potential.

5.4.4 Topography: The site has a gentle slope towards the southwest (Illus. 5.12). The banks of the Walker Spruit channel are unnaturally steep and render the water inaccessible for humans.

Legend



Illus. 5.12: Slope analysis (Author, June 2011)



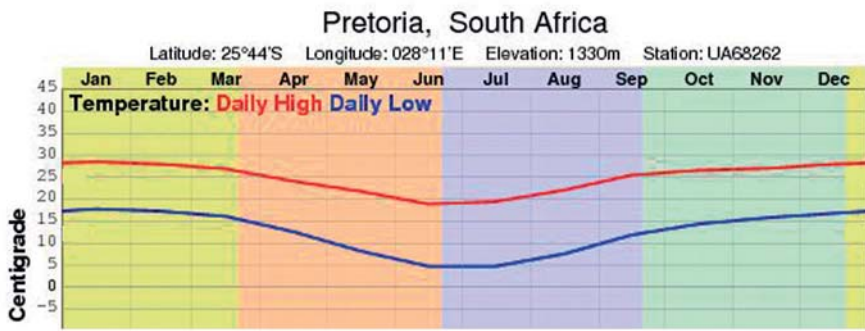


Figure 5.3: Temperature (Climate-Charts, 2010)

Statistic	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
Precipitation	mm	135.0	76.0	79.0	54.0	13.0	7.0	3.0	5.0	20.0	7.0	10.0	108.0	43.08
Mean Monthly Value														

Figure 5.4: Rainfall (Climate-Charts, 2010)

5.4.5 Temperature: Summers can be very hot with temperatures reaching the lower thirties. This implies that the provision of shade is of cardinal importance.

5.4.6 Rainfall: December and January are the wettest months with thunderstorms occurring frequently. Adequate provision for stormwater run-off as well as shelter from sudden rainstorms therefore need to be provided.

5.4.7 Humidity: Ranges from 47% in September to 69% in March. This falls within a comfortable range for humans and no compensating measures need to be taken.

5.4.8 Wind: The prevailing wind is from the north-east at an average speed of 4.15 m/s. The site is sheltered from strong winds by the high buildings around it, as well as by the existing trees.

5.4.9 Sun angles: Illus 5.13 shows the implications of sun angles on the site. In winter the apartment block on the northern side casts a shadow onto the site which could create a cold spot. In the late afternoons in summer, a part of the site south of the Spruit receives shade from the Spruitsig apartments, which would be welcome relief from the summer's heat. Apart from this, the site is mostly exposed to the sun except for the shade cast by some existing trees.

5.5 General

5.5.1 Built-to lines: 4.5 m on all boundary sides (South Africa. City Planning and Development Division, 2008:32). Permission will be requested to change the built-to lines to accommodate the proposed mixed use intervention on the groundfloor of the apartment block on the northern boundary of the site.

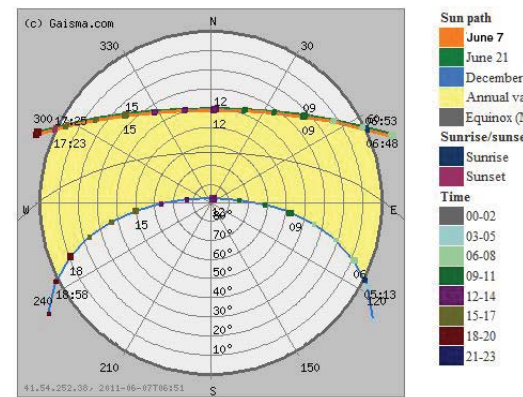
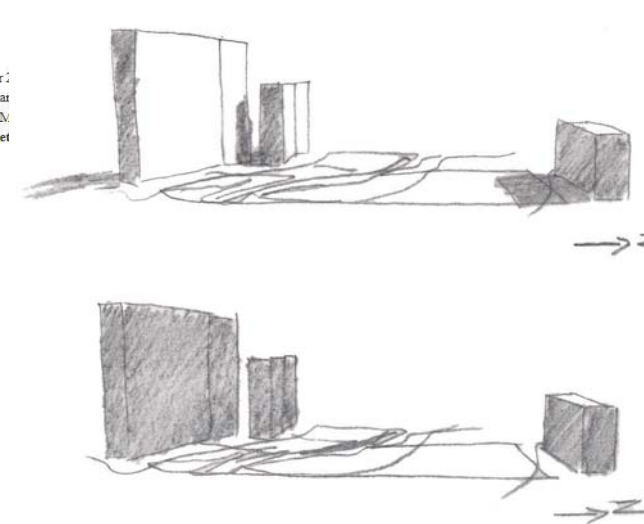


