The Wall: Exploring inequality, waste and hope in Vrygrond and the adjacent Capricorn Business Park (Cape Town, SA).

EHS MASTER'S DISSERTATION

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A photo of the entrance to the Capricorn Business Park, as I entered via car, while in the queue to get my car and drivers licence scanned (as a condition of admittance) (C. Berning, 2023).

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Introduction

The World Bank (2022) assesses South Africa (SA) to be the most unequal country in the world, with Cape Town described by Ivan Turok, Justin Visagie, and Andreas Scheba (2021) as the country's most segregated city. Johnny Miller's photographic project called *Unequal Scenes*, starting in 2016, highlights this when he notes "In South Africa, where wealth inequality has always been radically skewed because of race-based political and economic policies, levels of inequality still remain the highest in the world" (Miller, 2022). Miller, on his website called the Unequal Scenes project, states that "climate change, health pandemics, and even the spread of digital technology have uneven impacts, and amplify and exacerbate existing inequalities in a population." While inequality is usually qualified in terms of financialised economics, there are many forms of inequality, related to health and justice, for example. In Muizenberg East, Cape Town, there is a still largely informal settlement called Vrygrond located next to the highly securitized and the so-called 'eco-friendly'[1] Capricorn Business Park (henceforth, CBP). This small area in Cape Town exemplifies the inequality experienced throughout South Africa, today, with the CBP's high boundary wall acting as both a physical and metaphysical barrier between the business park itself and the adjacent Vrygrond community.

As an environmental humanities student, I am interested in both the social and environmental impacts of barriers like these. Moreover, by experimenting with a catalytic approach to social science, I aim to conduct my research in a way that is generative and that facilitates the formation of relationships across the wall (i.e., between the Vrygrond community through a local NPO and businesses in the CBP). By working towards building local relationships, the hope is that these two spaces can begin to work together to improve the environmental and social conditions of this area which will further contribute to a resiliency against climate change. This study therefore aims to provide accounts of life in Vrygrond, as mediated through a non-profit organisation (NPO) located in the community, called Where Rainbows Meet (henceforth, WRM), under the guidance of Mymoena Scholtz (the founder and director) – including the NPO's efforts to address food security through their urban food garden and the broader study site along with accounts of my attempt to find and create connections between the CBP and WRM as a representative of the Vrygrond community. In addition, I examine the past and present spatial, social and economic divisions experienced in the space with the CBP's boundary wall on the south edge of Vrygrond acting as the signifier of these barriers.

Behind Vrygrond and the CBP, looms a 50-hectare waste dump named the Coastal Park Landfill that provokes a grim backdrop. Vrygrond and the CBP are juxtaposed here, with the people inhabiting these spaces holding different life challenges and experiences as well as imaginaries around the future of their space and place in the world. In this context then, this study addresses the current and future imaginaries of individuals and groups located in this particular space and time.

[1] As noted in the business park's branding. While the term, 'eco-friendly', is rather ambiguous (and its meaning contested by different actors), I use it here to reference the business park's own categorisation of a space which mixes nature conservation with business's infrastructure, such as offices and factories/warehouses.

Figure 1

A map of the fieldsite in context, with Vrygrond and the CBP outlined in red sitting to the west of the visible Coastal Park Landfill (1:20 000). (Created by me on GIS, using data from the City of Cape Town, 2022: Map section 3418AB)

Vrygrond and the Capricorn Business Park

Vrygrond started as a fishers' settlement in 1942 on the beach dunes located here at that time. The first to settle here, did so in 1942 on the beach dunes and were known as 'trek fishermen' (von Kotze, 2014). Following the Expropriation Act[2] that implemented the Group Areas Act of 1950[3], many families that were removed from Retreat joined the growing population of Vrygrond. In the 1970s, the surrounding areas were expanded as residents removed from District Six were relocated to flats in the adjacent area of Lavender Hill. Then in the 1980s, the area was expanded through the creation of Sea Winds. After democratic rule came into place in South Africa in 1994, several smaller housing schemes were established in the broader area under the Reconstruction and Development Programme (RDP) (von Kotze, 2014).

In her book, *Ausi Told Me* (2021), June Bam illustrates the historical landscapes of, and life stories from people residing on, the Cape Flats – including Vrygrond – prior to colonisation and urban development. Bam paints a picture of communal care and pastoral livelihoods that worked in conjunction with the ecological systems that existed here in precolonial and pre-apartheid pasts. In this book, Bam (2021, p. xi) argues that "the everyday decolonial-knowledge ecologies on the Cape Flats provide important pointers for reimagining the hybridised, precolonial pasts" as told by the *Ausidi* (first-born daughters; female knowledge-holders) who "were and continue to be profound intergenerational knowledge-holders of those pasts." Here, Bam describes the 'soft, white sand dunes' that used to cover this coastal area on the Cape Flats – sand which provides challenges for the agricultural endeavours of those residing here today – and notes the precolonial hybridisation in the Rondevlei area, specifically, where erased and forgotten narratives of a 'powerfully shared, ritual ecology' come to light. In the 1900s prior to apartheid in SA, Bam (2021, p. 82) describes how "many generations of these interracial communities had lived in the Muizenberg, Vrygrond, Rondevlei and Hardevlei areas over many decades. These areas, with their wetlands, abundance of indigenous herbs, veld, birds, water, beer-brewing hubs and livestock, made for thriving, racially mixed communities who continued their hybridised precolonial practices…." However, this all changed with the introduction of apartheid's segregation laws which prompted forced removals from District Six and other urban areas in the late 1960s onwards whereby this 'non-racial decolonial knowledge ecology' was violently disrupted and many people were displaced. As these people resettled on the erased land Rondevlei and Hardevlei which became known as Lavender Hill, they had no employment and were dislocated from the city, leading to immense social distress that fed gangsterism and violence. Bam (2021, p. 224) notes that a "once thriving knowledge and environmental ecology was now being violently and relentlessly disrupted." What followed was a further loss of land that once held huge vegetable gardens and livestock (which were subsequently stolen by gangs), and a loss of access to the veld that previously provided residents with indigenous herbs. Consequently, people living in this area lost their self-sustaining livelihoods and, thus, food security, which has had long-lasting impacts on the communities residing here today. In speaking about this 'epistemicide on food sovereignty' in the Rondevlei-Vrygrond area, Bam observes:

> *"What was once a place of Ausi's precolonial rituals and relative community food security … as well as overall stability and control over crime and violence had turned*

[2] The Expropriation Act (63) of 1975 allowed the apartheid government to expropriate property for 'public and certain other purposes', thereby writing into law the provision for forced removals of people of colour by the state, largely to segregate the South African population by race. (Republic of South Africa, Government Gazette [121:4780], 9 July 1975, Cape Town)

[3] The Group Areas Act (41) of 1950 dictated where separate races were allowed to live and work, and more broadly which spaces they were allowed to occupy. The purpose of this act was to secure land ownership and occupation for white South Africans, while subjugating all other races. The act displaced hundreds of thousands of people in the country before finally being repealed in 1991. (The Union of South Africa, 24 June 1950, Parow, C. P.)

into 'a concentration camp' of hungry people harassed by drug cartels and a base for the world's most violent gangs."

Accordingly, Nixon's (2011, p. 19) proposed radical notion of displacement, referred to as 'displacement without moving', which expresses the loss of land and resources beneath a community that leaves them "stranded in a place stripped of the very characteristics that made it inhabitable." This concept perfectly captures the aforementioned changes and the sense of loss conveyed in June Bam's (2021) book. This study will illuminate the ways in which Vrygrond has experienced displacement without moving, as defined here.

Today Vrygrond is a densely packed settlement with high rates of poverty, hunger and unemployment, in addition to crime and violence that largely stems gang activities and their clashes with taxi drivers. Nonetheless, individuals and families continue to move to the area, often due to displacement and unemployment, alongside the longstanding members of this community. The population is said to be 8000 residents, although this number is inaccurate due to a lack of a complete census and is probably higher, and includes a mix of majority coloured and black residents[4] (Living Hope, 2021). According to the census, the unemployment rate in Vrygrond, as of 2011, was 31% - excluding people who are not economically active because they cannot work, including those who do not have the physical capacity to do so (Charman & Petersen, 2014). However, an article published in 2014 states that the unemployment rate in Vrygrond was approaching 70% at the time (von Kotze, 2014), and a later study estimates that it could even be as high as 80% (Ndayishimiye, 2017). The Cape Flats District Spatial Development Framework (SDF) Review, then, records the average income bracket as R3500-R7000 per month of household earnings in Vrygrond between 2013-2018 (City of Cape Town, 2022).[5]

Overall, the whole area of Vrygrond to Lavender Hill is "extremely volatile, as incidents of personal and community issues related to social and economic exclusion and oppression are very high" (von Kotze, 2014). In addition, a settlement – named Xakabantu by the community – has developed on the edge of Vrygrond alongside the Coastal Park Landfill, encroaching on the False Bay Nature Reserve with many of the residents joining the sewing programme at WRM, where education and support is offered to them. In fact, the reason that Mymoena Scholtz started WRM in Vrygrond was due to a call for help from grandmothers and youth living in the area who recognised the need for help and believed that Scholtz could bring about change in the community (Jeranji, 2018). While WRM has made great headway in bringing about social change in Vrygrond, the residents still experience challenges linked to unemployment, poverty and violence as well as issues of pollution – including physical rubbish littering the area, air pollution emanating from the adjacent Coastal Park Landfill, polluted water in the nearby wetland, and sewage overflows in streets. Due to inadequate municipal services, illegal dumping, the close proximity of the waste dump and little help from council, rubbish pollution is a major issue in Vrygrond and can be seen in heaps throughout and surrounding the area. Although informal waste pickers work in the area, collecting materials for recycling, the impact is limited while the number of materials able to be recycled is restricted and the problem too large for the Extended

[4] The racial categories of 'black' and 'coloured' – as opposed to 'white' – were constructed under the apartheid government in South Africa (SA) in the 1950s. These racial categories were largely based on appearance and social class, and were constructed by the apartheid government to bureaucratize racial differences to control the population in favour of white people (Posel, 2001). While all three categories are inherently ambiguous and dynamic, the concept of the coloured identity – which has been reclaimed in post-apartheid SA – is particularly so. In fact, Sara Nilsson (2016), in her master's study, found "that Coloured identity is often defined in terms of lack. The informants were not quite Black and not quite White but found themselves caught in-between these two 'dominating' racial categories."

[5] More recent data for Vrygrond, specifically, could not be obtained within the parameters of this thesis, as the 2022 census only provides overall data for the entire City of Cape Town.

Public Works Programme (EPWP) clean-up crews to make a substantial difference, especially since the littering and dumping continues regardless. At the same time, the condition of the vlei situated between the edge of the settlement and the CBP's boundary wall is in decline and poses a serious health risk to Vrygrond residents. This is due to the stagnant water in the vlei containing litter and polluted water from the stormwater drains that feed into it. Yet little has been done so far to remediate the vlei's condition.

The NPO known as 'Where Rainbows Meet Training and Development Foundation' (WRM), on which this study focuses, is a training centre located in the informal settlement of Vrygrond in Muizenberg East, Cape Town. The centre was established 15 years ago by Mymoena Scholtz on mostly vacant land, except for an existing food garden run by a group of local women living in the settlement. This group of women created the food garden to aid in food security for themselves, their families and their community. Upon the establishment of WRM, the staff decided to incorporate the garden into their centre and continue its operation, while employing some of the local women so they could remain working in what was essentially their garden. The goal of WRM is to generate social changes in the areas most at risk within the community and provide holistic support to families and individuals living in Vrygrond and the surrounding settlements in need. Part of their programme includes fostering a space that looks after the community which includes providing nutritious food, education and training, and, specifically in the garden, a green space to counter the lack of vegetation in the area. Two of the biggest hindrances to success at the centre include too few employees or volunteers, and insufficient funds.

The CBP that adjoins Vrygrond, is near the False Bay seaboard and markets itself as an environmentally sustainable park for commercial and industrial activity. The park was established in 1995 and forms part of an 'award-winning nature conservation area' (Peck, 2009). The CBP is a walled off estate with 24-hour security and access control. A central wetland sits inside the park with a variety of fauna and flora existing throughout. The businesses situated in the park were intended to range from "landscaping, solar conversions and engineering firms to large distribution facilities, metal manufactures and boat builders" (Peck, 2009). The park contemporarily also boasts the inclusion of large firms such as Charlotte Rhys, Sasol's Research and Technology Centre, Reitech (a group of German engineers) and The Poleyard (Peck, 2009). Overall, this business park is a designed space which envisions a form of conservation and 'green' thinking from which Vrygrond residents are excluded, and as such it may be viewed as largely elitist, exclusionary and enclosed. Underlying the park's urban design is the theoretical divide between nature and society which sustains the concept of fortress conservation, ignoring the complex ways in which they are entwined. Fortress conservation practices involve fencing off areas that are deemed to be 'wild' and 'natural' in the name of preservation, which can only be achieved with the absence of certain human activities. This space exemplifies the failure of trickle down promised in neoliberal economics, as a business park for globalised corporations alongside the poverty of Vrygrond (Greenwood & Holt, 2010). Moreover, the promise that conservation supported by capital would be in the public interest, is demonstrably false in contrast of the devastated environment on the Vrygrond side of the wall alongside the idyllic green business park on the other side.

According to the United Nations Industrial Development Organization (UNIDO), an 'Eco-Industrial Park' – which the CBP claims to be – is an "industrial park in which companies cooperate with each other and with the local community trying to reduce waste and pollution, efficiently share resources and help to achieve sustainable development, with the intention to augment economic gains and improve environmental quality" (Erkman & Van Hezik, 2016, p. 3). In accordance with this definition, then, the CBP is not living up to the standard of an eco-industrial park, especially when it comes to collaboration

with the local community, resource sharing, and reductions in the amount of waste and pollution in the area. In fact, a Global Assessment of Eco-Industrial Parks in Developing and Emerging Countries was conducted by UNIDO in 2016[6] which reported that "although outlined in its Environmental Management System (EMS), no sharing of services, utility and by-product resources [was] apparent" (Erkman & Van Hezik, 2016, p. 17). Concurrently, the report noted that the CBP is required to subject all tenant companies to 'a strict environmental screening process' prior to approval and operation in the park (Erkman & Van Hezik, 2016), yet evidence of this being carried out today remains to be seen. The report, thus, categorises the CBP as 'not fully operational' in terms of its development as an EIP, but it is noted as actively monitoring its progress (although what this entails is unknown).

In addition, the concept of EIPs – such as the CBP – can be analysed in conjunction with the concept of green capitalism under which EIPs pair environmental conservation and 'sustainability' with business and capital in the neoliberal economy. Ivan Scales (2017, p. 1) defines 'green capitalism' as a "form of environmentalism that emphasizes the economic value of ecosystems and biological diversity and attempts to reduce human environmental impacts by ensuring that the importance of environmental services is reflected in the way that markets operate." This reflects the belief in neoliberal economics that markets are "the most efficient way of allocating scarce resources" (Scales, 2017, p. 2). Moreover, emphasis is placed on "individual liberty, minimal involvement of the state, and free markets as the most efficient way to coordinate the diverse needs of people" (Scales, 2017, p. 4). By focusing on the value of natural capital, green capitalism extends commodification to the more-than-human world. In this way, green capitalism has been criticised as forming part of "a much broader neoliberal encroachment of market relations into various spheres of human life" (Scales, 2017, p. 7).

It is ironic that both Vrygrond and Capricorn are located in close proximity to the 70-hectare waste dump situated approximately 500 meters away. The waste dump itself is ironically located within the parameters of the False Bay Nature Reserve. Meanwhile, Vrygrond across the wall faces compounded socio-political, economic, and spatial inequalities that marginalize the community, with many residents facing chronic poverty and hunger.

This study explores the contrast between Vrygrond and the CBP because its contradictions link to a statement made by Greta Thunberg: "We can't solve the climate crisis in a world where people are suffering, and people don't have basic human rights" (Wagner, 2021). This entanglement of humanitarian needs and ecological crises has been foregrounded by many scholars and activists alike. For instance, the World Wildlife Fund (2023) notes that "as the climate crisis fuels more intense disasters, environmental issues and humanitarian needs are growing increasingly intertwined." For many scholars, the devastations of the moment are better grasped with the term 'Capitalocene' (Moore, 2016) than the Anthropocene.

The context of climate change and the 'Capitalocene'

There has been an abundance of literature on the Anthropocene.[7] Jason Moore argues that the Anthropocene as a concept further entrenches the 'Nature/Society dualism' and promotes *Green*

[6] UNIDO set out to comparably document 33 examples of EIPs in 12 so-called 'developing and emerging' economies. This documentation comprised of "an in-depth comparative analysis of the results of the country case studies, to understand the environmental, social and economic benefits" (Erkman & Van Hezik, 2016, p. 5).

[7] While the concept of the 'Anthropocene' has since been rejected as a 'formal unit of the geologic timescale' by the International Union of Geological Sciences [IUGS] (Amos, 2024), this study and its references to the idea were completed before this rejection. As such, the paper utilizes the term in reference to the destruction of ecosystems across Earth at the hands of humans which has led to widescale changes in the climate and decreased habitability for communities and species alike. In fact, the IUGS acknowledges that the term "will remain an invaluable descriptor of human impact on the Earth system" (Amos, 2024).

Arithmetic all the way posing no real solutions to the problems it raises. Moore hopes to transcend the limitations and contradictions of the 'Anthropocene' and instead proposes the concept of the 'Capitalocene'. As such, Moore states that "the Capitalocene signifies capitalism as a way of organizing nature — as a multispecies, situated, capitalist world-ecology" (Moore, 2016, p. 6). Within this 'Capitalocene', Moore emphasise that "the contradictions of capitalism dramatized by biospheric instability reveal modernity's accomplishment as premised on an active and ongoing theft: of our times, of planetary life, of our—and our children's—futures" (Moore, 2016, p. 11). Therefore, by using the term, Capitalocene, in place of the Anthropocene, this research is better posed to seek out the contradictions and brutalities enacted through capitalist systems as will be examined in the context of Vrygrond and the CBP.

My initial interest in the contradictions of this area was sparked by how the tension between (mostly economic) development and environmental protection strategies play out in South Africa. I was especially interested in understanding what temporalities are being employed by the various stakeholders in these (often contentious) endeavours and what the implications are for the future of various regions under contestation in South Africa. By exploring future imaginaries and temporalities employed by groups and individuals in Muizenberg East, I hope to extend this interest by analysing the conceptualisation of a 'green' future in the so-called eco-friendly CBP and the possible contradictions that arise inside this constructed landscape as well as those of the broader landscape including the adjacent informal settlement, Vrygrond, and the Coastal Park Landfill. This exploration will further include the future imaginaries and temporalities emanating from the WRM training centre in Vrygrond and a subsequent comparison of descriptions arising from within these two spaces (CBP and Vrygrond). This analysis should provide a critical review of current (small scale) strategies to envision an environmentally aware future in a country like South Africa and what may need to be reconsidered to improve these strategies.

The central research question that I set out to answer, then, was around how different groups and individuals in Vrygrond and the adjacent CBP, in Cape Town, are imagining futures as related to environmental concern and climate change. Several sub-questions that were formulated in relation to this are as follows:

- What is the current experience of residents in Vrygrond and those working in the CBP – including notable historical influences – and points of immediate concern within this current experience? What are the effects of this current experience on future trajectories/imaginaries for the area?
- What are the timeframes/temporalities being used by these groups and what are the implications for environmental governance in the area and the future of the site, specifically in regard to climate change?
- How are concepts of conservation/environmental awareness being employed in future imaginaries, and what are the strengths and weaknesses of these concepts as envisioned in their design?
- How is hope being employed in these imaginaries and what are the possible contradictions embedded here?
- How can connections be made across the boundary wall surrounding the CBP between this business park and Vrygrond? What currently crosses the wall and what barriers are there to connecting the two sides (CBP and Vrygrond)?

Social Imaginaries

To frame the research, I employed the concept of social imaginaries as a way to capture some of the narratives that emerged during my fieldwork. Adams et al. (2015) provides a detailed overview of the development of social imaginaries theory over time with a focus on Cornelius Castoriadis, Paul Ricoeur and Charles Taylor as cornerstones in the field. Adams et al. (2015) conclude that the phenomenological and hermeneutic sources in the social imaginaries field are useful in developing an "*open* (as opposed to *closed*) conception of culture as modes of *being-in-the-world…*." Furthermore, "social imaginaries presuppose society as a self-altering social world comprised of *instituted* and *instituting* aspects: it is thus well placed to elucidate movements towards social change, as well as recognising the existence of meaningful social" (Adams, et al., 2015, p. 42). This posits social imaginaries as an appropriate lens to use in the conceptualisation of futures in Muizenberg East. The aim is to explore current and projected modes of being-in-the-world as situated in Vrygrond and the CBP as well as explore affects of social change and the existence of meaningful social in this locale. More specifically, Adams et al. (2015) analyse political-economic and ecological imaginaries as they have emerged in modern times, both of which are especially pertinent in researching imaginaries in the Anthropocene as will be done in my research. Here, Adams et al. (2015, p. 35) assert that "regarding the dominance – and resilience – of contemporary neo-liberal capitalism, it is then possible to argue that there is both a relative lack of political imagination (in terms of the articulation of alternatives) and a closure of the economic imaginary in the form of depoliticisation, meaning the active denial of the need for a political, public discussion of the means and ends of the market economy." In light of this, while the 'unending pursuit of rational mastery' is intensified, "what is often taken as the other of the social – nature – is gravely at risk and there is an urgent need to interrogate the various imaginaries of nature in modernity as well as the images of nature that underpin current debates concerning the environment," according to the authors (Adams, et al., 2015, p. 35).

Within the field of social imaginaries, Castoriadis is the one thinker that has gone further in relating social and ecological imaginaries than any other, in his 'distinctive characterisation of the living being' through which humanity is placed in constant worldly engagement with nature (Adams, et al., 2015). Furthermore, Castoriadis maintains that "ecology calls into question the *social* by problematising the creation of needs, questioning the neutrality of the Enlightenment's scientific imagination and illuminating the collective desire for conquest of non-human worlds within the capitalist imaginary" (Adams, et al., 2015, p. 37). Therefore, it can be seen that the ecological imaginary features prominently in the study of social imaginaries and clearly links with political and economic imaginaries, making this a relevant lens through which to explore the experiences of, and future prospects related to climate change in, Vrygrond and the CBP. Accordingly, Sophia Stamatopoulou-Robbins (2020, p. 10) conceptualises environmental imaginaries as constellations of "ideas that groups of humans develop about a given landscape, usually local or regional, that commonly includes assessments about that environmental as well as how it came to be in its current state (D. Davis 2011, 3)". In this sense, my thesis can be seen to be a collection, and analysis of the environmental imaginaries of people residing and working in Vrygrond and the CBP – especially in chapter 3 on waste.

Methodology

The focal site of my research included Vrygrond (a largely informal settlement) and the CBP which are located in Muizenberg East, Cape Town. This site was also viewed in context with an exploration of its relations to surrounding areas, specifically the Coastal Park Landfill.

Data was collected in the form of ethnographic fieldwork from residents of Vrygrond as mediated through a local training centre, WRM. This included the use of thick description as a technique to capture in-depth depictions of participants from Vrygrond and the CBP in their context. The participants included adults working at, or visiting, the training centre. The main person of contact at the centre was Mymoena Scholtz, the director of the centre. In addition, there was an attempt to collect data, through semi-structured interviews, from employees at Faithful to Nature, Kelpak, and Siyakhula (a non-profit organisation that is a part of the Bay City Church) all located within the CBP. However, this endeavour was unsuccessful as the businesses did not respond to any of my attempts at making contact. Documents such as maps of the area, policy and municipal documents, news articles and journal articles, and other archival information was also used to construct a depiction of the area. In addition, geospatial data and mapping was used to gain insight into the conditional factors (such as vegetation, soil, water, air quality, litter) affecting the environment(s) in which Vrygrond and WRM, and the CBP are located.

Ethnographic fieldwork employed included participant observation and conversational/informal interviews with members of the Vrygrond community. This constituted working with people at *WRM* on gardening in their urban food garden, and conversing with management, employees, trainees and visitors involved in these activities/projects. This was organised through Mymoena Scholtz according to where they needed my help, which turned out to be in the form of restoring the previously neglected nursery in the garden. The volunteers will be referred to with pseudonyms to protect their identities. This ethnographic research was intended to be a collaborative process (especially at *WRM* in Vrygrond).

In addition, tests were conducted to analyse the quality of water samples from the borehole and main outside tap located at WRM's, which are used for drinking water and irrigation of the garden. To start, I collected water sample bottles from the South African Bureau of Standards (SABS), with which I collected several samples of water from the tap and the hose connected to the borehole at WRM. These samples were then sent to the SABS for testing of pH, chemical determinants, and heavy metal presence. This was done on the 22nd of June 2023. However, I only received the results of these tests on 19 March 2024, due to bureaucratic and administrative inefficiency. What is clear from this process – combined with the substantial expense of the testing (R13 733,30 to be exact) – is how inaccessible data from local institutions in SA is to citizens, thereby bringing into focus the need for a citizen science practice in the country. A few more affordable options for water testing available in SA are small, portable water quality testing meters with limited functions, water test strips, and water test kits - although the quality and accuracy of these test options may need to be reviewed. Subsequently, there was a home water quality test kit invented in 2013 by a student at Rhodes University, Grahamstown, that cost R5.00 (or US$0.56) to make, yet its availability is not apparent – there is only mention of the workings to make the home kit available for sale. Availability of this kit would be of great use to many households and organisations, even more so considering that, according to Dr Roman Tandlich, "this cheap tool has the sensitivity of the government standard methods for microbial water quality (Pillay, 2013). Monitoring and maintenance of water quality is crucial for the health of communities and environments, especially since inadequate drinking water quality and low sanitation standards are among the leading causes of disease in Africa, according to WHO (2002). Moreover, Luyt highlights that "as treatment at the household level is both expensive and time-consuming, the circumstances

are ripe for the occurrence of waterborne diseases" (Rhodes University, 2011). As such, Luyt's research into the use of the H2S strip test and heterotrophic plate count (HPC) indicated that the two tests hold promise, in combination with the assistance of municipal health services, for the ability to "carry out fast, low-cost and simple monitoring, even in remote areas" (Rhodes University, 2011).

While it would have been useful to collect more than one water sample from WRM to be tested, the expense and delayed turnaround of the water results for the one set of samples constrained the rigour of this water testing and negated the possibility of multiple water sample sets.

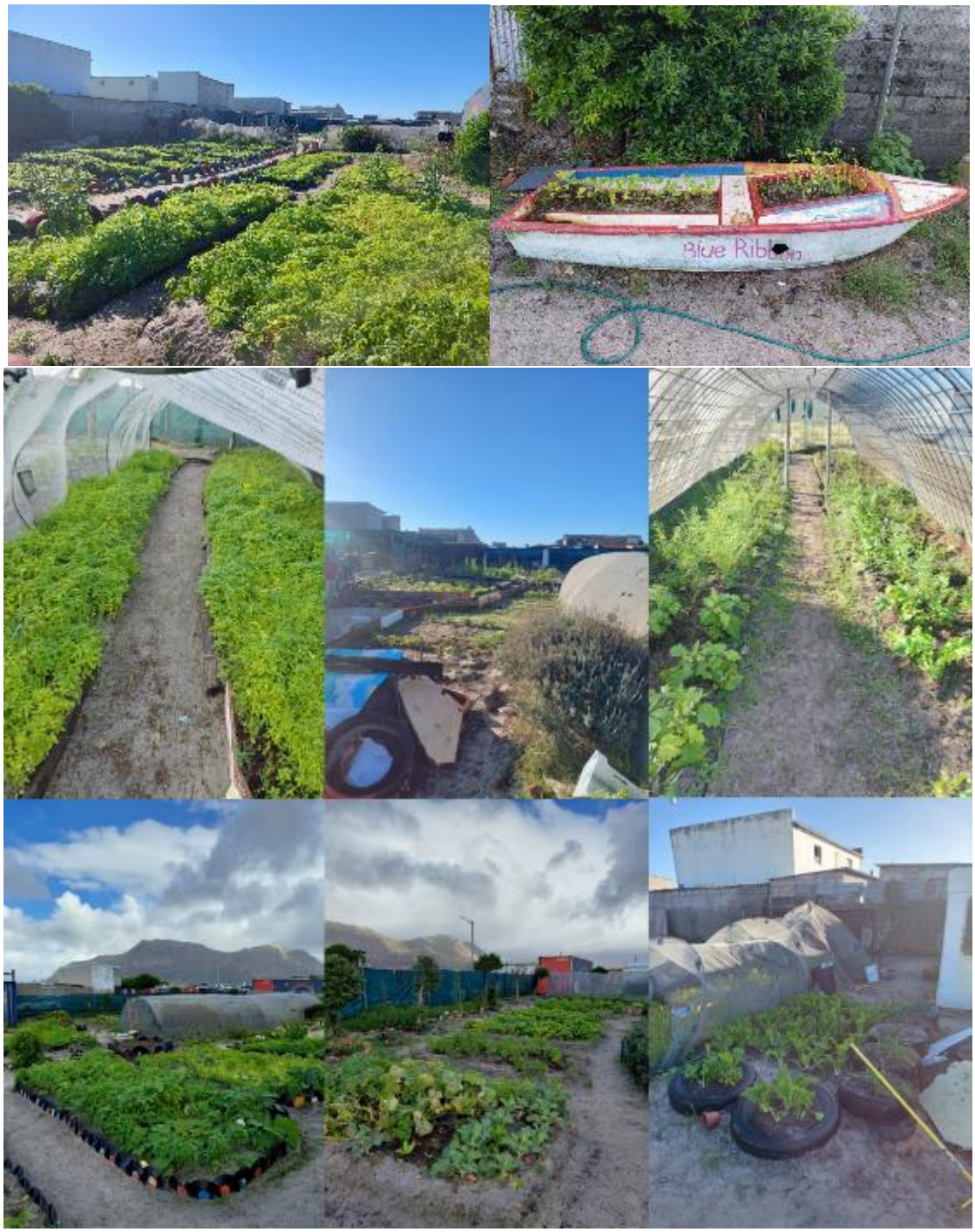
WRM Photographs[8]*:*

1. *Garden in Feb/Mar – the garden was looking very dry and sandy with little vegetation. The shade nets in the garden were all torn and damaged, and there were several piles of trash lying about.*

↓

[8] All of the photographs here were taken by me (Carey Berning) at WRM, with permission from the organisation.

2. *Garden in June – after much planting, composting, watering and care, the garden flourished with a large production of crops across the space. This is due to the efforts of Chad and Codi working with the WRM staff and volunteers to revamp the space. The garden, at this point, was cultivating several different vegetable varieties, as mentioned above.*



3. *Composting – the following piles are compost in progress as monitored by Chad and Codi.*


4. *My volunteering – I was put in charge of cleaning up the nursery and starting propagation processes in the nursery. Below are photos of my propagation progress, from seedlings to being planted in a garden bed on the property.*

For this research project, data for an *ethnography of current and future imaginaries* was collected. This material is analysed in three main chapters, namely, food sovereignty (chapter 1), the wall (chapter 2) and waste (chapter 3). The first chapter on food sovereignty will outline the accounts of those living in Vrygrond and working/volunteering at the WRM training centre, the centres efforts to achieve food sovereignty within the community, as well as the future imaginaries that follow this. The second chapter, 'the wall', interrogates the physical and metaphorical barriers illustrated by the boundary wall separating the CBP from Vrygrond, the conceptualisations upheld by this wall – including a discussion of neoliberal capitalism in relation to the wall's existence – and possibilities around traversing the wall (both practically and conceptually). Finally, the last chapter, 'waste', discusses the presence of waste in Vrygrond and the CBP as related to Sophia Stamatopoulou-Robbins' concept of *waste* siege and within the context of the Capitalocene.

Ethical Framework for this Research

In conducting research with human participants, ethical considerations are necessary to ensure ethical engagement in the research. As such, I received ethical clearance from the University of Cape Town (UCT) with the application number, *EHS 2022-BERNING.*[9] In the case of this study, it included ensuring that informed consent (in the written form) was obtained from participants prior to participation, transparency, reciprocity and confidentiality in the interview process, and, where required, ensuring participant anonymity. The safety of participants and the researcher, myself, was also considered in the data collection process, especially as conducted in Vrygrond. For instance, when I was developing this study, a concern arose surrounding the shootings between the local gang dominating Vrygrond and the taxi drivers which were occurring in the area at the time. While I took this concern into account during my fieldwork, I found refuge within WRM and engaged with a vibrant community within the centre's confines. During my conversations with staff and volunteers at the centre, I was told that while crime was a reality in the settlement, most people felt safe at the centre. Scholtz also stressed that the community is a beautiful and largely safe area, noting that Vrygrond has 'evolved'. However, she didn't expand on this. Scholtz did emphasise that trust and respect were hallmarks of integration into the community which leads to increased safety and good relations in Vrygrond.

In addition, I aimed to protect the autonomy, wellbeing, safety and dignity of all research participants throughout the research. I also minimised or avoided exposure of participants to foreseeable legal, physical, psychological, or social harm or suffering that might be experienced in the course of research, as far as possible. Moreover, prior to participation, I provided information that explained the aims and implications of the research project and the nature of participation to all participants. The right of potential participants to refuse participation or withdraw consent at any time was also respected without prejudice. This research further intends to maintain authenticity in the representations of participants' perspectives, and employs reflexive reporting. Any raw data collected will be stored for 2 years (in a secure folder on my laptop or filed privately) and then destroyed, it will not be distributed – it has only been used in this master's dissertation – and will only be seen by my supervisor and myself; this was explained to participants thereby expressing the means of confidentiality. In my reporting of the findings from the research, here, I have done my best to adhere to the principles of honesty, clarity, comprehensiveness, accountability and openness to public scrutiny. In addition, by conducting an ethnographic research study, my own positionality in the matter and a reflexive awareness of the research's effects on participants has been considered (in the last section of this paper).

[9] Refer to the ethics letter confirmation in Appendix 1.

Lastly, the intention of this research was not to be extractive but rather to contribute to farming within the Vrygrond community and get to know the members of this community. The research also intended to improve relationships between people on either side of the CBP's boundary wall running alongside the edge of Vrygrond. The hope, here, was to aid in the fostering of a caring community as outlined in The Care Manifesto (noted previously).

Catalytic Social Science Research

Throughout my fieldwork, I was acutely aware of my position as an outsider in the community with which I was conducting my research. In fact, this actuality caused me great anxiety in the beginning stages of my fieldwork. Although I was welcomed by staff and volunteers at WRM in Vrygrond, I constantly felt out of place. This is not an entirely unique experience for field researchers in any discipline. I stood out in the garden as a young white woman surrounded by a majority of older black and coloured men. As such, I found it especially difficult to approach these volunteers working in the garden to converse around my research. My anxiety around this did, however, lessen over time as I became a familiar figure in the garden and began to forge a casual acquaintance with the volunteers. Within this research, I had to engage with ways of conducting fieldwork which allowed me to gain insight into the people and area that I was researching while being cognizant of the power dynamics inherent in this relationship between me as a white, female academic and the largely disenfranchised, coloured and black community in which I found myself immersed at WRM in Vrygrond. Following a conversation with my supervisor, I began to see my role in this research project, and this particular community, as one of using my privilege to broadcast the (often silenced) voices of those residing in Vrygrond and Xakabantu, while also mediating relations between WRM and businesses in the neighbouring CBP.

Nonetheless, I still had to take my own positionality into account as a white woman doing this research in the current socio-political context with its historical underpinnings (colonialism and apartheid) in mind, and constantly reflect on my role as a researcher in this complex context. As such, there were times when I doubted my ability to conduct the sort of catalytic social science research that I had set out to do. This included questioning when and where it was my place to speak up and involve myself in the relations between WRM and the businesses in the CBP. I wanted to make a positive change in this space by mediating these relations (where possible) and meet the expectations of both the director of WRM, and my supervisor. At times, I felt like I had failed – especially, when I kept facing barriers to access at the business park and was stonewalled by many of the businesses when I tried to make contact. Consequently, this experiment in catalytic research was unable to create concrete connections between WRM and the business park – although it is important to note that one interviewee spoke of an existing connection in this space through the City Bay Church. While I had hoped to get more information on this – and other possible – connections, I think that the challenges I faced in permeating the wall, between the two studied spaces, serve to further highlight the long-lasting divisions that South Africa faces post-apartheid; some divisions of which have been actually entrenched through the current neoliberal capitalist system that we live in (as discussed in this thesis).

While writing this thesis, I also had to contend with my own affective response to the injustices of the capitalist system as shaped by the colonial and apartheid legacies in SA, as well as the injustices of oppression in Palestine – the latter of which escalated during the write-up of my thesis when violent conflict broke-out between Israel and Palestine in October 2023. The atrocities that followed made for a sombre analysis of the segregation occurring in this space which was discussed here as a parallel to my own case study, at least in certain respects. Furthermore, it is important to note, as stated by the

youth organization – Climate Vanguard, that the climate movement needs to recognise the significance of actively pursuing decolonisation in an effort to uproot the global systems driving climate and ecological crises at this point in time.

Regardless, I continued writing this thesis with the intention of illuminating the significant and long-lasting influence of historical oppression in a space such as Vrygrond/Capricorn, alongside the creativity, determination and resilience with which individuals and organizations, such as Mymoena Scholtz and WRM as a whole, address the current challenges – including poverty and hunger – and foster care in this community. My hope in analysing this case study, here, is that it will demonstrate the power of local food sovereignty and caring communities in the Global South, while also highlighting the systemic divisions that are still in need of reform on a broader scale. Going forward, this case study could then provide insight into the social justice needs of spaces such as this which, paired with ecological/environmental justice needs, could indicate the way forward for social and environmental justice movements envisioning habitability/sustainability and equity in the Global South.

At the same time, I experienced a lot of frustration in the process of trying to get my water test results paid for and released from the SABS. This process was substantially delayed due to bureaucratic and administrative hurdles, inefficiencies and idiosyncrasies, which spanned 9 months from receipt of the water samples to the release of the test's results as two labyrinthine bureaucracies – one at the SA Bureau of Standards and the other at the University of Cape Town – struggled to connect their technological systems in order to release payment. Consequently, my thesis completion and submission were delayed, thereby accruing more university fees (that the EHS department graciously covered) and delaying my graduation date.

Chapter 1: Food Sovereignty via Where Rainbows Meet in Vrygrond

Food sovereignty is a critical issue in South Africa. Creating more localised urban food systems is an important endeavour in the current context of climate change, but it is especially important for poverty-stricken neighbourhoods. WRM is demonstrating this point through their urban food garden in Vrygrond which envisions food sovereignty for the marginalised community. What's more, the garden was established by a group of local women who aimed to address issues of hunger and malnutrition within their community, expressing their self-empowerment and initiative. Overall, WRM's urban food garden illustrates the creativity in impoverished communities to make something even where it seems there's nothing.

Scholarship on food sovereignty speaks to the need for a comprehensive, conceptual analysis of 'urban food policies for a sustainable and just future' (Moragues-Faus and Battersby, 2021) which addresses both the social, economic and health inequalities experienced in cities today, as well as the interrelated environmental sustainability challenges in the urban context. Moragues-Faus and Battersby (2021, p. 1) argue that cities and the 'urban' are vital spaces in which "to rework the spatialised politics that result in different forms of socio-economic, political and environmental injustice within and beyond food systems (McFarlane, 2011; Roy, 2009; Uitermark et al., 2012)." They "respond to the urgent need to revisit the role of cities across the globe in delivering sustainability and food security outcomes, as well as providing refreshed theoretical tools to critically understand urban food dynamics and their multiscalar and spatial interdependencies", in the hopes of envisioning a transformative urban agenda (Moragues-Faus & Battersby, 2021, p. 2). Accordingly, Moragues-Faus and Battersby (2021) find that there are three fundamental turns emerging in urban food governance studies: "a shift towards systemic engagement with the food system; increased acknowledgment of scalar complexity; and a growing focus on relational aspects of urban food governance and policy-making dynamics" (Moragues-Faus & Battersby, 2021, p. 5). As a result, the authors propose that for a transformative urban agenda, urban food policies and governance should focus on, better conceptualising the 'urban' as a site of urban food systems; on more clearly articulating the nature of governance and policy in this context; and, on engaging with issues of power and inequities within these urban food systems and the related governance structures (Moragues-Faus & Battersby, 2021).

Food sovereignty, specifically, conceptualises "the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems" (Forum for Food Sovereignty, 2007, p. 9). Overall, mobilisation of the concept generally aims to localise food systems and empower those working within these systems. In recent times, food sovereignty as both a concept and a movement has increasingly gained traction due to a continually rising population and increasing threat of climate change – both of which have contributed to the current food crisis faced by many in the Global South. Following the Nyéléni 2007 Forum for Food Sovereignty, the definition of food sovereignty, that came out of this conference, was translated into six pillars that "represent the common framework and the collective vision of the movement" (Dekeyser, Korsten & Fioramonti, 2018, p. 224). These six pillars are: food for people, local food control, building knowledge and skills, valuing food providers, localized food, and agroecology. WRM is, therefore, putting the concept of food sovereignty into practice with their urban food garden by establishing a localised food production system based on agroecological principles which further provides opportunities for the upskilling and empowerment of community members.