Figure 5.5: Sun angles for Pretoria (Gaisma, n.d)



Illus 5.13: Above: Solar study at 12:00 on 21 June
Below: Solar study at 12:00 on 21 December
(Author, June 2011)

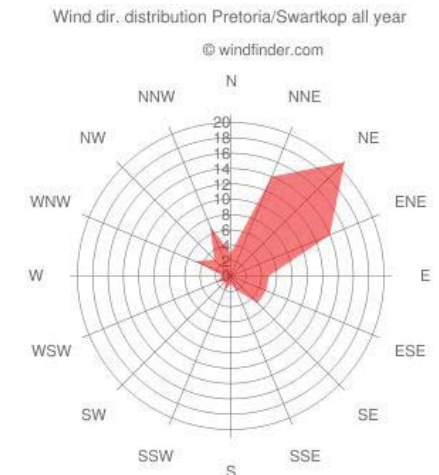
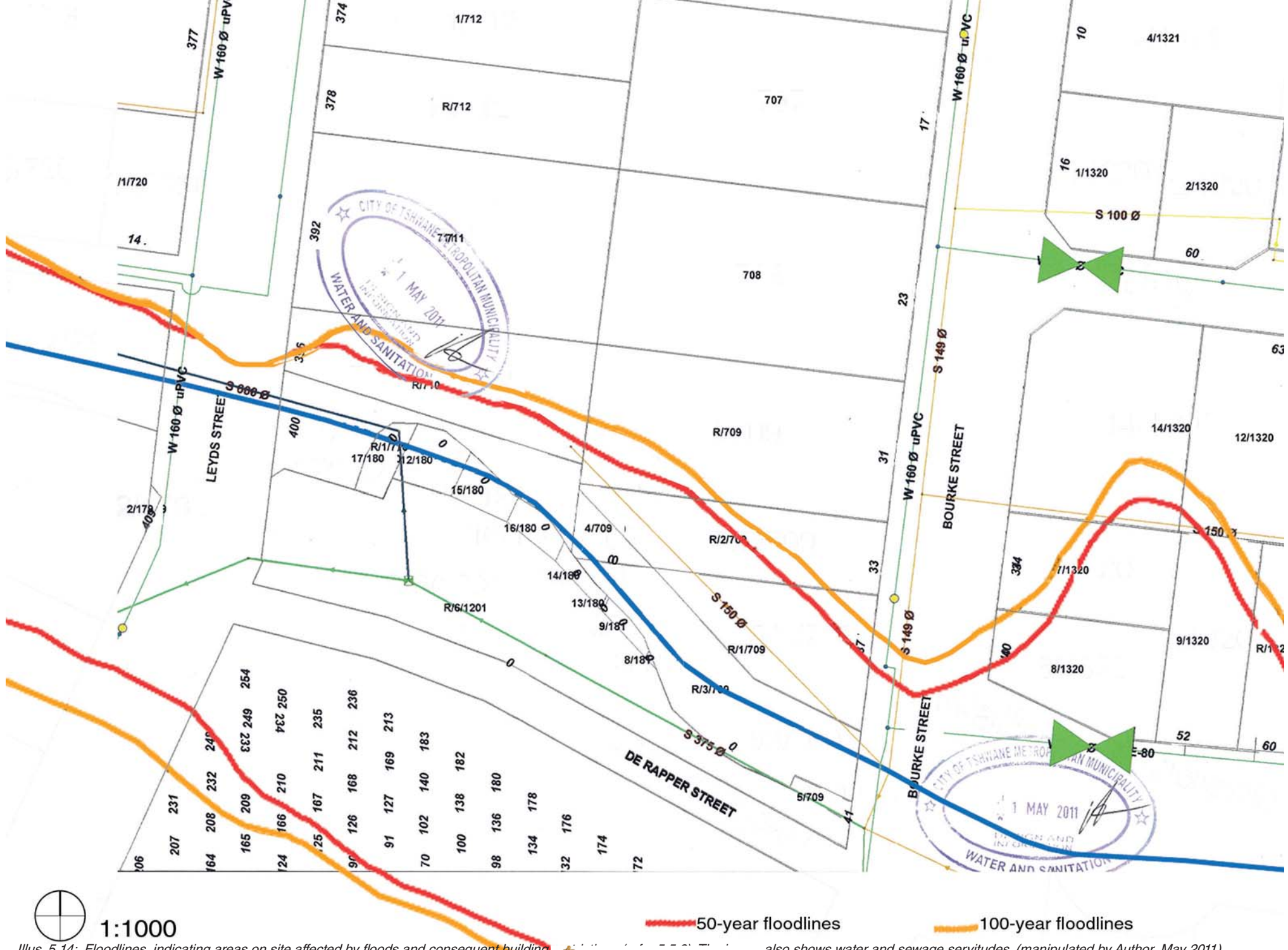