At the same time, it comes as no surprise that the "role of urban agriculture for income generation and food and nutrition security depends strongly on the historical, political, economic and social

context" as was the finding of an SLE discussion paper on *Farming in cities: Potentials and challenges of urban agriculture in Maputo and Cape Town* (Engel, Fiege & Kühn, 2019, p. v). This paper concludes that "urban agriculture practised in the townships of Cape Town on small plots with sandy soils plays a negligible role when it comes to income and food and nutrition security in Cape Town" which is "partly due to weak market links within the townships and the difficult marketing routes to the city centre, which are usually organised by NGOs or 'social businesses'" (Engel, Fiege & Kühn, 2019, p. vi). While this may so, I believe that this paper underestimates the impact of (at least some) urban agricultural programs practised in Cape Town's informal settlements – the substantial value of which is illustrated in my research findings from WRM. In support of my claim, David Olivier (2019) acknowledges that while urban agriculture might provide an income to some, this financial benefit is not often accessible to the 'poorest of the poor'. In this regard, Olivier (2019, p. 18) argues that the "results suggest that urban agriculture's benefits for the economically marginalised in African cities are broader and more complex than previous studies on economic efficiency and food security suggest." The contrast, as suggested by Olivier (2019) then, seems to stem from the fact that the aforementioned discussion paper edited by Engel, Fiege & Kühn (2019) focuses solely on the economic benefits of urban agriculture, with a broader scale in mind as well. This can be perceived in the paper's objective which is "to contribute to the discussion on whether and how urban agriculture could enhance food and nutrition security among certain segments of the vulnerable urban population and increase their income with reference to the improved production, processing and marketing of agricultural and livestock products" (Engel, Fiege & Kühn, 2019, p. v). Meanwhile, my research centres around one community's lived experience and the wide-ranging benefits of the urban food garden at WRM (most of which are not financial). In the same manner, Olivier (2019) claims that urban agriculture offers significant empowerment to 'economically marginalised people', which tends to be overlooked when scholarship focuses on the economic benefits of these practices. The discussion paper edited by Enge, Fiege and Kühn (2019, p. vii) does, however, acknowledge that "the gardens and their surrounding structures (e.g., training centres) offer the possibility of networking, self-organisation and joint action" and that "social networks – established through farming – are crucial to food access strategies for vulnerable households in Cape Town."

Enge, Fiege and Kühn (2019) provide a useful summation of the evolution of urban agriculture (UA) in Cape Town which is significantly shaped by the history of apartheid in SA through which citizens deemed 'black' and 'coloured' were oppressed resulting in legacies of precarious economic and social conditions for large parts of these populations today. The long-lasting effects of apartheid can also be observed in the remaining spatial divisions within the city of Cape Town – the subject of the next chapter. Enge, Fiege and Kühn (2019, p. xviii) also proclaim that "producers in Cape Town highlight the social benefits of farming and exchanging" and further highlight the ecological and health benefits of farming in townships where there is little 'green' space, resulting in community gardens providing "small havens of green in an otherwise densely built-up environment." Moreover, the paper notes that for a 'sustainable city' to be realised, policy makers should provide support to urban agricultural systems and farmers for they do have the potential to advance food security/food sovereignty and poverty alleviation at the right scale. As it currently stands, Cape Town does have a policy for urban agriculture, but it has not as yet been fully implemented, and is under review according to Enge, Fiege and Kühn (2019).

Regardless, Olivier (2019) ultimately opposes the conclusion made by Enge, Fiege and Kuhn (2019, p. vii) that states "in the end, urban agriculture in both cities [Maputo and Cape Town] fails to provide an income that will cater for a balanced, healthy and nutritious diet." In fact, Olivier (2019) suggests that research on urban agriculture in Africa, such as that outlined in the paper edited by Enge, Fiege and Kuhn (2019), tends to attend to different aspects of urban agriculture – including, 'economic viability',

'contribution to food security', and 'social and psychological benefits' – in isolation, which may lead to these conclusions. However, Olivier (2019) claims that the application of the sustainable livelihoods framework to research on urban agriculture, as done in his own research, can incorporate all of the aforementioned benefits, further revealing how they are, in fact, all intricately interrelated. The key contribution of Olivier's paper (2019, p. 29) then demonstrates "that urban agriculture at any scale of operation can contribute to livelihood sustainability." Likewise, my research into WRM as both an organisation on the whole and a site of food production, through their urban food garden, demonstrates that urban agriculture and community development via this centre contribute to the livelihood sustainability of Vrygrond's residents.

In fact, Olivier's (2019) research into urban agriculture on the Cape Flats is analogous to my own in that he too conducted empirical research into the workings of urban agriculture as practised via NPO's in marginalised communities across the Cape Flats, including Vrygrond itself. In Olivier's study (2019), five 'capitals' are assessed in their contributions to livelihood sustainability following Farrington et al.'s (1999) interpretation of the sustainable livelihoods framework – namely, social, human, financial, natural and physical capital. After analysing these five capitals in relation to urban agriculture on the Cape Flats, Olivier (2019) found that urban agriculture facilitates social capital gains which foster trust, reciprocity and care in the community, while also resulting in direct economic payoffs.

In terms of human capital, Olivier found that in the context of Cape Town, training provided by NPOs is instrumental which builds skills and self-confidence as well as extending to positively influence physical health through the promotion of eating healthy and nutritious food. For financial capital, Olivier states that while the economic benefits of urban agriculture on the Cape Flats may appear insignificant, the various (often non-financial) exchanges that take place in these communities does play an important role in stabilising household cash flows. Natural and physical capital are discussed tangentially as both equipment and education are particularly necessary to access, and harness, the natural capital found on the Cape Flats. Hence, NGOs and NPOs play a crucial supporting role in this context. Furthermore, through learning agroecological principles, Olivier (2019) found that many involved in these urban agricultural practices gained 'a deep appreciation for the natural world' which increases sustainability as well as creating spin-off benefits whereby communities start to see the importance of looking after the natural capital around them. This, then, has important implications for sustainability and resilience in the face of climate change. Overall, Olivier (2019) outlines the many complex benefits gained through practices of urban agriculture on the Cape Flats, many of which were echoed in the stories of volunteers working in the urban food garden at WRM.

Similarly, Jane Battersby and Maya Marshak (2013), identify the value of urban agriculture as providing benefits other than economic and which correspond to a "different configuration of the ecological, social and individual rifts identified by McClintock [2010]" which are part of an extension of Marx's theory of the metabolic rift which the authors use as a conceptual framework in their research on urban agriculture. Consequently, Battersby and Marshak (2013, p. 11) concluded that by using this approach, "the interconnectedness of the economic and social challenges of I" is reiterated. In addition, their approach, then, "demonstrates that urban agriculture cannot be viewed as a response to one challenge in isolation. Participants in urban agriculture projects articulate their motivations and benefits in multiple and symbiotic ways" (Battersby & Marshak, 2013, p. 12). For example, these participants "identified urban agriculture's value primarily in its redress of individual and collective social problems brought about by the previous and current regimes. In their view, the gardening helped to address alienation, to restore positive identity and to build community. … The key individual benefits identified by participants were to do with mental and physical wellbeing through activity, spiritual engagement and a sense of pride and status through growing a successful garden. These

benefits can be connected to attempts to overcome the economic and social problems brought about by the multiple dislocations and alienations of the apartheid city (Western 1981)" (Battersby & Marshak, 2013, p. 11).

Even so, negative impacts on urban agriculture are a reality and important to consider in regard to the effectiveness of such practices. Specifically, Enge, Fiege and Kühn (2019) note the vulnerability of urban agriculture to climate change and increased occurrences of extreme weather events, to contamination by industrial or human settlements, and to theft and vandalism. At WRM, for instance, they have experienced the theft and vandalism of their irrigation system (where their piping was cut and stolen) and of their shade netting around the nursery in their garden. Similarly, Olivier (2019) notes that crime (and adverse living conditions) limit the potential of urban agriculture to contribute to sustainable livelihoods on the Cape Flats. Additionally, there is the persistent challenge of waste being thrown or blown into the garden, especially along the side that faces the road (Vrygrond Avenue). In light of all this, Olivier (2019, p. 29) concludes that, despite requiring time and effort, and often support from an NPO (or appropriate institutional support), the five livelihood capitals can be developed through urban agriculture, thereby contributing to building livelihood sustainability on the Cape Flats.

At the same time, Battersby and Marshak (2013) identified low soil quality (sand) and winter flooding as challenges to urban agriculture in Vrygrond and Seawinds. These physical/natural challenges are further linked to the social effects in the context of informality and marginalization, which was echoed in my own research through WRM in Vrygrond. Battersby and Marshak (2013, p. 11) argue that this is "clearly the result of colonial and apartheid-era planning norms that reserved the best land for the white population and placed the poor on marginal lands. The logic of this environmental racism persists. In this confluence of an injustice of spatiality and spatiality of injustice (Dikec, 2001), the people placed in these locations are among the least able to afford to buy resources to make this land viable for agriculture." These insights are crucial to understand the challenges faced by food growers working with WRM, in Vrygrond.

Where Rainbows Meet (WRM)

Initially a small fishermen settlement, Vrygrond grew in the 1960s as displaced families began to settle in this area during the relocation policies enacted under apartheid. Today Vrygrond has an estimated population of 50 000 people living on approximately 0.82 km² of land (Davies, 2014), and continues to grow each year. My first encounter with Vrygrond, as a place, happened during my undergraduate year when I was delivering flowers as a part time job. Google Maps directed me through part of Vrygrond enroute to the CBP . The drive through the settlement was brief, and as I was new to I and its suburbs, I couldn't place myself in the city. I passed through Vrygrond with little interaction with the actual community. I would next encounter the community in my first year of my master's degree as part of a fieldtrip of the Muizenberg East area led by Professor Lesley Green. During this fieldtrip, we visited WRM and were warmly welcomed by the staff .

Figure 2
An aerial image of WRM and its urban food garden in Vrygrond (Google, 2023).

The NPO, WRM, is a training centre that was established in 2008. The centre boasts a garden that provides fresh vegetables and work opportunities for the community, as well as the opportunity for people to learn how to grow their own vegetables as part of educational/training programs run by the organisation, all of which contributes to the food security and improvement of the livelihoods of those living in the area.

It is not surprising that the communal garden was started by local women when considering the history of the area as noted by June Bam (2021). In her book, *Ausi Told Me*, Bam highlights the existence of a matrilineal knowledge line, and subsistence farming and communal gardens in precolonial and pre-apartheid era communities that once inhabited Rondevlei and the surrounding areas (including Vrygrond). In fact, the communities here had, for a long time, shared communal gardens and achieved joint food security with most families practicing small-scale subsistence farming and keeping livestock. Under the apartheid segregation laws and forced removals starting in the 1960s, most of these gardens – along with the corresponding food security – were erased in the area as land was lost and gangsterism proliferated (Bam, 2021).

Mymoena Scholtz' initiated WRM in Vrygrond following a call for help from grandmothers and youth living in the area who recognised the need for support in the community and believed that Scholtz could bring about change in the community (Jeranji, 2018). Hence, WRM aims to generate social changes in the community and provide holistic support to families and individuals living in Vrygrond and the surrounding settlements in need. However, getting to the point of actually making this a reality, was not without its challenges. Scholtz began by working out of her car; she also faced criticism and mistrust from the community as she was seen as an outsider coming to interfere in the community. Nonetheless, with perseverance, Scholtz and her colleagues eventually built trust with community members, and with support from several people, were able to establish the training centre that has grown into the organisation that it is today, which is able to make substantial impacts on the lives of those residing in Vrygrond. In a News24 article, Scholtz states that today, she is "a proud member of Vrygrond, working beside great community leaders that still strive to bring bigger changes within the area" (Jeranji, 2018). Scholtz further notes: "Rainbows is about bringing about change and we will continue to always put our communities first" (Jeranji, 2018).

The programme at WRM includes providing nutritious food from the soup kitchen, youth development at various levels (including an Early Child Development centre or ECD, and afterschool programmes and holiday programmes for first and secondary school students) a sewing project for survivors of gender-based violence, computer training, and, specifically in the garden, a green space to counter the lack of vegetation in the area. Furthermore, WRM as an organisation is focused on enacting social changes in the areas most at risk within the broader community and follows a holistic programme that offers psycho-social and educational support for entire families. Sharing is part of the organisation's practice, and they do this by supporting not only Vrygrond but also surrounding communities and their soup kitchens as much as possible with what they have. Two key principles of the organisation (according to Scholtz) are honesty and integrity. Moreover, trust and respect are key factors in mobilising the community and building relations. In general, WRM and Scholtz, prioritise community care above neoliberal practices of profit-making and individual success.

It was here that I volunteered and spent most of my time engaging in participant observation and doing informal interviews. During this time, I came to understand the importance of care and community in a space such as this, and have all the staff and volunteers here to thank for welcoming me with open arms and sharing their stories with me.

Working in the Garden

The food garden at WRM has been running for over 15 years. It is 1800m² in size and mostly produces spinach, beetroot, small tomatoes, spring onion or leeks, pumpkin and potatoes. The range of crops grown here varies with a changing labour force, and inconsistencies in seasonal timing and soil care practices. While I was based at WRM, plants grown included eggplant, cabbage, lettuce, green peppers, sweet potatoes and an abundance of chillies . It is an organic garden built on sandy soils that require large amounts of effort to become fertile enough for agricultural purposes. The vegetables grown in the garden are used in the soup kitchen onsite which produces food daily for the community. However, the production of vegetables from the garden is not able to keep pace with the kitchen's needs – something that the director hopes to improve.

In terms of infrastructure, the garden has a compost pile, three shade nets with beds underneath, a vandalised and non-functional irrigation system (resulting in the use of hand irrigation from hosepipes) linked to a borehole system, minimal gardening equipment and an unmaintained nursery.

The garden is situated on relatively flat land with no natural shade and generally windy conditions. Several years ago, a company called Guerrilla House created a design for the garden which remains today despite some adjustments. The garden is not funded – a big challenge for the centre – but does receive several donations of compost from Lains Stables in Constantia, vegetables for the soup kitchen and seedlings from a farm in Philippi called Philippi Groente Verpakkers, and project-specific support from a German organization, called All4All, every two years (such as the construction of the nursery and the supply of certain equipment). WRM did, however, receive some funding from a company for the sole purpose of purchasing seeds for use in the garden previously, although this was a one-time occurrence.

WRM is partnered with the Department of Agriculture in Cape Town who provide resources for the garden based on a project proposal basis, but they provide no funding or labour to the centre – the things that are needed most according to the project manager. A local business called Gro-a-Garden is also instrumental in the success of the garden. It specializes in growing and maintaining gardens using permaculture principles. They have an agreement with WRM in which they make compost onsite at

the centre, 50% of which goes into the garden here, with the other 50% going to their business to be sold and used in other projects. The company also donates seedlings to be planted in the garden and aids in maintenance of the garden and growing of the vegetables. In addition to this, the company has planted Chia seeds between growing vegetables in certain places which act as a groundcover – shielding the soil from sun and rain as well as providing extra nutrients into the soil – and when the plants reach a certain height, Gro-a-Garden harvests the stems and leaves to be sold in the surrounding communities where they are often eaten in salads as microgreens. During my work at WRM, Gro-a-Garden became more involved in the garden and were working to actively improve the functioning and efficiency of the garden (which will be discussed below).

Effectively, the garden at WRM is run by Gogo ("grandmother", in isiXhosa) Minnie and Gogo Mava, both of whom were a part of the group of women who started the garden, and maintained by a fluctuating number of volunteers. The most consistent volunteers are given the position by WRM after coming to the NPO as part of a social work case (whereby they sought financial and emotional support from the organisation) and are allowed to join the Men's Project in conjunction with the City of Cape Town which aims to provide employment opportunities for vulnerable men in the community. The majority of the volunteers work not only in the garden but throughout the organisation. An estimated 95% of volunteers, according to the project manager, come from Vrygrond or adjacent communities. Due to this mix of volunteers put together with the Gogo Minnie and Gogo Mava in the garden, a challenge has arisen around communication and differing practices. Specifically, a language barrier exists as the Gogos, Minnie and Mava, predominantly speak isiXhosa (with minimal English) making communication difficult with volunteers who don't understand the language. The Gogos, Minnie and Mava, use traditional knowledge and skills, that were passed down generationally, to maintain the garden and are reluctant to change their ways which causes tension when a group of volunteers with their own knowledge base, who attempts to introduce new practices for the benefit of the garden . This has caused much frustration for the director who feels the garden would benefit greatly from certain changes. In the same vein, the director noted that the garden desperately needs someone with the relevant knowledge and skills to co-ordinate the running and maintenance of the garden; someone who is able to traverse the language and knowledge barriers and help the team to work more collaboratively. However, this is a difficult endeavour as the centre has little-to-no funds to pay this co-ordinator.

One of their biggest challenges is the lack of labour. WRM was able to appoint a new group of volunteers drawing from a City-funded Expanded Public Works Programme (EPWP) in 2023. People who apply to be part of this programme (as individuals who are lacking employment opportunities) are, once accepted, appointed in a volunteer position wherever the City sees fit during which they work for 3-4 weeks with no pay. Following this, the volunteers can enter into a contract with the City and be paid a stipend. WRM partnered with the City of Cape Town created this "Men's program" in 2022, through which they recruited and employed 20+ men from Vrygrond and surrounding disadvantaged communities in the same year. The program aims to add value to the lives of the enrolled men, their families lives and the lives of the beneficiaries of WRM and other partnered organisations, through the provision of employment and empowerment opportunities.

John, one of the EPWP volunteers is a resident of Capricorn and had been working in the garden at WRM for one month at the time of our meeting after being allocated the position by a company called True North. This volunteer, John, noted two benefits of the garden as providing work opportunities and giving back to the community. A kind of circularity has been created through the WRM, he noted, with its garden at the centre. For example, leaves are harvested from the pumpkins growing in the garden and sold to people (mostly Malawians or Zimbabweans) for whom pumpkin leaves are a

traditional dish. The money from these sales is then used to buy vegetables for the garden and/or kitchen which in turn feed more members of the community who rely on the soup kitchen at WRM for their food.

My role in the garden was to clean up the nursery which had been neglected following its establishment – due to a lack of knowledge around growing and transplanting seedlings – and start producing seedlings here, to later be planted in the garden. The nursery was established by a German organisation who sent volunteers to WRM for this purpose two years ago. While the nursery boasted an abundance of seedling trays and plastic pots, the shade netting needed repair as it had been vandalised by someone who stole part of the netting and it has also been battered by the wind. Seed-starting soil mix as well as potting soil was needed to grow and sustain seedlings. I planted corn, large tomato, cabbage and carrot seeds in a soil mixture of peat moss (which provides organic material and beneficial microbes), perlite (for drainage) and vermiculite (for moisture retention). One of the volunteers working in the garden voiced his support of my use of vermiculite, acknowledging its importance in retaining soil moisture, which he found to be especially important for the seedlings' survival. Both of us then noted the inappropriate soil mix used in the previous planting of seedlings – that had consequently been neglected, leaving dry soil and dead roots remaining in the seedling trays and pots – with its lack of vermiculite and excess of large wood/bark chips clogging the seedling trays. My seedlings were late-transplanted into the garden and thrived, for the most part. Following my interventions in the nursery, Chad and Codi, from Gro-a-Garden, along with the volunteers, repaired the shade netting, started growing more seedlings and revamped the construction on the one side of the nursery by adding wooden planks and more shelving.

Regarding the future of the garden, Kyle (the project manager) shared the organisation's vision for their garden as a space that effectively looks after the community. This entails that the garden is able to sustain the kitchen at WRM with sufficient vegetables for daily meals, is a place for the community to learn new skills and translate that into growing their own vegetables at home, is an educational space for children to learn about the importance of looking after the 'environment' and the effects of climate change, is able to provide for a market in which surplus vegetables can be sold to the community, and is ultimately a 'green' space in Vrygrond to counter the lack of plants in the area.

An endearing story, demonstrating the importance of access to fresh fruit and vegetables for children, comes from the curious case of the 'boom' ("tree" in Afrikaans) vegetable. For context, most of the children in the ECD centre don't get many varieties of fruit and vegetables at home due to financial restraints of households in Vrygrond. Hence, the children are able to try all sorts of new (mostly) vegetables that are grown in the garden at WRM and then served to the children for lunch. One time, the soup kitchen at WRM served the children a meal with broccoli in it, but the kids didn't know what the vegetable was called, so they started calling it 'boom' ("tree" in Afrikaans) amongst themselves. The children then went home and told their parents that they were eating 'boom' at WRM, causing concern amongst the parents, for in Cape Flats dialect of Afrikaans, "boom" usually refers to the cannabis plant. Some of the parents approached Mymoena at the centre for clarity. After speaking to the kitchen, and Mymoena uncovered that the children were actually referring to broccoli. As such, Mymoena and WRM strive to give these children a variety of fruit and vegetables that they likely won't get at home, for both nutritional and educational purposes.

Stories from WRM Volunteers and Community Members

As of 24 February 2023, there were 40 volunteers in total at WRM, 90% of which are needy members of the community (meaning that they are unemployed, living in poverty, or have unstable domestic

situations). For instance, Sipho, a volunteer working in the garden, had migrated to Cape Town from the Eastern Cape in search of work, only to end up living in a dump site in Vrygrond with no job. He was brought by a community member to WRM, where he was enlisted as a volunteer in the garden and as part of the Men's Program. Nonetheless, Sipho was high-spirited each day working in the garden where he tells his fellow volunteers about his previous day's experiences and makes sure to show the crops love and care. Siyanda is another of the volunteers at WRM who works in the garden here two days a week, alternating between this and manning a mobile library in the community. He worked with me in the beginning of my volunteer period at WRM, helping me to clean up the nursery. Siyanda also moved to Cape Town from the Eastern Cape in search of work. He now hopes to create a small farm on a plot of land in Vrygrond so that he can grow his own spinach, potatoes and carrots. In this pursuit, he is trying to earn enough money to rent his own piece of land to grow food. While working alongside Siyanda in the garden, he spent a lot of time conversing with Gogo Minnie in isiXhosa.

While volunteering in the garden, I also met several EPWP workers who reside in Vrygrond or Capricorn and who were volunteering in the garden as a requirement to get a job contract with the council. All of the volunteers expressed enjoyment at working in the garden and appreciation the space for its aesthetics as a 'green' space and as a site of food production for the community. Moreover, one of the volunteers, Lethabo, who had been working in the garden for a month, highlighted the benefits of the garden as both a work opportunity and a way to give back to the community. Sipho, an aforementioned volunteer, told me that he had moved to Cape Town from the Eastern Cape in hopes of finding a job 'in the city' – the third volunteer to have done this, from my conversations – and earning money, some of which he would need to send to his family back home. Once he's made enough money (though he didn't specify how much is 'enough'), he plans to return home, to the Eastern Cape. This apparent trend among the volunteers of migrating Cape Town in search of work is part of a bigger process of internal migration that has been happening in the country since South Africa's 1994 democratic elections, whereby many impoverished people tend to relocate "to major South African cities in search of enhanced economic opportunities, following broader African urbanisation trends (Cartwright, 2015)" (cited in Petersen and Charman, 2018, p. 1-2). This is also noted by Ivan Turok (2012) . When this volunteer, Sipho, moved to Cape Town, he first stayed with his brother while searching for a job but, without success, he was asked to leave. As a result, he found his way to Xakabantu. Though he lives in unstable conditions, he is at least grateful to have a chance to work in the garden. This is the first volunteer that told me he was currently growing his own vegetables (specifically, green pepper and potatoes) at his shack for his own subsistence. He emphasised the importance of growing one's own food, especially when the price of bread, and other staple foods, increase. He had some knowledge about permaculture and said he has a friend studying agriculture at Rhodes University in Makhanda (formerly Grahamstown). This may be the reason for the interest that he expressed in my work in the garden, with him consistently asking me about what I was doing and why. He was also concerned about the issue of dumping of waste in the community – especially around Xakabantu (likely due to its proximity to the landfill and the ambiguity in land ownership in this area). Sipho complained that trucks full of trash drive into Vrygrond and dump the contents of their trucks in open spaces within the area, especially near Xakabantu which is located right next to the Coastal Park Landfill. This observation was echoed by the other volunteers.

The last EPWP volunteer that I interviewed, John, is a Capricorn resident who has lived in the area for a long time and says that living here is 'fine' with no major problems except that of finding employment, hence his enrolment in the EPWP through which he was given the volunteer position at WRM. His job here includes gardening and painting , but also any odd tasks (such as peeling vegetables in the soup kitchen and handy work) that the centre might ask him to do. He also has prior knowledge of gardening and growing crops, but doesn't grow his own vegetables due to a lack of space at his

residence. He is part of the EPWP because he needs to earn money for his family and to 'keep a roof over his head', he said, noting that if he were unable to find a job after his volunteer period, then would have nothing to do. He liked the 'busy work' of volunteering at WRM and being in the garden. For him, the benefit of this position is greater than purely just for employment reasons. He is happy to do what he can to earn money, he said, but also values helping WRM and the community. When I asked him about the CBP, he said that there were no job opportunities there . Rather Kyle (the WRM project manager) is helping him, along with the other volunteers, to apply for jobs online. During my volunteer period at WRM, I witnessed all of these volunteers working hard in the garden each day, often while chatting to one another while conducting tasks, and spending their breaks huddled in one corner of the garden conversing and laughing together, sometimes with music playing in the background. As such, the garden always presented as a lively scene, especially on the days that there are more volunteers, such as Tuesday and Thursday. Nonetheless, the volunteers tended to divide themselves in specific groupings – notably, the Gogos, Minnie and Mava, the EPWP volunteers, including Sipho, Lethabo and John, and long-term volunteers at WRM, such as Siyanda and Colin. Colin is one of the youngest volunteers in the garden and has been at WRM for 4 years, ever since his mother asked Mymoena to find him a job at the centre. Mymoena took him on as a volunteer in the garden and now hopes that after working here for so long, this experience will aid Colin in finding a full time job someday. In fact, if any of the staff at WRM hears about a job opportunity, then they will recommend suitable volunteers that have worked at the centre for an extended period of time. As a result, Mymoena has observed less people queuing in the food lines for the soup kitchen at WRM, which she claims is due to the organisation's ability to find jobs for community members in Vrygrond.

Gro-a-Garden is a local, small business run by Codi Jordan Marais, in connection with Chad Cupido's organisation with the unusual name of "Dr Phil-afel Plant Powered People". Together they offer gardening and permaculture services predominantly on the Cape Flats in Cape Town. Both men live in Capricorn and are partnered with WRM where they are heavily invested in the urban food garden. Through the project at WRM, they hope to start a 'movement to uplift Muizenberg and the Cape Flats'. Furthermore, their "goal is to create a sustainable system of food production that benefits the community. We want to empower members of both communities to take ownership of their environmental impact, reduce their carbon footprint, and contribute to a more sustainable future" (Cupido, 2020). Chad and Codi began their partnership with WRM in February of this year (2023) as part of a 'soil business model' using the urban food garden at the centre. Their hope, then, was to both improve the soil health of the garden at WRM, while also creating compost for their own business. In this way, they are working towards creating a more sustainable local food system whereby organic waste is turned into soil which in turn feeds the community; therefore, contributing to waste reduction, food security and overall community health and wellbeing. They further describe their 'vision of a sustainable garden, a space of healing and growth' within Vrygrond through which fresh, nutritious produce can be supplied to the community as well as developing empowerment and education of the youth through the 'art of gardening and permaculture' (Cupido, 2020). The focus, then, is not only on the garden itself but also on the community with a future-oriented vision in which they are "cultivating a community of care, rooted in the principles of Ubuntu" (Cupido, 2020).

What these narratives have revealed is legacies of colonialism and apartheid, coupled with the political and social dynamics of the formalisation of Vrygrond, which has culminated in the transformation of the area from dunes, housing a fishermen settlement with subsistence livelihood practices, to a densely populated urban settlement with a mix of formal and informal infrastructure which is largely marginalized and poverty-stricken. This transformation and inequality form the backdrop against

which WRM has been established – and will be the subject of the following chapter (2). WRM, under the leadership of Mymoena Scholtz, demonstrates creativity and resilience born out of this reality, and aims to foster social empowerment and food sovereignty within the community. This is showcased in their urban food garden where Chad and Codi from Gro-a-Garden, the volunteers such as John, Sipho, Siyanda, Lethabo and Colin, and Gogo's Minnie and Mava have transformed nutrient-poor sands to fertile, compost-laden soils which support the crop growth that ultimately feeds the local community.

Despite divisions across *the wall* and within the community in Vrygrond, Mymoena and the rest of WRM highlights the power of caring communities in the feedback loops that they have formed here. This includes circular flows within the garden (for instance, through the creation of compost) and within the broader community (such as through food sovereign practices and the transfer of knowledge and skills). This circularity, illustrated in the garden, echoes a previous time – specifically, the self-sustaining livelihoods prior to colonialism and apartheid, as mentioned in June Bam's book (2021). Moreover, the agroecological principles utilized in the garden start to mend the metabolic rift, on a small scale, within the community. The partnership between WRM and Gro-a-Garden, run by Chad and Codi, also presents a local flow of knowledge and skills which fosters the garden in WRM that in turn feeds the community and promotes a small business. This partnership – and WRM's practices as a whole – inspires hope for the potential of communal relations to foster food sovereignty and social empowerment. Emerging out of these flows of matter within the WRM garden, and flows of knowledge, skills, and care in Vrygrond, is the potential for "an ecopolitics based on relatedness, on kinship, and on connectedness" as described by Lesley Green in *Rock | Water | Life* (2020, p. 217).

However, there is a clear contrast between the social, environmental and economic struggles faced by those residing in Vrygrond, when viewed alongside the wealth generated by the businesses within the CBP, which has effectively constructed a physical and metaphorical wall between the two spaces, as will be the topic for discussion in the following chapter.

Chapter 2: The Wall

> *"Neoliberalism's proliferating walls concretize a short-term psychology of denial: the delusion that we can survive long term in a world whose resources are increasingly unshared. The wall, read in terms of neoliberalism and environmental slow violence, materializes temporal as well as spatial denial through a literal concretizing of out of sight out of mind." (Nixon, 2011, p. 20)*

Figure 3
'The wall' and a man walking alongside it for size comparison. Photograph (Berning, 2023).

Figure 4
A security camera mounted to the CBP's wall that looks out across Vrygrond. Photograph (Ziggy Heuer, 2022).

The inequitable juxtaposition between Vrygrond and the CBP, as divided by 'the wall', is an occurrence that is reflected in several other divided spaces around the world. Two notable examples are the Israel-Palestine border (with the infamous wall around the 'Gaza Strip') and the Tijuana (Mexico) - San Diego (US) border (which is divided by a boundary fence). In both of these spaces, much like Vrygrond and the CBP boundary, one side of the border holds relative wealth (the side which holds power derived from settler colonialist processes), while the other bears the burden of *politicized* waste. Sophia Stamatopoulou-Robbins (2020) explores this scenario in the Israel-Palestine context in her book, *Waste Siege*, in which she conceptualises waste as a 'political actor' and highlights "the material

inescapability of dwelling in waste as a material environment" (2020, p. xi). At the same time, Lesley Stern reveals the 'haunted' canyonic landscape of the Tijuana-San Diego Region where she observes how "condominiums line one side [of the border], while waste piles on the other" in *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene* (Gan, et al., 2017, p. 190). These two case studies, paralleled with my research in the Vrygrond/CBP space, then, all provide insights into who is dealt the burden of dwelling in waste and what politically charged power dynamics occur through waste management and infrastructure systems. This further links to the concept of 'sacrifice zones' which was adapted from the term 'sacrifice area' that was first applied to agricultural management. The concept of 'sacrifice zones' has several definitions, but for the purposes of this study, I will refer to Steve Lerner's understanding of the concept, as articulated by Ryan Juskus (2023, p. 20), in which "sacrifice zones are places where rival political ecologies of sacrifice conflict with one another over the meaning and practices of life and death."

Vrygrond has been shaped by a history of injustices under the colonial and apartheid regimes which continue to haunt this landscape and are continuously negotiated by the residents here today. Meanwhile, the CBP reiterates the divide entrenched under these oppressive regimes as based on race and class, as well as places new burdens on the community of Vrygrond under neoliberal capitalism. In post-apartheid SA, specifically, Cock (2007) states that the global pattern of over-consumption juxtaposed with deprivation is especially apparent, highlighting it as one of the most unequal countries in the world; an inequality that has only deepened following the end of apartheid and the state's newfound commitment to neoliberal policies and practices. The formalisation of Vrygrond juxtaposed with the development of the CBP reveals this inequality as symbolised by 'the wall', as will be detailed in this chapter. The CBP, with this wall enclosing the 'nature' within, can also be seen to enact a practice of fortress conversation.

Fortress conservation posits that only through the expulsion of human activity can a 'natural' area be protected and conserved for the foreseeable future. This idea rests on the strict divide between society and 'nature' as well as the notion of 'nature' as static and fixed in time, on which past colonial, and current neoliberal, theories seem to hinge. Hence, fortress conservation seeks to create boundaries around so-called 'nature', much like how the CBP has built a boundary around itself (i.e., *the wall*) thereby establishing a corporate fortress. The term 'fortress conservation' refers to conservation strategies which 'natural' or 'wild' areas – predominantly in the Global South – are fenced in, and access becomes restricted in the name of protecting and conserving the 'nature' here. This approach, which can also be called 'fences and fines' and 'coercive' conservation, aims to create landscapes that are essentially peopleless so that the idealized 'wilderness' can be safeguarded against destructive human activity (Brockington, 2015; Siurua, 2006) – namely, "agricultural cultivation, pastoral activities and human settlement" (Mfune, 2012, p. 13). What this type of conservation fails to protect is the people living in and around these areas. Hanna Siurua (2006, p. 74) highlights the "unjust imposition of priorities" underlying fortress conservation practices, noting how this conservation is often accompanied by the dispossession and displacement of local communities who are largely left marginalized, criminalized and impoverished. Siurua (2006) critiques Holmes Rolston III's conceptualisation of fortress conservation in which he places nature conservation above human needs, and equates 'feeding people' with 'development' which is perceived as inherently detrimental to nature preservation. However, Siurua (2006, p. 79) argues that this equation is unwarranted as this destructive notion of development tends to also victimize the impoverished, many of whom are opposed to these types of development schemes, yet remain invisible to "the radar of mainstream conservationism." Mfune (2011) also asserts that fortress conservation practices portray resource management as a technical matter which needs to be governed by ecological expertise and western

science. Consequently, environmental decision-making becomes the domain of bureaucrats and scientists which excludes local communities from the management of these landscapes.

Bluwstein (2018) analyses this further by employing Foucault's concept of 'biopower'[10] to develop a biopolitical ecology of conservation. Reflected in these biopolitics are "differently racialized" and "asymmetrically valued populations of humans and nonhumans," forming the basis of colonial governmentality which aimed to "reorder a social-ecological landscape into bounded spaces for people and wildlife" (Bluwstein, 2018, p. 146). In contemporary times, fortress conservation practices similarly categorize people and dictate access based on what Bluwstein (2018) calls 'conservation-compatible livelihoods'. In this way, the concept of fortress conservation has been criticized by several authors for its inherently flawed assumptions and imposition of inequitable power relations. The way in which conservation is represented in these practices, coupled with a blindness to the consequential harm of this, in turn helps to sustain historical inequalities and injustices for the benefit of the Global North (Brockington, 2004). The biopolitics of these conservation practices, according to Bluwstein (2018, p. 163), reveals a combination of "global environmentalist concerns and political economies of neoliberal conservation" alongside a "domestic agenda of economic growth through tourism-based foreign exchange" which ultimately reinforces uneven development based on "an asymmetric valuation of human and nonhuman species in the contemporary conjuncture of transnational neoliberal conservation."

The focus on economic growth within the CBP and the lack of economic flow from this space into Vrygrond is part of bigger economic trends within the neoliberal capitalist system which have been critiqued by economists and authors such as the Nobel Prize winner Joseph Stiglitz (2016; 2017; 2019), Kate Raworth (2017), in her book *Doughnut Economics*, and Kallis et al. (2020), in *The Case for Degrowth*. The International Commission on the Measurement of Economic Performance and Social Progress (CMEPSP) – led by Joseph Stiglitz, Amartya Sen and Jean Paul Fitoussi – presented, in a 2009 report, the growing global consensus that "GDP does not provide a good measure of overall economic performance. What matters is whether growth is sustainable, and whether most citizens see their living standards rising year after year" (Stiglitz, 2016, p. 11). Subsequently, Stiglitz (2016) argues that the focus needs to be shifted from what is happening on average (such as GDP indicates) to "how the economy is performing for the typical citizen" by considering various aspects of societal well-being, including health, fairness and security, which are not reflected in GDP statistics.

Accordingly, Raworth (2017, p. 22) criticizes the fixation on GDP growth in mainstream economics which has been used to "justify extreme inequalities of income and wealth coupled with unprecedented destruction of the living world." Instead, Raworth (2017) proposes 'Doughnut Economics' which prioritizes a social foundation of well-being for all people and an ecological ceiling of planetary pressure that should not be exceeded, in between which living species should be placed. This conceptualisation of economics also utilises systems thinking and opposes the Kuznets Curve's theory that both inequality and pollution have to get worse before they can get better; rather, 'Doughnut Economics' requires a circular (not linear) economy that promotes the redistribution of wealth – "particularly the wealth that lies in controlling land, enterprise, technology, knowledge and the power to create money" (Raworth, 2017, p. 23) – and regenerative designs. Similarly, Kallis et al. (2020) put forward the case for degrowth in which the pursuit of growth is discontinued in the face of reorientating lives and societies toward wellbeing whereby resources are "shared and invested

[10] Biopower, or 'power over life itself', was conceptualised by Foucault (2003) as the combined use of technology, expertise and knowledge by those in power to 'make live' or 'let die' – i.e., to dictate who is afforded the rights to live a substantial life versus those who are left in strife (Bluwstein, 2018). The differentiations used in these exercises of biopower tend to be based on categorisations such as race and class.

differently to secure good living with less money, less exploitation, and less environmental degradation" (Kallis, et al., 2020). In this sense, Lorenzo Fioramonti (2020) argues that well-being (as opposed to economic growth) is a better suited focus in the pursuit of development, and that development should be viewed as "a process towards an improved state of existence for humanity and the ecosystem." Furthermore, Fioramonti (2020) notes that the economy is seen as a decision-making system from a governance perspective, thereby enmeshing the economic and political systems, so that a successful alternation of the consequent economic governance rules can result in a reorganization of society, both politically and socially. However, within the current mainstream economic system, which focuses on GDP growth, policies are designed to replace informal systems with formal structures in support of the vertical economy, while natural resources are commercialised and sold off. This, unfortunately, seems to be the case in the CBP, in which 'nature' has been enclosed and commercialised in a setting of profit-driven industry, meanwhile the informal systems in Vrygrond, next door, are constantly encroached upon, thereby reinforcing the inequality in this space.

Figure 5

The informal trade occurring alongside the road in Vrygrond opposite the CBP. Photograph (Berning, 2023).

What's more, the so-called 'trickle-down effect' that many mainstream (western) economists advocate for, has been debunked by, for example, Thomas Piketty (2014) and the Organization for Economic Co-operation and Development (OECD) which provide data on the correlation between rising inequality, "the absence of corrective policies, progressive taxation, and redistribution mechanisms" (Fioramonti, 2020, p. 146), and the growth of the vertical economy worldwide. As Reidpath and Allotey (2019, p. 1) explain, "trickle-down economics holds that the way to lift the poor out of poverty is to support wealth creation in those who are already rich. The underlying assumption is that as the wealth of the rich grows, they will purchase more goods and services, creating opportunities for the less well-off to benefit. The theory is in direct contrast to one that actively redistributes wealth." However, the observations of increased levels of inequality proliferating over the last few decades has disproved this theory, and instead produced what Greenwood and Holt (2010) call a 'negative trickle-down' effect, whereby there are additional hardships on people whose income has declined relative to other groups of people, despite if their income rose in absolute terms or not. Here, Greenwood and Holt (2010, p. 404) outline three ways in which negative trickle-down is manifested: "1) changing standards of consumption; 2) fewer publicly produced goods and services, and 3) unequal increases in purchasing power for goods with inelastic supply." This can be seen to be true in the case of Vrygrond/Capricorn where the community experiences high levels of poverty and unemployment despite being located next to the CBP which boasts a high economic value.

“For 40 years, elites in rich and poor countries promised neoliberal policies would lead to faster growth and the benefits would trickle down so that everyone would be better off” (Stiglitz, 2019). Yet, economist Joseph Stiglitz (2019) highlights the slowed growth evident around the world today and that the benefits of that growth – namely, income and wealth – flowed up to a very few at the top, instead of trickling down as promised. “We are now experiencing the political consequences of this grand deception: distrust of the elites, of the economic ‘science’ on which neoliberalism was based and of the money-corrupted political system that made it all possible” according to Stiglitz (2019).

“Globalization was oversold. Politicians and some economists wrongly argued for trade agreements on the basis of job creation. The gains to GDP or growth were overestimated, and the costs, including adverse distributional effects, were underestimated” (Stiglitz, 2017, p. 2). Stiglitz (2017) explains that even if profit gains are made by corporations, the marginalised can end up worse off if they get a smaller share. For example, large parts of the USA – the ‘bottom 90%’ – have been struggling financially, despite overall increases in the GDP (Stiglitz, 2017). This reality has proved that trickle-down economics and neoliberal globalization has failed to serve the majority of the country leading to major political and social consequences (Stiglitz, 2017). This failure has also shown to be true in the case of Vrygrond and the CBP.