Figure 5.6: Wind direction (Windfinder.com, n.d)

5.5.2 Services: Illus. 5.14 shows floodlines, water and sewage servitudes on site. No structures which would alter the cross-sectional area of the flood are allowed within the 50-year floodline.

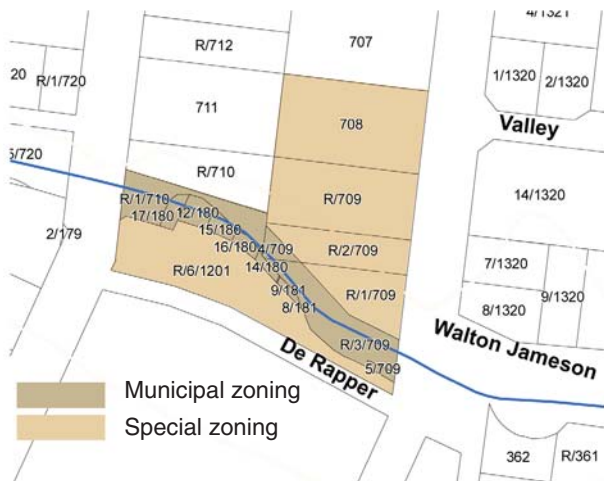


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Illus. 5.14: Floodlines, indicating areas on site affected by floods and consequent building

50-year floodlines 100-year floodlines

also shows water and sewage servitudes. (manipulated by Author, May 2011)



Illus. 5.15: Consolidation of erven. Not to scale (Author, May 2011)

5.5.3 Consolidation: For the design of the park, several erven currently belonging to the municipality will need to be consolidated (Illus. 5.15).

5.5.4 Zoning: The site is zoned as “special” and the erven containing the Spruit as “municipal”. The site does not need to be rezoned for the purposes of constructing a park.

5.5.5 Legislation that affects the project:

- National Water Act (NWA) (Act no. 36 of 1998)
- National Environmental Management Act (NEMA) (Act no. 107 of 1998)
- SANS 51176 (Playground equipment and safety standards)



Zoning legend

Special		Business		Undetermined	
Municipal		Educational		Public Open Space	
General residential		Special residential			

Illus. 5.16: Zoning (manipulated by Author, May 2011)



Illus. 5.17: The current concrete channel has a low base flow, but could become a safety hazard during rainstorms (refer to Illus. 5.15 for floodlines). It is not feasible to rehabilitate the channel due to space constraints, but there is an opportunity to clean the water and to beautify the channel. (Author, April 2011)



Illus. 5.18: View from west edge of site. Note the street vendor next to the bridge, the narrow sidewalk between the road and the street, as well as the waiting area that has formed on the south-western corner of the site. The tree behind the vehicle is used for advertising. (Author, June 2011)

5.6 Visual analysis

The following images will give the reader an idea of the current physical condition of the site.



Illus. 5.19: The existing shade trees along the walkway will be kept. The site is very narrow on the south side of the Spruit. (Author, April 2011)



*Illus. 5.20: View of existing playground on site. Note the lack of shade, seating and enclosure. There are many *Combretum sp.*, *Sercea lancea* and *Ekebergia capensis* trees which provide shade on the southern part of the site. (Author, April 2011)*



Illus. 5.21: View of site from the east. Note the gentle slope (2 to 5%), as well as some large trees along the edges of the site and the Spruit. The Ring-Ting Pre-primary school at the western edge of the site is currently physically and visually separated from the site by a wall, and presents an opportunity for integration. (Author, April 2011)



Illus. 5.22: View towards the north. The 6-storey apartment block visible presents an opportunity for integration into the park. Note the gentle slope. Currently the northern part of the slope is essentially a blank slate, except for a few large trees which could be kept. (Author, April 2011)