Beginning in the mid- to late-seventies, increases in inequality parallel a “rising gap between growth in productivity and growth in wages” as a result of the rules governing globalization and the neoliberal market economy (Stiglitz, 2017, p. 12). “Today the trend to greater equality of incomes which characterised the postwar period has been reversed. Inequality is now rising rapidly.” (Stiglitz, 2016, p. 1). Hence, Stiglitz asks for an urgent rethinking of the trickle-down notion and its theoretical justification. He further shows that “far from being either necessary or good for economic growth, excessive inequality tends to lead to weaker economic performance” (Stiglitz, 2016, p. 1). According to Stiglitz (2016), inequality harms the economy in three key ways: Firstly, by leading to weak aggregate demand due to the income distribution discrepancies that restrain consumption for the majority. Secondly, through the correlation between ‘inequality of outcomes’ with ‘inequality of opportunity’ whereby a lack of access to educational opportunity, and to adequate nutrition and health, fuels not only weaker demand today but also lower growth in the future. Finally, greater inequality tends to correlate with decreased investments in public infrastructure that could enhance productivity, resulting in a weaker and more unstable economy.

“We are living through an unprecedented moment of multiple crises. … The very richest have become dramatically richer and corporate profits have hit record highs, driving an explosion of inequality” (Christensen, et al., 2023, p. 2). In an Oxfam report, titled ‘Survival of the richest’, Christensen et al. (2023) critique the rapid accumulation of wealth over the last 10 years by a tiny elite, during which “the richest 1% of humanity has captured more than half of all new global wealth” (Christensen, et al., 2023, p. 8). Moreover, the report highlights the correlation between the recent cost-of-living crisis – with consistently rising food and energy prices – and a ‘cost-of-profit’ crisis as corporate price profiteering drives “at least 50% of inflation in Australia, the US and Europe” (Christensen, et al., 2023, p. 8). Furthermore, The World Bank announced in 2022 that “global progress in reducing extreme poverty has come to a halt” amid “the largest increase in global inequality and the largest setback in addressing global poverty since World War II” (Christensen, et al., 2023, p. 7). However, Christensen et al. (2023) argue that inequality is not inevitable, but rather a policy choice. “Governments can take clear and concrete, practical steps to radically reduce inequality and give themselves the fiscal firepower to protect their people. They can choose to help them safely through crises, instead of imposing unnecessary suffering on them through austerity policies” (Christensen, et al., 2023, p. 13).

In SA, high levels of wealth inequality have persisted since the end of apartheid (in 1994). While the South African government has implemented several policies to address this socio-political and economic inequality, they have remained unable to effectively employ these policies to significantly reverse the past colonial and apartheid legacies and successfully redistribute the country's wealth (Fortuin, et al., 2022). This is clearly illustrated by 'the wall' and division between Vrygrond and the CBP: in Vrygrond, 77% of households have a monthly income of R3200 or less, as found by the Sozo Foundation (NASCEE, 2023), meanwhile, the CBP sells and rents industrial spaces that cost millions of rands, and boasts businesses which earn annual profits upwards of one million dollars. For example, Charlotte Rhys – a large luxury bath, body and home producer – reached a turnover of R10 million (±$540 000) in 2006 (Verduyn, 2009), and today has a profit margin of approximately R70-100 million ($3-5 million). Additionally, in 2015-2017 alone, the business park was able to double land values during which land was sold/leased for a total value of approximately R54 million (eProperty News, 2017). Hence this aligns with the fact that, according to Statistics South Africa (Stats SA, 2022), the labour market is by far the biggest contributor to income inequality in SA (with a 74.2% contribution), and is heavily racialised and gender-biased, which can clearly be seen in the case of Vrygrond and the CBP.

The Capricorn Business Park (CBP) & The Wall

The CBP was established in 1995, with its environmental management system approved in 1998; however, it was only in the early 2010's that a substantial number of businesses began to settle here, and it has been growing ever since (Peck, 2009). The business park also has a working relationship with the Cape Town Environmental Educational Trust (CTEET), the Homeowners Association and the Zandvlei Trust. For example, the Zandvlei Trust, in collaboration with the CBP, facilitated in the planting of indigenous plants in the park and surrounds to create plant corridors of local indigenous flora which link several parks and pavements in Muizenberg East and along the False Bay Nature coast (Western Cape Government Environmental Affairs & Development Planning).

The CBP was initially planned and approved as a 'science park' before becoming a business park as it stands today. In the beginning, there was also an agreement that was made by the owners of the business park (as a condition for its establishment) which stated that the businesses taking up residence in the park would employ local people from the surrounding communities. However, Mandy Marr (the ward councillor) stated that most of the businesses, currently located here, moved to the CBP from other locations and brought their own employees with them into the new space which, consequently, has left very little opportunities for local residents to be hired since most job positions in these businesses are already filled. What becomes important then is how to hold these businesses accountable for the promises made by the business park to the community and for their own Corporate Social Responsibility (CSR). However, this is not an easy task, and it goes against the neoliberal capitalist mode of production which promotes individual success and exploitation over care (as will be discussed).

Figure 6
The highly securitized entrance into the CBP on the NW side. Photograph (Google, 2023).

Experimenting with research methods that might be catalytic rather than only descriptive, I attempted to aid in the formation of relationships between several businesses in the CBP and WRM. However, I was largely unsuccessful. I began by sending some emails to various businesses in the business park which seemed like they could contribute donations (either in the form of funds or assets) to WRM urban food garden. I got no response. Following advice from my supervisor, I then personally approached people working at the front desk at the Faithful to Nature store and Kelpak offices in the CBP. My reasons for approaching these two particular businesses were because Faithful to Nature had an existing relationship with WRM, whereby they have previously donated to the NPO which I hoped to engage the business around, and because Kelpak manufactures organic fertilisers which would be highly beneficial in the urban food garden at WRM. Despite multiple visits, however, I was not able to speak to a relevant party in person at the businesses but was rather given different email addresses to contact. None of my emails got responses. In a meeting with the ward councillor and Mymoena, I was informed that there is a middleman that is supposed to be the go-between for people trying to engage businesses in the business park, although apparently this person only provides another 'wall', figuratively closing the business park off from outsiders. Following this revelation, Mymoena suggested that the only way to effectively reach businesses with a proposal is to approach the trustees. However, as to how this might be achieved, I am still unsure.

My next plan of action involved testing the quality and composition of the borehole water that is used to irrigate the food garden at WRM. With these results in hand, I planned to approach a water treatment business in the CBP in the hopes of obtaining their services (in the form of treating the borehole water at WRM as a donation). However, due to delays in gaining funding, the water results were only obtained in March 2024, so any plans to approach the water treatment company in the business park would have to be done in post. Nonetheless, I have analysed the results in the next chapter on waste as part of an exploration into the inundation of waste and pollution that is experienced in Vrygrond.

I did, however, gain some useful insight on an existing connection between the business park and Vrygrond, courtesy of a Vrygrond resident with whom I conversed towards the end of my research period. This interviewee, Okuhle, is an undergraduate student at UCT who moved to Vrygrond at the age of 5 years old and has several ties to the CBP. In contrast to the responses that I had received from the volunteers at WRM, Okuhle claimed that the business park did in fact offer job opportunities to the residents of Vrygrond and Capricorn, albeit in a limited capacity. For example, Okuhle's aunt and sister have previously been employed (on a casual/temporary basis) at Charlotte Rhys in the CBP. Regardless, Okuhle conceded that the business park is largely closed off to the community in Vrygrond, and that many of these residents are not able to harness the job opportunities here (she did not say

why this might be though). Moreover, Okuhle argued that while some people accuse the CBP of taking advantage of the surrounding communities, she feels that we should rather focus on what they are doing right for the communities and hold them accountable for promises made and damage done.

At the same time, Okuhle stated that several businesses within the business park donate funds to the City Bay Church's non-profit organisation, Siyakhula (located on the premises), which then conducts charity work in the surrounding communities using these funds. Despite my many attempts to contact and meet with Siyakhula staff, I received no response from the organisation, so I have no confirmation of how these funds are collected and distributed or who benefits from them. The staff at WRM, including Mymoena, Kyle, John, and Sipho, however, reported a distinct lack of funds flowing from any of the businesses in the CBP to WRM, and more generally, Vrygrond. Nonetheless, Okuhle noted that many of the foundations, non-governmental or non-profit organisations and schools located in Vrygrond seem to receive a multitude of donations from various businesses and organisations, both regionally and internationally. While it may not be consistent, WRM has indeed received donations, mostly in the form of specific assets and supplies instead of monetary funds, for example seedlings from Philippi Groente Verpakkers, equipment and construction from All4All, and horse manure from Lains Stables, Constantia. However, there is an apparent problem of, particularly, international organizations coming to the area to provide aid and often starting projects but then leaving without passing on the knowledge or support to continue the projects, which are subsequently neglected or abandoned altogether. This was, certainly the case with the nursery at WRM that was built by an international organisation (All4All) who then left without ensuring the longevity of the project.

My experience of the business park, which was corroborated by all the volunteers that I spoke to at WRM, was one of enclosure and disconnect from the broader community. Mymoena Scholtz, at WRM, argued that the CBP's businesses need to "be seen on the ground" in Vrygrond by creating more opportunities for interaction and partnerships (with the community so that they can build trust and respect within the community which will further improve relations and safety in the area. With its large gates and security, the business park is accessible only to the businesses and their customers essentially – as such, the lake and conservation area in the middle of the business park is not accessible to the majority of local residents as a recreational or educational space.

Additionally, the business park appears to exemplify the fragmentation caused by boundaries and walls, further entrenching age old class and race divisions from the colonial and apartheid eras in SA. At the same time, there is a perceived loss of space by several residents who feel that the space taken up by the business park's development was owed to their community and should have been rather developed to meet the need for housing. In a similar vein, an enclosure of the commons can be perceived, whereby residents of Vrygrond now have limited access to the space and 'nature' encompassed by the business park under mainstream neoliberal and conservation rhetoric which promotes divisions between 'nature' and society.

In a context such as this, boundaried conservation seems an inappropriate intervention to address the ecological crises we face. This is proved to be further contradictory when juxtaposed with the 50-hectare waste dump situated around 600 meters beyond the business park; a waste dump that is itself located within the parameters of the False Bay Nature Reserve. Meanwhile, Vrygrond across the wall faces compounded socio-political, economic, and spatial inequalities that marginalize the community, with many residents facing chronic poverty and hunger. This reality, therefore, calls up a statement made by Greta Thunberg in which she exclaims that humanitarian crises and environmental crises go hand-in-hand and need to be addressed in conjunction with one another: "We can't solve the climate crisis in a world where people are suffering, and people don't have basic human rights." This entanglement of humanitarian needs and ecological crises has been echoed by many authors and

activists alike, with climate change increasingly threatening both. For instance, the World Wildlife Fund (2023) highlights that "as the climate crisis fuels more intense disasters, environmental issues and humanitarian needs are growing increasingly intertwined." Moreover, some people have even suggested that our current disconnection/alienation from nature can produce unjust social relations (Cock, 2007). Nonetheless, there is a growing body of literature that highlights the connections between the crisis of nature and the crisis of justice, with which this thesis is aligned.

In my research, then, I endeavoured to make connections and establish networks across the wall – i.e., resourcing a network to act, as my supervisor put it – as part of a broader exploration into the creation of caring communities. Subsequently, the question of how to build community relations across a wall like this proved a daunting task. This was compounded by the difficulties that I experienced in trying to get information both about, and from, the businesses in the CBP. I can speculate that the reason for these difficulties might be because of gatekeeping and fear of reputation, or guilt, yet I still have no accurate answers. In response to my failed attempts at engaging several of the businesses in the CBP, Mymoena at WRM told me that I need to make contact with the Trustees, however, this proved no easier and again I came up empty handed.

Figure 7
The wetland conservation area within the CBP. Photograph (Berning, 2023).

Enclosure of the commons has arisen under capitalism as both a condition for the system's success through promotion of inequality – which forms part of the 'background conditions of possibility for exploitation' as Nancy Fraser (2022) theorizes within the 'hidden abode' of (cannibal) capitalist production following on from Karl Marx's defining features of capitalism – and as a means of nature conservation – under the logic of an inherent division between humans and so-called 'nature' which has become entrenched within the era of the Anthropocene or, rather, the Capitalocene, and further serves the capitalist pursuit of exploitation. Nonetheless, practices that enclose the commons can be traced back to early colonial beginnings which sought to place ownership on (often appropriated) land. All of this forms part of what Marisol de la Cadena (2015) calls the 'anthropo-not-seen' which she describes as "the world-making process through which heterogeneous worlds that do not make themselves through the division between humans and nonhumans – nor do they necessarily conceive the different entities in their assemblages through such a division – are *both* obliged into that distinction *and* exceed it."

It is through this lens that the CBP, as an economic hub following neoliberal capitalist logics and as a space of 'nature' conservation, can be analysed. It is also in this light that multiple forms of division –

spatial, social, economic and political – start to emerge. Yet it is important to note that 'nature' and its more-than-human assemblages tend to defy human-made boundaries as they are caught up in intricate ecological entanglements which sit outside westernised theorisations of world-making as Anna Tsing (2013) makes clear through her conceptualization of more-than-human sociality. Here, Tsing (2013, p. 40) proposes more-than-human sociality as a way to "understand human sociality neither as conquest of other species nor as a parallel to other ways of being–but instead as an ingredient in social worlds in which both humans and non-humans live together."

At the same time, the CBP as an urban development needs to be located within the broader history of South Africa. Ivan Turok, in a 2012 article, outlines the fractured urban development that followed colonial and apartheid spatial planning practices in SA and which post-1994 remains fragmented due to the lack of a consistent national policy for planning and managing subsequent processes of urbanisation. In fact, the neutral stance taken by post-1994 government did nothing to directly address the physical manifestation of social damage from the past resulting in continued legacies of segregation in urban areas – as observed in Cape Town today. Moreover, Turok (2012, p. 1) notes that "ambiguity towards urbanisation also translates into a reactive, indifferent and sometimes hostile approach towards informal settlements and backyard shacks" – such as experienced in Vrygrond. Notably, the remaining fragmented form of South African cities today boasts harmful social, economic and environmental consequences which the post-1994 government seems to recognize yet has implemented policies that are "too short-term and sector-specific to bring about significant settlement restructuring" according to Turok (2012, p. 1).

Infrastructure & Inequality

> *"Some of the most important historical aspects of the settlement include its history of resistance to attempts to eradicate the settlement during apartheid years, its tumultuous history of formalization in the midst of conflict, and the rapid population growth since formalization with a proliferation of backyard and informal freestanding dwellings. … Existing planning policies do not seem to have a significant impact on the settlement, and are hindered by a lack of alignment with the realities of the largely informal context." (Davies, 2014, p. 74)*

Courtesy of colonialism and apartheid through South Africa's history, land and segregation are major points of controversy in the country today. In fact, "the effects of South Africa's apartheid spatial planning policies continue to be evident in the region, with many of the surrounding suburbs remaining starkly defined in terms of race and income" (Davies, 2014, p. 61). Nowhere else does this history and its legacies seem more apparent than in Cape Town which still experiences land injustices to this day. As noted by Turok, Visagie, and Scheba (2021, p. 88), Cape Town remains sharply divided with social and economic inequalities continuing to be aligned with race, "although the causes have shifted from apartheid controls to the economy and labour market." In fact – as noted in the introduction – Cape Town is one of the most unequal cities in one of the most unequal countries in the world and the Vrygrond-CBP locale is a clear illustration of this inequality. In this space, we see Vrygrond as a partially formalised, but still largely informal, settlement that is densely packed with marginalised, generally poverty-stricken households juxtaposed with the CBP next door which constitutes many businesses, some of which are part of multinational corporations raking in million dollar profits each year.

Another legacy of the urban spatial planning policies conducted by the apartheid government relates to the proximity of settlements to the CBD, which correlates with race and class. In this regard, Amin & Cirolia (2018, p. 16) highlight the power of physical distance whereby the cartography of informal settlements, that was constructed under the apartheid policies of spatial confinement and distanced segregation, now "lingers as a key determinant of social prospect." In this way, the infrastructures of informal settlements are implicated and agentic in the governance of those residing in these settlements (Amin & Cirolia, 2018). This is especially true in Cape Town where the suburbs surrounding the CBD and Table Mountain are largely affluent in nature, while lower-income areas and informal settlements remain on the outskirts of the city showing little institutional reform following their establishments as 'townships' and areas designated for people of colour under the apartheid regime. The location of Vrygrond also follows this divisive spatial planning and is situated approximately 25km from the city centre in Cape Town. This distance, today, constrains economic flows from the city's CBD to this suburb, as the travel costs between the two areas are not easily affordable to residents in Vrygrond, many of whom are unemployed. Vrygrond's locale is further denoted as being on the 'fringes' when considering the placement of the Coastal Park landfill to the east of the settlement as landfills are generally positioned long distances from the city centre, out of the "public's" eye (Casas, 2021) and in 'sacrifice zones' – namely, a space in which the health and quality of life of a community are compromised to serve capitalist practices (de Souza, 2020) – as will be discussed in chapter 3. It is in this context that I will now discuss the establishment and growth of Vrygrond as a settlement. Aside from differences in physical proximity to the CBD, the density of settlements also reflects apartheid urban spatial planning policies with a higher density across the Cape Flats than across the Southern Suburbs, for example.

Vrygrond underwent formalisation processes following the purchase of land adjacent to the settlement for the development of the CBP. This came about as local community leaders, and later the Vrygrond Community Development Trust (the Trust), established in 1997, put pressure on the municipality to deliver the much-needed housing, infrastructure and services to the area as a condition for the development of the business park to go ahead undisturbed. This process did not go uncontested, but the agreement was ultimately delivered. When deciding on the zoning of Vrygrond's residential plots as part of this formalization, the municipality designated them as 'SR1' which essentially means that their intention was to develop Vrygrond as a "fully formalized suburb in which residents would not pursue incremental upgrading and informal economic activities" (Davies, 2014, p. 70). Therefore, the area was intentionally designed for limited growth leading to what many perceive as an infrastructure failure due to the high density of the settlement today. This occurrence seems to be part of a bigger issue in African countries whereby "insufficient attention is paid to the dynamics of urbanization and the nature of growth, including the different ways in which cities can support growth and the varied forms or composition of that growth" (Turok & McGranahan, 2013, p. 466).

Vrygrond has an estimated population of somewhere between 18 498 (from the 2011 census[11]) and 50 000 (a more recent, but unofficial, estimate according to several sources) which covers approximately 0.82 km² - resulting in a substantially high density. In fact, the Cape Flats District SDF Review in 2022 reported Vrygrond as having one of the highest population densities at 49 642,59% (City of Cape Town, 2022) or between 20-75 DU/ha gross residential density (Naude, 2023). Between 1999-2002, formal housing was established within the area where "1 500 formal houses with formal electricity, water and sanitation, 100 serviced plots, and formal infrastructure including roads and stormwater drainage" were delivered (Davies, 2014, p. 5). Following this formalisation, the

[11] The 2022 census does not provide detailed population data for sub-districts, such as Vrygrond, only broad data for the entire City of Cape Town.

settlement's population has grown significantly with many of the formal RDP houses accruing backyard dwellings and/or second story developments (many of which are not built to code, according to the volunteers in WRM's garden) to accommodate the rising density of people moving into the area (many of which migrate from other parts of the country and also the continent). The relative accessibility and proximity to the CBD in Cape Town – as compared to other lower income areas – combined with a lower cost of accommodation in Vrygrond are major factors in this high level of migration into the area and its high population density (Davies, 2014).

The prevailing narrative of Vrygrond, then, centres around physical improvements in the area (such as service, infrastructure and housing delivery) alongside "an overwhelming proliferation of social problems that increasingly characterize the daily experiences of Vrygrond residents" (Davies, 2014, p. 47), which was echoed through all my interviews and research. Many long-time residents of the area, reminisce about safe and socially cohesive times in the 'old Vrygrond' prior to development. One Vrygrond resident named Chris, while at a community mapping workshop organised by Amava Oluntu[12], described the area as once being 'green' and the people as being 'free' before formalisation created new problems and challenges – namely, fragmentation of the community, increased density and a loss of 'nature' among other social problems (such as increased crime, violence and gangsterism). This resident then went on to state that now 'Capricorn is not for us'. Meanwhile, development of the CBP remains largely contained, with the promises of economic growth of the broader area being generally unfulfilled.

In the last ten years, crime has generally increased (by 10.18%) across the country, as noted in the South African Police Service (SAPS, 2013) annual crime statistics. When compared to crime statistics from 1983, as noted in a research paper by Naidoo & Dreyer (1984), the figures from 2023 indicate a general decrease in crimes reported, excluding murder (with a 30% increase, approximately) and drug-related crime, the latter of which saw an almost tenfold increase. This fits with the accounts of residents in Vrygrond, who expressed that gangsterism and drug-related activities have skyrocketed since the formalisation of the area at the beginning of the 21st century.

This rise in social issues and crime in conjunction with the formalisation of settlements, as noted here, has also been observed in other parts of the world. For example, Janice Perlman (2004) similarly found in the urban upgrading schemes of the favelas in Rio de Janeiro. In tracking these informal settlements, Perlman similarly found that while "there have been considerable physical improvements, other dimensions of life in the favela have drastically worsened" (Roy, 2005, p. 150). In this regard, Roy states that "the limitations of urban upgrading are the limitations of the ideology of space. In such policy approaches, what is redeveloped is space, the built environment and physical amenities rather than people's capacities or livelihoods" (Roy, 2005, p. 150). This emphasis on the physical environment is then, according to Roy, an 'aestheticization of poverty' (Roy, 2004), whereby the focus is on an 'aesthetic upgrading' rather than the upgrading of 'livelihoods, wages, political capacities' (Roy, 2005). Therefore, Roy (Roy, 2005, p. 155) concludes that "informality at first glance seems to be a land use problem and it is thus often managed through attempts to restore 'order' to the urban landscape or to bring it into the fold of formal markets. However, … it can be argued that the more fundamental issue at stake in informality is that of wealth distribution and unequal property ownership, of what sorts of markets are at work in our cities and how they shape or limit affordability." Furthermore, informality can be seen to be produced by the state and so dealing with informality then "partly means

[12] Amava Oluntu is an NPO based in Cape Town that is focused on creating "interpersonal spaces of learning" and empowering the city's youth (Amava Oluntu, 2020).

confronting how the apparatus of planning produces the unplanned and unplannable" (Roy, 2005, p. 156).

According to Davies (2014), the formalisation of Vrygrond ultimately shows a clear disconnect between state city planning and local level development in the area, in which planning policy documents are inadequately reflective of the local knowledge of Vrygrond residents and the relevant ward councillor. What's more, the planning and design of this development was mainly technocratic and not widely relevant to the locale (Davies, 2014). Further highlighting the disconnect that occurred between the planning processes behind the formalisation of Vrygrond and the experiences on the ground, Davies (2014) notes how both the ward councillor and the local residents had – and, in fact, continue to have – little opportunity to add input into the municipal plans which, in themselves, are an insubstantial source of guidance and strategy for the development of the area. Furthermore, the general misalignment between official laws and policies can, consequently, be seen "as a source of direct and indirect structural violence for residents living in informal contexts" (Davies, 2014, p. 108). As a result, the ward councillor and local NPOs play a more significant role in the development and wellbeing of the community. However, an overreliance on ward councillors is a challenge wherein they lack the capacity to fulfil all of the demands made of them. Furthermore, ward councillors often have limited influence over planning and policy structures due to the centralised nature of these decision-making configurations (Paradza et al, 2010 as cited in Davies, 2014). Nonetheless, as a result of state failures, Vrygrond residents tend to shape their daily lives and livelihoods around neighbourhood, friendship and family networks (van Heusden & Pointer, 2006) – such as seen at WRM.

Additionally, the theoretical framework and actualisation of the formalisation process in Vrygrond can be placed within the broader neoliberal trend in which the role of the state in service delivery is minimized and the responsibility for further development is removed from the state and communal organizations, instead being place rhetorically in the hands of individuals and households not taking into account the capacity of these individuals and households to do so, which is ultimately shaped by infrastructural and institutional constraints (van Heusden & Pointer, 2006). Accordingly, Turok (2004) claims that urban and regional development are historical, path-dependent processes and new industries are, thus, established in this context where they are modelled on inherited conditions. Hence, Amin & Cirolia (2018, p. 21) argue that while the "agency of materiality, improvisation, and citizens" must be recognised, this cannot be at the expense of proactive efforts to dismantle the systemic driving forces behind the entrenchment of inequality and subjectivity in SA.

Figure 8
An aerial photograph of Vrygrond from 1973 (ArcGIS, 2014).

Figure 9

An aerial photograph of Vrygrond and the CBP – block 3418AB (ArcGIS, 2022). The red square indicates the section illustrated in *Figure 13* in Chapter 3.

Neoliberal Capitalism & The Wall

In South Africa (SA), specifically, race still remains closely interlinked with class in a way that creates 'environmental and health vulnerabilities' (Cock, 2007, p. 201), many of which arise in so-called 'informal settlements', such as Vrygrond. Accordingly, in Cock (2007) conceptualises environmental racism under neoliberal capitalism as the production, and reproduction, of social inequality in which the rich continue unsustainable patterns of consumption, while the poor are excluded from livelihoods. In this regard, capitalism can be seen to produce wealth, "but also poverty, insecurity and waste, as part of its disintegration of ecosystems" (Kovel, 2002: 66 as cited in Cock, 2007, p. 206).

In her book, *Cannibal Capitalism,* Nancy Fraser (2022, p. 16) describes the capitalist system as a type of society that *"*empowers a profit-driven economy to prey on the extra-economic supports it needs to function…." In this sense, Fraser expands on Marx's four 'contradictions of capitalism' – namely, the ecological, the social, the political, and the racial/imperial – that can each be correlated with a genre of cannibalization in which they embody a 'crisis tendency'. According to Fraser (2022, p. 45), these crisis tendencies are not internal to the capitalist economy as in Marx's conceptualisation, but rather grounded "in the contradictions between the economic system and its background conditions of possibility – between production and reproduction, society and nature, economy and polity, exploitation and expropriation." In particular, the contradiction between production and reproduction has resulted in a crisis of social reproduction and care which consequently feeds a larger crisis across the whole system since social reproduction and carework are essential to sustaining individuals and entire communities (Fraser, 2022). In order to resolve this crisis of care – the roots of which lie in capitalism's inherent social contradiction – Fraser (2022) maintains that a deep structural transformation of this societal order is required; whether and how this happens remains to be seen. Subsequently, the contradiction between exploitation and expropriation underlies Fraser's argument that capitalism maintains a structural basis for racial oppression because of its reliance on expropriation as a necessary condition for exploitation whereby capital accumulation necessitates a social division, namely the '(doubly) free workers' whom capital exploits in wage labour (as theorised by Marx), as well as the 'unfree or dependent subjects' whom capitalism cannibalizes by other means (Fraser, 2022). In the current period, then, Fraser highlights how financialised capitalism universalizes precarity to exploit and expropriate nearly everyone simultaneously. Nonetheless, it can be seen to still harbour 'racial disparities' and foment 'racial antagonisms'.

Sian Sullivan (2009) also argues that capitalism thrives on crisis. Here, she explains that capitalists aim to profit off crisis by attaching financial value to the risk of loss or hazard, thereby maintaining economic growth in times of crisis, which presumably benefits everyone. As such, Sullivan (2009, p. 18) argues that "the environmental crisis itself has become a major new frontier of value creation and capitalist accumulation" under the names of 'market environmentalism' and 'green' neoliberalism or capitalism. The argument, here, is that the rational abstraction and pricing of nature into assets, goods and services will counter environmental risk and degradation through measurement, exchange, offsetting and general minimisation. However, the production of environmental service-oriented landscapes tends to continue along histories of displacement for environmental conservation and food-producing practices alongside disruptions of cultural practices and formations in the global south. As a result, 'nature' is seen to serve culture, and "those dwelling in landscapes newly monetised for their provision of ecosystem services are themselves constructed as servers for visions of the appropriate nature of these landscapes, as perceived by policy and technical experts who, while globally mobile, frequently are based in distant urban locations" (Sullivan, 2009, p. 23).

However, Sullivan (2009, p. 26) emphasises that the allocation of financial value to the environment does not necessarily equate to embodied practices of valuing our environments and forming caring

interrelationships with a "sentient, moral and agential non-human world." Rather, 'the moral tone of social life' is lowered and further damage is done to both humans and ecosystems (Sullivan, 2009). Consequently, genes, species and ecosystems have become commodified in the capitalist system which has led to the acceleration of enclosure and primate accumulation so that natural capital can be liberated for the global, neoliberal market (Sullivan, 2009). The CBP has enacted this through its commodification and enclosure of the 'nature' within the park that it is trying to preserve. In this way, the CBP as a corporate fortress meets fortress conservation in its attempt to enclose the commons, and pursue global connections and profit within the neoliberal capitalist system.

The inequality apparent between Vrygrond on one side of the wall, and the CBP on the other, is, therefore, based upon the legacies of colonialist and apartheid's spatial planning policies, and has become reinforced in contemporary times by capitalist ideologies, such as those described by Fraser (2022) and Sullivan (2009) above. However, the flows that are found within informal spaces, like Vrygrond illustrate the potential for care and communal relations to bridge some of these divides. For instance, Pablo Sendra and Richard Sennett in *Designing Disorder* (2022) argue that in order to imagine an 'open' and vibrantly inhabited city, we need to welcome informality and allow for experimentation. Specifically in terms of borders, Sendra and Sennett (2022, p. 31) note that "the porous wall and the edge as border create essential physical elements for an open system in cities. Both porous walls and borders create liminal space – that is, space at the limits of control, limits which permit the appearance of things, acts and persons unforeseen yet focused and sited." Subsequently, they call for life-enhancing structural designs in the city over rigid forms, stating that "rigid, overdetermined forms are smothering the modern city. These unyielding environments suppress people's freedom to act, stifle informal social relations, and inhibit the city's power to grow" (Sendra & Sennett, 2022, p. 1). Sendra and Sennett (2022) further highlight the erasure of vitality from the city through the creation of boundaries and the elimination of the capacity to share resources with the people around you as major issues in today's cities. In this way, the CBP may be perceived as a rigid form that is reliant on the creation of boundaries in its functioning which limits the power and freedom of people living in, and moving through, the area, and impedes vitality and relations across the 'wall'.

However, as chapter 1 shows, flows of matter (such as is highlighted in WRM's garden), and flows of knowledge, skills, and care still emerge on the Vrygrond side of the wall. In a paper exploring the intersections between politics and matter, Amin & Cirolia (2018) analyse informal settlements in SA by detailing the intertwined plans, practices and materiality observed in these spaces. Here, Amin & Cirolia (2018) highlight the ways in which rights (including to housing, water, and democratic representation) are constantly reconfigured in accordance with new market inequalities and emergent power structures that both compound and reconstruct those of the past. In addition, the paper references Dierwechter (2004) who illustrates how the infrastructures of informal settlements "are not just the ground on which social life is conducted, but are key technologies of social organisation and experience: governing matter" (Amin & Cirolia, 2018, p. 4). In the end, Amin & Cirolia (2018) demonstrate how the cartographies, aesthetics, flows, and infrastructures of informal settlements in Cape Town are significant social forces that have been – and continue to be – shaped by policy decisions and social mobilisations in the city, and in the country. Moreover, the matter within informal settlements can be seen to have agency as they shape local social prospects, affinities and orientations, which the authors argue has to be understood as a form of 'socio-technological governance' (Amin & Cirolia, 2018). For instance, the soil, availability of funds and labour, and the social demographics (including marginalization and impoverishment) of the community in Vrygrond are all factors shaping the kinds of flows that exist within the settlement (see chapter 1) and across the wall.

This chapter has, then, provided the context in which WRM is working, as detailed in chapter 1. The focus here has been on the way in which the legacies of colonialism and apartheid have shaped the socio-political, economic and environmental dimensions experienced in Vrygrond today. Amin & Cirolia, (2018, p.21) sum up the focal point of this reality in stating that "in the new South Africa, the state violence of apartheid has given way to the violence of a neoliberal democracy, with all its market misallocations and private appropriations." This era of neoliberalism has brought about the large-scale privatisation of the commons and promised wealth distribution in the form of 'trickle-down', but rather an 'elite paradise' has been established through the practice of 'gush-up' (Green, 2020, p. 212; Roy, 2012). In this space, the 'wall' (i.e., the CBP's northern boundary wall) acts as a signifier of this historically cast spatial division. While I attempted to engage several businesses in the CBP in discussions around connections with WRM, I was met with yet more barriers, and ultimately was unsuccessful in this endeavour. Hence, the wall is still firmly in place.

While the wall acts as a meta-physical barrier in the space, Vrygrond becomes further divided from the business park when waste enters the political frame of reference in this case study. Subsequently, the final chapter to follow discusses the presence of waste in the area and how it comes to be politicized under the theory of *waste siege* as conceptualised by Stamatopoulou-Robbins (2020). Ultimately, these multiple divisions between Vrygrond and the CBP, combined with the environmental crises present here, provide an account of slow violence, according to Nixon's (2011) theory, as will be discussed below.

Chapter 3: Waste

> *"Waste is one of the most universal aspects of human life. Yet humans experience waste in very different ways. The cultural significance of waste changes across time and space, and so does the material form that waste takes in the twenty-first century some populations live in greater proximity to waste than others. Some are inundated by it, others not." (Stamatopoulou-Robbins, 2020, p. xi)*

Figure 10
The Coastal Park Landfill seen to be looming behind Vrygrond and the CBP as a mountain of trash, essentially. Photograph (Berning, 2023).

As you drive into Vrygrond from Prince George Drive, the Coastal Park Landfill looms up ahead, behind the settlement, as if mirroring the Muizenberg/Silvermine mountains behind you. This mountain of waste stands there defiantly as a physical representation of Cape Town's waste, which residents of the area are confronted with each and every day. Yet many of these residents (barring the CBP's occupants) do not have the privilege of getting their own waste collected and added to the pile (the landfill). In fact, driving through Vrygrond, waste can be found all around, with piles gathering in the vlei areas in particular. In a striking parallel with both Stamatopoulou-Robbins' (2020) account at the Israel-Palestine border and Stern's account at the Tijuana-San Diego border *Anthropocene* (Gan, et al., 2017), waste can be seen accumulating alongside the one edge of Vrygrond, in a vlei, bordering the CBP's outer wall, meanwhile inside the business park a mostly pristine environment can be found.

Waste – in the form of littering and illegal dumping, specifically – is one of the biggest environmental challenges in the Vrygrond area. This challenge was emphasised by several staff members and volunteers at WRM as well as the ward councillor, Mandy Marr. So far, waste management interventions from NPOs and the council have been largely ineffective and short lived. 'Waste siege' is a term which Sophia Stamatopoulou-Robbins (2020, p. xi) uses to describes "the material inescapability of dwelling in waste as a material environment." In her book, Stamatopoulou-Robbins argues that, in Palestine, waste is able to act upon the social as a 'political actor', thereby shaping politics and ethics. The besieging waste, that Stamatopoulou-Robbins (2020) speaks of, is a waste product of a political process; explicitly, the "material remains of a settler colonialism" in Palestine today (Stamatopoulou-Robbins, 2020, p. 18). The presence of waste in Vrygrond and the CBP can be

explored through this frame of 'waste siege' (as theorized by Stamatopoulou-Robbins), in which waste reinforces political and spatial divisions, and fuels ecological degradation, the burden of which disproportionately falls on the disenfranchised.

This intersection between waste and the social, can then be linked to Rob Nixon's concept of slow violence which refers to the gradual, invisible violence that is preceded by destruction delayed over time and space. Furthermore, Nixon (2011, p. 4) emphasises how marginalised communities – or the 'poor' – are the "principle casualties of slow violence" whereby "their unseen poverty is compounded by the invisibility of the slow violence that permeates so many of their lives." In this way, slow violence is seen to intersect with structural violence (including legacies of colonialism and racial oppression). Applied to my case study, the proximity of the Coastal Park Landfill and the inundation of waste in Vrygrond, can be interpreted as both a waste siege and slow violence experienced by the community members here whose marginalisation is closely tied to the effects of colonialism and apartheid in SA.

The Coastal Park Landfill is the second largest of Cape Town's three operational landfill sites, located in Muizenberg, to the east of Vrygrond and the CBP. As the landfill is coming to its end stages with limited capacity to take on more waste, two notable projects have begun onsite: Fountain Green Energy's methane-extracting gas project which is part of the City of Cape Town's waste-to-energy project and the new materials recovery facility (MRF) as being developed by the City of Cape Town and JG Afrika. The first project aims to extract methane gas from the Coastal Park Landfill and turn it into electricity that can be exported to the City's electricity grid. It is important to note that the project is expected to only produce 2MW (a very small amount of electricity that will not cover much of the City's total demand), however, successful implementation of this project is being heralded as 'an important milestone towards sustainability' (Engel, 2022), thereby benefiting the City's residents and gaining carbon credits for the City of Cape Town under the Kyoto Protocol. The second project, then, aims to reduce the amount of waste ending up in landfills by filtering out, and diverting, waste that can be recycled instead. This will be done through the construction of "a refuse transfer station (RTS) for compaction and transportation of waste, and a materials recovery facility (MRF) for the processing of recyclables" (Van Rooy, 2022). There are also plans to construct an organic waste diversion infrastructure that will remove organic waste from the waste sent to the landfill which will reduce the production of landfill gas. As such, the project is hoping to contribute to a 'more circular, waste-wise economy' in the city (Van Rooy, 2022), while also creating jobs at least 100 jobs for city residents (Venter, 2023).

While these two projects boast good intentions that foster sustainability in Cape Town, they should still be critically analysed in the context of their locale and the political context of SA. For instance, on recalling his reaction to seeing the Coastal Park Landfill, Marcela Guerrero Casis (2021) noted how "on the one hand, the scale of the operation in terms of space and materials, as well as the system in which trucks, reclaimers and formal employees of the site work, was nothing short of impressive; on the other, it was a poignant reminder of the stark social inequity that enables some to over-consume while others' livelihoods depend solely on what is disposed of as a result of that over-consumption"; a contrast that was discussed in chapter 2. Subsequently, landfills such as this speak to the principle of excess and the temporal sensibility of humans' relationship to contemporary waste (Stamatopoulou-Robbins, 2020). As such, landfills in this context and the existence of waste siege, as described above, are matters of the proportion of wastes in finite space – i.e., habitable earth. As this proportion grows in the favour of wastes, due to the fundamentality of excesses in the neoliberal capitalist system, the proportion of resources, upon which human life on earth depends, relative to waste shifts (Stamatopoulou-Robbins, 2020). How to transform this relationship remains a complex question that requires a dissertation of its own.

The framings of the methane-extracting gas project and the MRF development project both propose solutions to deal with the landfill reaching its capacity which, while they employ the language of 'sustainability', are ultimately short-term fixes to a much larger issue of overconsumption and excessive waste generation that can be further contextualised as part of the pervasive inequality experienced in SA. Furthermore, the methane-extracting gas project, in particular, is predicted to produce a minimal amount of electricity for the country, as compared to the benefits that the company (Fountain Green Energy) will receive, including profit and a ('green') reputation boost. Not to mention the air pollution and potential adverse health effects on the community in Vrygrond and the CBP due to the open flaring of methane at the Coastal Park Landfill several hundred metres across from the area, as part of this enterprise. This can, subsequently, be linked to the 'techno-aesthetics of change' that Stamatopoulou-Robbins (2020) observes in Palestine whereby notions of expertise and modern infrastructure are used to frame ideas of development over the realities of waste siege. In this regard, the two projects being developed at the Coastal Park Landfill are both being undertaken by private companies and endorsed by the government for their innovation and sustainability, while Vrygrond continues to contend with issues of poverty, lack of service delivery and an inundation of waste in the settlement. As such, this appears to be yet another reiteration of the government's commitment to development in spite of the social and environmental injustices that continue to abound.

Landfills in Cape Town are increasing in waste accumulation at 6% yearly, which, when coupled with the fact that most of the city's landfill sites (including the Coastal Park Landfill) are almost at capacity, illustrates that waste generation and disposal is not slowing down. Moreover, landfills are claimed to be the cheapest form of waste disposal (Roelf, 2005), a narrative that the government will surely maintain, yet a more sustainable alternative is desperately needed – specifically one that enact real change.

In South Africa, Cock (2007) claims that we have to deal with the threat of climate change and biodiversity loss alongside air and water pollution, water scarcity, land degradation, and excessive waste generation and dumping. However, the burden of these issues falls disproportionately on the marginalised communities who have to grapple with long-lasting legacies of colonialism and apartheid. This becomes particularly apparent in the case study of Vrygrond and the CBP. Vrygrond as a community has to contend with the insistent inundation of waste in their daily lives, whether in the form of litter and pollution or the landfill that sits several hundred meters away from the settlement. This reality, in conjunction with the spatial division of the area as signified by the wall, forms a remarkable parallel – albeit on a much smaller scale – to the wall dividing Israel and Palestine as captured by Stamatopoulou-Robbins in her book, *Waste Siege*. This analogy highlights the politicization of waste in Vrygrond through which Nixon's (2011) concept of slow violence becomes visible.

The following image – figure below – showcases several black refuse bins placed on the side of the (litter-free) road within the CBP which poses a stark contrast to figures above that picture piles of litter sitting alongside the roads in Vrygrond. Both photographs were taken on the same day by me, and together they clearly capture the effects of the unequal division maintained by the CBP's 'wall' between the two spaces, as illustrated in the form of waste siege – which has been discussed above in reference to Stamatopoulou-Robbins (2020). This experience of waste siege, in conjunction with the issues of water quality and pollution, as noted in Vrygrond alongside the CBP, can therefore be framed through the lens of the historical injustices endured in this space – as discussed in Chapter 2 – which reveals the slow violence (as theorised by Nixon, 2011) enacted upon this community. Moreover, the water testing results (discussed above), and research conducted at WRM (denoted in Chapter 1) highlight the effects of these divisions and slow violence on communities such as in Vrygrond. Yet,

what the people at WRM and in Vrygrond clearly demonstrate (as described in Chapter 1) is the presence of hope, resilience and ingenuity in their pursuit of habitability within the space.

Figure 11
The clean road and dustbins awaiting collection within the CBP, posing a stark contrast to the littered seen in figures above. Photograph (Berning, 2023).

Litter and Pollution in Vrygrond

Throughout my fieldwork at WRM in Vrygrond, I was constantly confronted with the abundance of waste pollution that exists in the settlement. For instance, when working in the garden at WRM, I observed that there was a consistent challenge of litter blowing, or being thrown, into the space. However, the two biggest challenges around waste, as noted by all the community members that I spoke to, are one, the highly polluted vlei located on the southern edge of Vrygrond, in front of the CBP's boundary wall, and two, the general dumping of waste in the settlement by companies who don't want to pay the costs to dump in the landfill. The latter is a concerning reoccurrence that several interviewees have, at some point, witnessed; one staff member at WRM recalled seeing a large truck enter Vrygrond and, subsequently, dump its contents – which consisted of empty fast food packaging and associated waste – in the settlement as it drove along, before turning around and leaving the area. The retention pond is another common dumping ground in Vrygrond, which one interviewee claims is largely linked to the spaza shops, although they didn't provide more information. Another observation came from Okuhle who noticed the way in which the presence of waste and pollution increased in Vrygrond in correlation with the growth in density of the settlement. This presence of waste in Vrygrond has been noted in other studies on the area, such as that of Davies (2014) who stated that public spaces here tend to be covered in sand, rubble, litter and other refuse. Furthermore, Davies (2014) expresses how the ever-present waste in public spaces along with high crime rights, and the occurrence of water retention ponds in winter, result in an underutilisation of these public spaces, especially in the form of recreation. In this regard, the flow and quantity of waste across the settlement forms a particular arrangement of governance in the use of public space as theorised by Amin & Carolia (2018).

During a meeting with Mymoena Scholtz (the WRM director) and the ward councillor, Mandy Marr, it was mentioned that there is an inadequate number of rubbish bins in the area, which is partially to blame for the litter, however, the councillor stated that there had previously been more bins but they

had to be removed due to improper use and emergent issues, such as the bins being set alight and the dumping of unwanted babies in the bins. In response, Scholtz suggested that there is a need for education around how to appropriately get rid of waste, and to raise awareness of the link between living conditions and health concerns so that residents become more personally invested in solving the problem and taking action. Even so, this implies that longstanding patterns of thought need to be broken which is not an easy task. At the same time, it begs the question: how do you get people to care for their environment/surrounds (by not littering, for example) when their environment (and in some ways, themselves) are made to be 'zones of sacrifice' through historical inequality and neoliberal patterns? The residents of Vrygrond are persistently inundated with waste, living next to a landfill of this scale and forced to deal with the city's waste; a reality which surely impacts the community's perceptions of their value and dignity. No wonder Scholtz described taking care of the environment as a 'long and painful process'.

Nevertheless, this highlights questions around how to implement long-lasting waste management interventions and whose responsibility it is to implement them. Besides, it seems crucial that the social injustices experienced by the community be addressed first, which then brings up the question of how to enact large-scale systemic changes, something that is linked to Karl Marx's concept of 'metabolic rift' whereby material flows have been disrupted by the modern (capitalist) ways of life which result in 'matter out of place' (as Lesley Green says) and waste being moved around the land, instead of fed back into the land, thereby breaking natural cycles and synergies (such as are practiced in permaculture). In this way, "Marx employed the concept of metabolic rift to capture the material estrangement of human beings in capitalist society from the natural conditions of their existence" (Foster, 1999, p. 383). At WRM, the volunteers, under the guidance of Chad and Codi from Gro-a-Garden, are attempting to mend this rift on a small-scale by implementing permaculture principles and making compost onsite using vegetable scraps from their soup kitchen and donations of horse manure from stables in Constantia.

Additionally, conflict arose at the Coastal Park Landfill in 2020 when violence followed the barring of Vrygrond community members and 'waste pickers' from the landfill site that is situated right next to their homes (Bezuidenhout, 2022). This showcases the contradiction whereby Vrygrond, as a community, has to deal with the burden of the landfill and its pollution, yet the community is unable to make use of the landfill for their own waste disposal and income (in terms of waste pickers who collect and recycle waste) purposes due to their social status according to the wealth hierarchy that is ever-present in the city of Cape Town.

Concurrently, inadequate collection services, lack of regulation around private companies, and discrimination towards informal waste workers/recyclers are all issues in waste management infrastructure that led to health hazards, employment losses and unfair working conditions which tend to affect the most marginalised of the country. Waste and health are especially important issues in Vrygrond that needs to be addressed. For example, Mymoena Scholtz witnessed a group of women working (sorting through trash) with no gloves by 'Mike's' in the recycling project which is a major health hazard. The ward councillor said, in response, that sometimes these women use old plastic bread bags as gloves, but Scholtz stressed that strong gloves and masks are needed to protect the health of these women. This, then, speaks to the importance of maintaining dignity, even – and maybe especially – in jobs that are often labelled as 'undignified', such as working with waste. It is imperative to note that these workers still have value and deserve to be provided with protective gear to safeguard their health. In addition, the settlement of Xakabantu that lies in the open land between Vrygrond and the Coastal Park Landfill, receives the worst of the air pollution resulting from dust and debris being blown off the top of the landfill by coastal winds. Despite the health and environmental problems that

follow, however, the occupying residents are more focused on the area as an available space to create a desperately needed shelter (as linked to housing crisis). How to resolve this contradiction remains a difficult task for the relevant NPO's and governmental parties.

Figure 12
Litter collecting alongside dwellings at the south-western edge of the settlement in Vrygrond, as seen from Drury Road. Photograph (Google, 2023).

Figure 13
Photographs (taken by C. Berning, 2023) illustrating the litter witnessed driving through the boundary roads in Vrygrond.

Water is one of the life sources on Earth which makes issues of water pollution, overextraction and scarcity incredibly important to address for the habitability of environments. Water is also something that tends to not obey humans' boundaries and barriers – something that can be observed in my fieldsite. Here, water flows across the 'wall' with both Vrygrond residents and occupants of the CBP experiencing challenges with water pollution and adequate access to water (albeit in different ways). On the Vrygrond side of the wall, many residents have limited access to water due to the informal nature of much of the settlement and then there is the issue of the polluted vlei's in the area. These polluted, standing bodies of water – such as the vlei that is situated right next to the CBP's wall (see figure 12 below) – pose a big problem for the residents of Vrygrond, as even if the water is not directly being used by residents, it is still seeping into the groundwater, and creating a breeding ground for bacteria and viruses etc. In addition, flooding is also a challenge in Vrygrond, especially because there are many informal dwellings in the area which are particularly susceptible to water damage. Furthermore, some people have taken to building 'shacks' on the low-lying vlei area in front of Vrygrond (see figure 11 below) which is highly prone to flooding and actually categorised as 'unfit' for housing/development for this very reason. Yet, as Mandy Marr said, any space in Vrygrond that can be

occupied, will be, because there are so many people that have nowhere to go thanks to poverty, the general housing crisis and a backlog of people waiting for government-provided housing; this makes the idea of any 'roof over my head' a priority for many people in this predicament who will set themselves wherever they can, despite the flooding risks, in this specific case. Mymoena Scholtz highlighted this issue after some particularly heavy rains experienced during this year's winter in June when she was dealing with many cases of flooded houses in the vlei area to the West of Vrygrond. Mymoena noted, in this instance, that the flooding compounds struggles for these people who already have very little and stated that she has tried to warn these people not to build houses here for this very reason, but their desperation seems to supersede her warnings. Furthermore, this demonstrates the well-documented notion that those who are – and will continue to be – the most vulnerable to the effects of climate change are the marginalised and poor.

Figure 14
Section from an aerial photograph of Vrygrond and the CBP – see *Figure 8* (ArcGIS, 2022).

Figure 15
A photograph of the litter/pollution and vlei area in front of the CBP wall along the south edge of Vrygrond (Carey Berning, 2023).

Within the CBP, then, water challenges have centred around the quality of water entering the space and in the lake in the middle of the park, as well as the use of water by businesses situated here. For example, an environmental report conducted in May-June 2013 by James Chapangara Mugabe (the

environmental site officer of the time) states that, according to the Environmental Management System (EMS), “water for irrigation in the park shall be obtained from the Cape Flats Wastewater Treatment Works. However, this water was shut down about four years ago [2009] due to poor quality of the water” (Mugabe, 2013, p. 3). As such, alternative water sources for irrigation in the park and for industrial use by the tenants were being proposed and reviewed at the time. These proposals included sinking boreholes to provide irrigation water, and/or pumping water from the lake for irrigation. The water quality of the lake and stormwater within the business park were also tested for this environmental report. Sample 1 from these water quality tests is of particular importance as this sample was taken from a point through which an influx of stormwater ‘originating from the northern section of the park’ and run off from the ‘Vrygrond pond’ enters the lake in the business park, essentially traversing the wall. This sample recorded the highest E. coli and coliforms count, and electrical conductivity (EC), ammonium (NH4-N) and sulphur trioxide (SO3) levels.

In 2019, a case study was completed by Dr Riemann (as appointed by UNEP) that analysed the Cape Town Major Aquifer System. The aim of this study was to determine the current water quality of the aquifer system which then provides an evidence base linking water quality hotspots to solutions and investment priorities. This analysis was also combined with a ‘multi-stakeholder driven process defining demand for water quality services’ (Riemann, 2021, p. i). For the purposes of this research, the Cape Flats Aquifer (CFA) is the central focus, which the study found to be highly salinized and anthropogenically contaminated with “nutrients, microbiological and industrial contaminants, hydrocarbons and potentially CECs” due to the extensive urban land cover in this setting (Riemann, 2021, p. 64). The salinity is, nevertheless, highly variable (EC ~120 mS/m), with some areas showing elevated EC values (~300-700 mS/m) due to ‘natural conditions and agricultural activities’, and some boreholes indicating >200mS/m due to very high chloride concentrations originating from a stormwater canal. In addition, the CFA’s water results showed generally low nitrate concentrations, with elevated concentrations linked to point sources such as WWTW and cemeteries, as was also the case of certain rivers and canals showing higher nitrate concentrations resulting from untreated sewage and stormwater entering the surface water system. At the same time, elevated contaminants such as hexavalent chromium and trichloroethylene in the CFA groundwater was found to be present near historical/closed industrial areas and landfill sites.

Overall, the CFA, as well as wetland and surface water systems in the area, were reported to be extensively degraded by the urban landscape (such as described in Vrygrond). Moreover, the area around the Cape Flats Wastewater Treatment Works (WWTW) was highlighted as a pollution hotspot with exceedances of fluoride, TOC, nitrates, E.coli, arsenic and Ammonia correlated with the unlined sludge and maturation ponds found at the WWTW. Both these WWTW and the Coastal Park waste site in Muizenberg east were identified by the report as major ‘potentially contaminating activities’ thereby threatening the quality of the CFA’s groundwater. Additionally, surface water sampling indicated high levels of pollution that impact the underlying groundwater quality across the Cape Flats with exceedances in EC, ammonia, arsenic and nitrates.

The following map, from the report, illustrates the DRASTIC Specific Vulnerability Index (DSVI) scores demonstrating aquifer vulnerability across the CFA (CCT, 2020c). In the bottom left quadrant, we see a large section of red indicating extremely high vulnerability which is where Vrygrond, the CBP and the Coastal Park Landfill are all located.

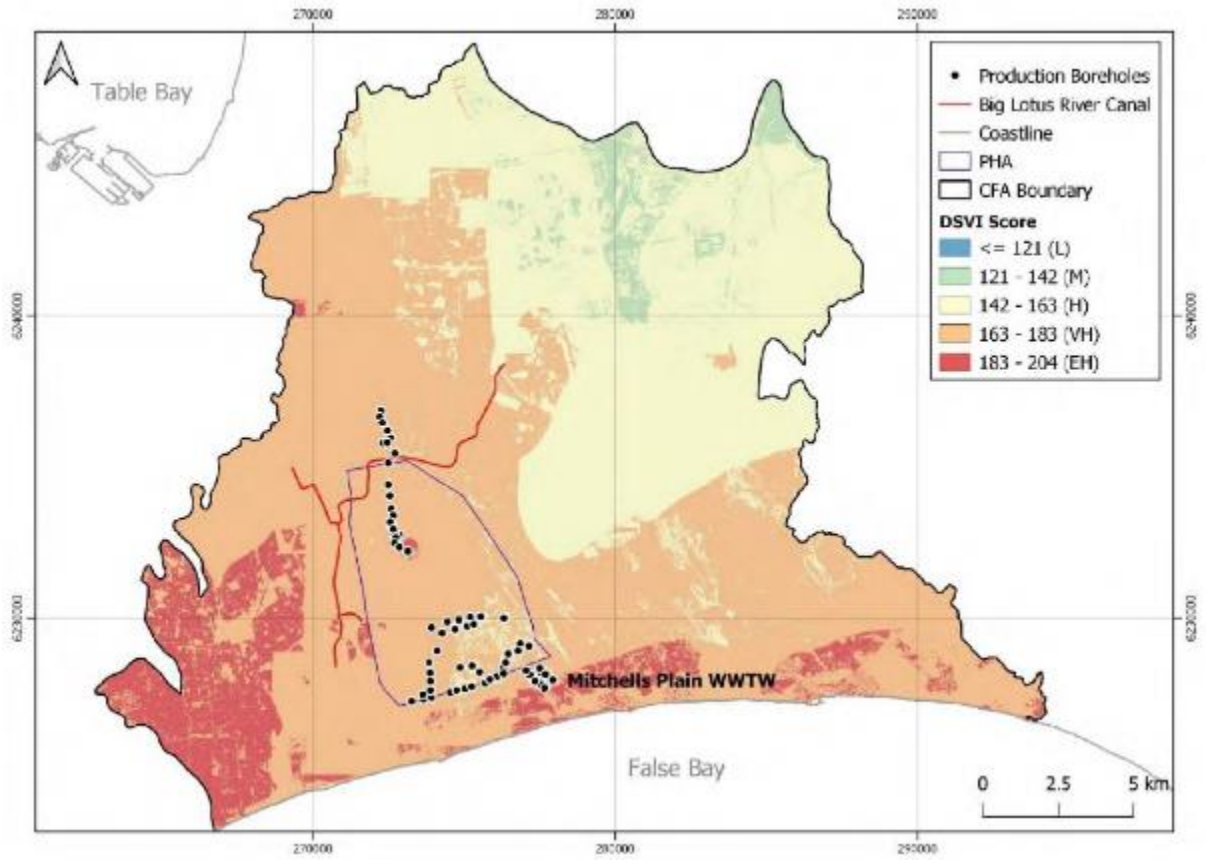


Figure 16
"DSVI map displaying aquifer vulnerability across the CFA (CCT, 2020c)" (cited in Riemann, 2021).

In conclusion, the report by Riemann (2021, p. 64) states that the "CFA groundwater will require extensive treatment via small scale, local treatment works prior to entering the distribution network, as indicated by the exceedances of water quality guideline limits."

Water Quality Analysis

As a result of climate change, countries all over the world are experiencing more frequent, and longer-lasting, extreme weather events (such as droughts, wildfires and violent storms) along with higher temperatures. Coupled with changes in ocean temperatures and sea level, over-abstraction of water sources is beginning to severely impact groundwater quality, with several coastal regions experiencing increasing salination of their groundwater. Overall, changes in water quantity due to climate change creates knock-on effects for the water quality. For example, "greater or lesser runoff affects the sediment loading, chemical composition, total organic carbon content and microbial quality of water" (World Health Organization, 2022, p. 98). Hence, it is crucial to monitor and maintain the water quality of current water sources for habitability in these environments, both at present and in the future. As noted above, the staff and volunteers at WRM, the ward councillor, and previous water quality assessments within the CBP (Mugabe, 2013) and the larger area Muizenberg East area (Riemann, 2021), all detail past and present issues observed and experienced in this area. In particular, Kyle and Lethabo from WRM both mentioned that they've observed the crops in the garden to sometimes grow poorly which they both partly attributed to inconsistencies in the water quality of the borehole water – used to irrigate the garden – with significant fluctuations in pH and salinity. As such, it seemed

important to analyse the water quality of the water used for consumption, washing and irrigation at WRM. Water samples, taken from the borehole and main outside tap at WRM, were then tested (via the SABS) to measure the quality of the water that the staff, volunteers and visitors have access to on a daily basis at the centre. Since this water flows across the wall into the CBP, connecting the two spaces, the quality of this water is important for both sides of the wall.

The water test results (refer to appendix 2) presented several elevated levels above recommended standards/limits. Although there were generally low levels across the board, there is still an issue of accumulation of minerals and heavy metals in the soil and consequently the yield in WRM's urban food garden. There were also quite low levels of heavy metals in the tap water, which may possibly need to be analysed further – especially in regard to the testing instrument's sensitivity to heavy metals. Water samples were collected from the main outdoor tap and the borehole (via a hosepipe) on WRM's property in sterile sample bottles, obtained from the SABS, which amounted to 2 litres of borehole water and 2.5 litres of tap water. The water flowing from the tap and the borehole are used by volunteers, staff and visitors at WRM for drinking, washing and irrigation purposes, daily. While the water samples from the tap and borehole show largely low levels of determinants in the water, these determinants accumulate in the soil, plants and bodies which take up the water consistently. Consequently, there is an accumulation of the minerals and heavy metals (contained within the water) in the soil and relative organisms within WRM's garden, which are further ingested by community members through the vegetables grown here and cooked in the meals distributed by the organisation's soup kitchen. Since there is no singular standard or guideline to measure water quality for agricultural/irrigation purposes, and the SABS only provided the SANS-241 (2015) drinking-water standards and industrial effluent guidelines in the report, I had to search for relevant standards and guidelines to measure my water test results against. As a result, the water test results were compared to the SA Water Quality Guidelines for domestic and agricultural use, the Food and Agriculture Organization (FAO) water quality for agriculture guidelines, World Health Organization (WHO) guidelines for drinking water and South African National Standard (SANS) -241 drinking water quality guidelines (2015).

Firstly, the SA Water Quality Guidelines for domestic use and agricultural use (irrigation) are two out of eight volumes published by the Department of Water Affairs and Forestry which provide the standards with which to measure, and therefore monitor, water quality through what they call "complex water quality management systems which involve role players from several tiers of government, from the private sector and from civil society" (Department of Water Affairs and Forestry, 1996, p. ii). The guidelines are applicable to any water that is used for irrigation or domestic purposes, "irrespective of its source (municipal supply, borehole, river, etc.) or whether or not it has been treated" (Department of Water Affairs and Forestry, 1996, p. 1). The agricultural use volume provides guidelines for the quality of crop-irrigation water, and the domestic use volume provides guidelines for water quality used for domestic purposes, especially for human consumption, but also including for bathing and other household uses. Secondly, the FAO water quality for agriculture guidelines is "a field guide for evaluating the suitability of a water for irrigation" which provides a guide "for obtaining maximum utilization of an existing or potential water supply" for agricultural irrigation (Ayers & Westcot, 1989). Thirdly, the WHO Guidelines provide recommendations for ensuring safe drinking water (World Health Organization, 2022, p. 1). These guidelines present "reasonable minimum requirements of safe practice to protect the health of consumers and derive numerical 'guideline values' for constituents of water or indicators of water quality" (World Health Organization, 2022, p. 2). Finally, the SANS-241 guidelines provide minimum water quality parameters, in the form of numerical limits, for drinking water to be safe for human consumption, and is based on the WHO (2021) Guidelines for drinking-water quality (South African Bureau of Standards, 2015).

Genthe and Kfir (1995, p. 30), in a report to the Water Research Common (WRC), recommend that the South African guidelines on water quality be revised and that "meaningful statistical descriptions of data processing" need to be addressed within these guidelines. The authors argue that the "available recommended guidelines lack suitable sampling statistics and do not describe the possible health implications of exceeding certain limits" (Genthe & Kfir, 1995, p. 1). F. Balfour, H. Badenhorst and D. Trollip in a 2011 WRC report, then, highlight the limited number of laboratories that conduct water quality testing in SA, many of which have limited capacities. The report also notes that prior to 2011 there had been little monitoring of "the quality control of the laboratories utilized in the testing of water. This has resulted in municipalities and the Department of Water Affairs (DWA) using both centres of excellence and those with little evidence of being able to produce reliable results" (Balfour, et al., 2011, p. i). Moreover, the report claims that "while the Department of Water Affairs (DWA) recognises water quality testing as being a problem area, no corrective measures have successfully been implemented to overcome these shortcomings thus far" (Balfour, et al., 2011, p. 1).

As a result of climate change, countries all over the world are experiencing more frequent, and longer-lasting, extreme weather events (such as droughts, wildfires and violent storms) along with higher temperatures. Coupled with changes in ocean temperatures and sea level, over-abstraction of water sources is beginning to severely impact groundwater quality, with several coastal regions experiencing increasing salination of their groundwater. Overall, changes in water quantity due to climate change creates knock-on effects for the water quality. For example, "greater or lesser runoff affects the sediment loading, chemical composition, total organic carbon content and microbial quality of water. … Changes in groundwater levels may also lead to altered mineral composition, and moves to deeper groundwater may tap into aquifers with high mineral content or high levels of specific constituents of concern for health" (World Health Organization, 2022, p. 98). Hence, it is crucial to monitor and maintain the water quality of current water sources for habitability in these environments, both at present and in the future. Furthermore, safe and clean drinking water are enshrined in the constitution as a basic human right for every South African citizen[13]. Not only is it important for the government to maintain safe, clean drinking water for the current citizens, but it is also crucial for figures in power to take into consideration the future generations that will one day inhabit this land.

Borehole Water Sample

As highlighted in Table 3 below, the water samples from the borehole at WRM indicate high levels of Electrical Conductivity (EC) – in reference to the SA Water Quality Guidelines for domestic use and agricultural use (irrigation) and FAO agricultural water reference limits), and dissolved solids – in reference to the SA Domestic water use reference limits. The total dissolved solids (TDS) level indicates the number of inorganic salts, as well as small amounts of organic matter, that are dissolved in water. TDS can end up in drinking water originating from "natural sources, sewage, urban runoff and industrial wastewater." (World Health Organization, 2022, pp. 470-1), and is directly proportional to the electrical conductivity (EC) of water. Electrical conductivity (EC) indicates the ability of water to conduct an electrical current as a result of the presence of ions in water (Department of Water Affairs and Forestry, 1996). High concentrations of salts in water make it taste unpleasant, cause diarrhoea, and can also adversely affect the kidneys. In terms of irrigation water, the presence of salts in soil and/or water reduces the amount of water available to the crop, thereby constraining the yield of the crop (Ayers &

[13] The Water Services Act (108) of 1997 outlines, for all citizens, "the right of access to basic water supply and the right to basic sanitation necessary to secure sufficient water and an environment not harmful to human health or well-being" as well as the regulation and maintenance of water services and sanitation (Republic of South Africa, Government Gazette [108:18522], 19 December 1997, Cape Town).

Westcot, 1989). According to a table (4) indicating 'crop tolerance and yield potential of selected crops as influenced by irrigation water salinity' (indicated by EC) (Ayers & Westcot, 1989), all seventy crops listed here would produce no yield at the EC levels recorded in the borehole water sample from WRM.

DETERMINANDS	RESULTS	REFERENCE LIMITS AND GUIDELINES					Riemann Study (2021) Levels
	CT0017	SANS 241-1 (2015) Drinking Water	SA Domestic Use	WHO Drinking Water	FAO Agriculture	SA Agri. Use: Irrigation	
Electrical Conductivity at 25°C in mS/m	**74**	≤170	0-70		0-3	≤40	Median: 94,8
Dissolved Solids at 180°C in mg/L	**461**	≤1200	0-450		<500		Median: 576

Table 1
Borehole water chemical analysis (SABS T0060) results and standards.

Sulphate (SO4) levels, at 93,31 mg/l (highlighted in Table 4 below), are substantially elevated above the FAO agricultural water (0-20mg/l) reference limit. Sulphates are found naturally in many minerals and are also used commercially in the chemical industry. Consequently, sulphates are often discharged into water via industrial wastes and atmospheric deposition (World Health Organization, 2022). According to the SA Water Quality Guidelines for domestic use, consumption of water with high concentrations of sulphates generally causes diarrhoea and imparts a bitter or salty taste (Department of Water Affairs and Forestry, 1996). However, the acute health effects of sulphate (diarrhoea) are temporary and reversible since the body is able to rapidly excrete the mineral through urination (World Health Organization, 2022).

DETERMINANDS	RESULTS	REFERENCE LIMITS AND GUIDELINES					Riemann Study (2021) Results
	CT0017	SANS 241-1 (2015) Drinking Water	SA Domestic Use	WHO Drinking Water	FAO Agriculture	SA Agri. Use: Irrigation	
Sulphate as SO4 in mg/L	**93,31**	250	0-200		0-20		Median: 40,4
Calcium as Ca in mg/l	**80,66**		0-32		0,01		

Table 2
Borehole water chemical analysis (subcontracted laboratory) results and standards.

Calcium (Ca) levels, at 80,66 mg/l (refer to Table 4 above), are significantly elevated above the SA water quality for domestic use (≤32mg/l) and FAO agricultural water (≤0,01mg/l) reference limits. Calcium is an alkaline earth metal that occurs naturally in varying concentrations in most waters and, together with magnesium, is one of the main components of water hardness, where 'hard' waters contain high concentrations of calcium (Department of Water Affairs and Forestry, 1996). Elevated levels of calcium are reported to have no proven adverse health effects, but can have an impact on water infrastructure.

Outside Tap Water Sample (used for drinking water and domestic use purposes)

The water samples from the main outside tap, that is connected to the City of Cape Town's water infrastructure at WRM, indicate a slightly elevated pH, although it is within range according to all the

standards. Regardless, a heightened pH – indicating that the water is more basic (as opposed to acidic) – may impact the ability of the crops in WRM's garden to flourish here. In fact, Suarau Oshunsanya (2019, p. 3) states that "soil pH is very important in agriculture due to the fact that soil pH regulates plant nutrient availability by controlling the chemical forms of the different nutrients and also influences their chemical reactions. As a result, soil and crop productivities are linked to soil pH value." In irrigation water, an extreme pH can cause a nutritional imbalance in the irrigated crops (Ayers & Westcot, 1989). A high pH in water can taste bitter or soapy and certain metals (such as lead, copper and zinc) may become more soluble at higher pH levels (Department of Water Affairs and Forestry, 1996). In all three guideline documents (SA, WHO, FAO), pH is noted as having no direct health consequences except at extremes – where the solubilisation (structural breakdown and dissolution) of toxic heavy metals causes adverse health effects (Department of Water Affairs and Forestry, 1996, p. 116).

		Results	Reference limits and guidelines					Riemann Study (2021) Levels
Determinand	Risk	CT 0018	SANS 241-1 (2015) Drinking Water	SA Domestic Use	WHO Drinking Water	FAO Agriculture	SA Agri. Use: Irrigation	
Conductivity at 25 •c in mS/m	Aesthetic	**22,00**	170,00		0-70	0-3	40,00	Median 94,8 Range 65-413
pH at 25 ·c b	Operational	**8,02**	5-9,7	6,5-8,5	7,0-9,0	6,5-8,4	6,5-8,4	Median 7,2 Range 6,7-8

Table 3
Tap water chemical analysis (SABS T0060) results and standards.

Elevated – in reference to the FAO standards – levels of sulfate (37,85mg/l) and chloride (42,80mg/l), as found in the water sample from the outside tap at WRM can be seen in Table 6 below. According to the WHO, existing data on sulfates in drinking-water doesn't indicate any adverse human health effects. Chloride in drinking water can be attributed to natural sources, sewage and industrial effluents, urban runoff and saline intrusions, and poses no major health risk in drinking water according to the WHO (2022).

		Results	Reference limits and guidelines					Riemann Study (2021) Levels
Determinand	Risk	CT 0018	SANS 241-1 (2015) Drinking Water	SA Domestic Use	WHO Drinking Water	FAO Agriculture	SA Agri. Use: Irrigation	
Sulfate as SO_4 2• in mg/L	Acute health	**37,85**	500,00		0-200	0-20		Median 40,40 Range 0,21-626
	Aesthetic	**37,85**	250,00					
Chloride as c1· in mg/L	Aesthetic	**42,80**	300,00		0-100	0-30	100,00	Median 94 Range 28-2779
Zinc as Zn in mg/L	Aesthetic	**10,00**	5,00		0-3	2,00	1,00	

Table 4
Tap water chemical analysis (subcontracted laboratory) results and standards.

The above Table 6 shows the level of zinc, found in the water sample from the outside tap at WRM, to be significantly elevated (at 10mg/l) above all the relevant water quality guidelines' reference limits (which range from 0-5mg/l). Zinc is an important trace element found in almost all food and water sources in the form of salts or organic complexes. Although levels of zinc in surface water and

groundwater tend to remain low, the dissolution of zinc from pipes can cause increases in these levels. Despite the lack of a formal guideline value for zinc, "drinking-water containing zinc at levels above 3 mg/l may not be acceptable to consumers" (World Health Organization, 2022, p. 482). High levels of zinc in water imparts an undesirable astringent taste and, at concentrations in excess of 3‑5 mg/l, "may appear opalescent and develop a greasy film on boiling" (World Health Organization, 2022, p. 247). Zinc is an "essential nutritional micro-element of relatively low toxicity" to humans and is only seldom associated with acute adverse health effects. At the levels detected in the water sample, this water is likely to have a 'clearly discernible bitter taste' and opalescence, and experiences of chronic toxicity are expected, according to the SA Water Quality Guidelines (Department of Water Affairs and Forestry, 1996, p. 166). On the other hand, zinc is "toxic to many plants at widely varying concentrations," however, a higher pH (> 6mg/l) and fine textured or organic soils can result in reduced toxicity (Ayers & Westcot, 1989, p. 6) – both of which are the case at WRM, thereby reducing the toxicity of the zinc found in the water here. Zinc tends to be retained in the uppermost soil layers, thereby accumulating in the 'plough layer of cultivated land' (Department of Water Affairs and Forestry, 1996, p. 170). When significantly concentrated, zinc "causes toxic responses by inducing iron deficiency" (Department of Water Affairs and Forestry, 1996, p. 172). However, a neutral to alkaline soil pH allows a "greater zinc load than acidic soils before concentrations in the soil solution becomes phytotoxic" (Department of Water Affairs and Forestry, 1996, p. 171). On the other hand, irrigated soils tend to be alkaline which can result in zinc deficiencies in the crops due to the low solubility of zinc at a higher pH (Department of Water Affairs and Forestry, 1996). Therefore, elevated zinc levels in the water pose little health risk to humans in domestic uses of this water, however, these levels are likely to impact the growth of the crops grown in the garden at WRM – especially when they accumulate. The slightly high pH recorded in the water sample works to counteract this, though, by reducing the solubility of the zinc. Conversely, this could lead to a zinc deficiency in the crops at WRM, as noted above. Nonetheless, the water from the outside tap at WRM (from which this water sample was sourced) is predominantly used as drinking water and for domestic purposes, such as cooking and cleaning and, thus, has less impact on crop growth.

Overall, the tested water samples from WRM's main outside tap and borehole reveal low levels of constituents across the board. Regardless, several constituents were recorded at levels above the recommended limits provided by the SA Water Quality Guidelines for domestic use and irrigation, the World Health Organization's guidelines for drinking water, the SANS-241 drinking water quality guidelines and the FAO's water quality guidelines for agriculture. Although the recorded levels of these constituents may seem negligibly elevated, the potential risks on human health and crop yield necessitates further investigation. Furthermore, the daily accumulation of these constituents in the soil can significantly affect the success of the crops grown in WRM's garden and can lead to bioaccumulation of the constituents in the crops which are then consumed by the community. Hence, it is crucial to monitor and maintain the water quality for the health of the people and the environment in and around WRM.

Water quality and usability monitoring and maintenance are under the mandate of the Department of Water and Sanitation (DWS), yet the efficient enactment of this mandate remains to be seen. In a study conducted by Genthe and Kfir (1996, p. 1) it is stated that the "available recommended guidelines lack suitable sampling statistics and do not describe the possible health implications of exceeding certain limits." Genthe and Kfir (1996, p. 3) further demonstrate how the WHO guidelines are the most lenient amongst all international guidelines, which follows the claim by the organisation that "the adoption of too stringent drinking water quality standards could limit the availability of water supplies that meet those standards." In addition, the report recommends that the "South African guidelines should be revised, particularly with regards to the inclusion of limits for pathogens and the latest methodologies

for the detection of both indicator organisms and pathogens such as enteric viruses and protozoan parasites" (Genthe & Kfir, 1996, p. 3).

Additionally, Malakar, Snow and Ray (2019, p. 12) argue for the need to improve irrigation water quality monitoring and maintenance, especially as there are very few strict guidelines to monitor contaminant concentrations in water used for irrigation of food crops and other plants. These guidelines are further necessary since the future is likely to bring increased concentrations of specific contaminants and bring fluxes in the quality of water sources for irrigation. Advancing climate change is also predicted to bring more extreme weather phenomenon's including drought and water scarcity which holds the potential for further concentrated contaminants in important water sources (Malakar, et al., 2019). Moreover, the authors state that "proper food quality can only be insured if water sources are regulated and regularly tested. Testing can also be used to monitor accumulation of contaminants in soil. Moreover, plant tissue should also be checked periodically for contaminant uptake to ensure appropriate produce quality" (Malakar, et al., 2019, p. 12). Therefore, Malakar, Snow and Ray (2019) echo the need for improved water quality guidelines, monitoring and maintenance – for agricultural and irrigation purposes, notably – which is necessary to maintain the health of soil, water, food crops and communities and requires particular attention in the Global South, as is illustrated in this case study's water analysis centred around WRM in Vrygrond.

Flows of earthly matter, such as water, are important for the health and habitability of ecosystems which sustain human populations across the globe. As Lesley Green (2020, p. 58) emphasises in her book, *Rock | Water | Life*, "waters and substances circulate through bodies rich and poor, black and white." Yet, certain substances, such as waste, can be drawn into the political realm through the concept of 'waste siege', as outlined by Stamatopoulou-Robbins (2020).

Waste Siege

Stamatopoulou-Robbins (2020) provides an 'ethnography of waste and ambivalence' in which she speaks to the experiential dimensions of siege and tracking of material flows, accumulations and blockages of waste itself. Taken as a whole, her book proposes the conceptualisation of "refuse and excreta as animating, culturing environments in which socialities, ethics, and politics come alive" (2020, p. 28). During her research in Palestine, Stamatopoulou-Robbins observed the difference between pristine sidewalks in West Jerusalem (a predominantly Jewish-Israel area today) as compared to the debris-strewn road leading to the Palestinian city of Ramallah via the Qalandiya checkpoint that separates Jerusalem from the West Bank. This difference alone indicates the political divisions through the material form of litter, or waste, that exists between Israel and Palestine, courtesy of the Israeli settler-colonial state. These observations by Stamatopoulou-Robbins demonstrate a striking resemblance to my case study of Vrygrond and the CBP. Driving along Drury Road which sits between Vrygrond and the CBP, I observed a debris-strewn sidewalk and a heavily polluted vlei running alongside the business park's boundary wall, all of which reflected the state of much of the settlement. In contrast, driving through the CBP, I encountered spotless sidewalks and roads with an abundance of rubbish bins – although, surprisingly, none clearly marked for recyclables. In both Stamatopoulou-Robbins' case study of Israel and Palestine, and my own on Vrygrond and the CBP, the presence of waste – or lack thereof – is illustrative of the social, political and economic divisions present in each space, thereby highlighting the way in which waste can become politicized. These two cases further illuminate the deeply intertwined nature of environmental risks and social relations, which culminate in the establishment of sacrifice zones (as defined in chapter 2).

Furthermore, it is the 'urban poor' who tends to bear the largest burden of waste, yet they are the ones who claim the least resources (Cock, 2007). In this regard, Stamatopoulou-Robbins (2020) notes that waste is managed by infrastructures, but also infrastructural itself. Additionally, neoliberal capitalism and environmental racism, as theorised by Cock (2007), intersect through the privatisation of waste whereby privatised waste services, and even the location of landfills, entrench apartheid-era inequalities and increasingly follow neoliberal practices of profit generation above all else. Moreover, Cock (2007) states that affluent, largely white, areas in SA are almost rewarded for their wasteful lifestyles with waste collection/cleanup services, while marginalised communities who have a 'lower per capita production of waste' receive no such benefits. Similarly, Casis (2021) expresses how people are "taught that a place without litter is one of value, and cleansing becomes an indicator for things such as safety and ambience. Conversely, we easily judge areas that have litter in public spaces as 'unkept' while failing to see that, in poor neighbourhoods, service delivery can be insufficient at best. This is undeniably yet another mirror of the inequity that plagues our city."

All of this can then be denoted as part of a broader process of slow violence as conceptualised by Nixon (2011). Following on from the definition of slow violence provided in the introduction of this chapter, Nixon (2011) contends that the 'incremental and accretive' nature of environmental degradation, that is also dispersed through time, creates a significant representational challenge whereby the gradual environmental impacts are difficult to recognize as a form of violence. Likewise, the distribution of environmental degradation across space makes it difficult to recognize as such. Consequently, this representational challenge involves somehow holding the past, the present and the future in one; namely, the historical origins of environmental degradation, its present unfolding's and the unknown future manifestations of it (Keeling, 2015). Therefore, Nixon (2011, p. 3) reasons that "we need to account for how the temporal dispersion of slow violence affects the way we perceive and respond to a variety of social afflictions," alongside the "temporal distance between short-lived actions and long-lived consequences" (Keeling, 2015). This is certainly a challenge in my case study around Vrygrond and the CBP, where the inundation of waste does not always result in directly identifiable health problems that could be used as evidence for the severity of the waste management issue at hand. Resultantly, this reality makes it difficult to persuade government to address the problem. Even more so, the more immediate afflictions of hunger and poverty, with which most of the community of Vrygrond has to contend, are generally prioritised – as expressed by the ward councillor.

This chapter has explored the prevalence of waste in Vrygrond and the CBP whereby waste is politicised in a way that further entrenches the inequality across the wall. In this way, parallels can be seen between the experience of waste siege in Palestine as described by Stamatopoulou-Robbins (2020). The focus here has been on two key forms of waste pervading Vrygrond, namely litter and water pollution. In terms of litter, the biggest challenges centre around the availability of rubbish bins and illegal dumping in Vrygrond. On the other side of the wall, the CBP differentiates itself by providing refuse removal and maintenance services to the tenants of the park in an effort to keep it waste free. However, the CP Landfill looming behind the CBP appears to remind us of the city's waste production, which tends to remain out of sight and mind for many living in other parts of the city. In this site, waste cannot be escaped – especially in Vrygrond. The CP Landfill, then, connects the two spaces – Vrygrond and the CBP – through virtue of its size and its dust, which blows across the entire area. Water also acts as a link across the wall, despite the CBP's attempt at cutting itself off from the commons. For instance, the Riemann (2021) case study outlines the degradation of the Cape Flats Aquifer underlying Vrygrond and the CBP. In addition, my water samples from WRM, following water quality analysis tests at the SABS, revealed several constituents that were recorded at levels above the given reference limits, thereby indicating potential risk for human health and crop growth following the use and consumption of this water. Although most of the constituent levels in the water samples were recorded

as quite low, daily accumulation of these constituents in the soil, plants and bodies is a significant concern. This accumulation of particulate matter can negatively affect the health of people and the success of crop propagation at WRM. Hence, more research into the quality of water accessed at WRM is crucial to monitor and maintain the health of the ecosystem and people found here.

Conclusion

It's easy to forget where our food comes from and turn away from the waste we produce when disconnected from the processes and infrastructure upholding these systems in urban areas. Yet, for some this is not an option when food insecurity is rife, and the community is inundated with waste – such is the case in Vrygrond. On the other side of the wall, the CBP attempts to block out this reality and create a kind of oasis for its tenants here. However, earthly processes and flows cannot be contained, instead they generally find ways to cross man-made boundaries, such as the wall, demonstrating the shared nature of the commons. For instance, contaminated dust emanating from the CP landfill blows across Vrygrond and into the CBP, while water flows across the site through Vrygrond and into the business park where it drains into the central Capricorn lake. A key difference here is that the CBP has the resources to treat the water as it enters the business park, ensuring safe, clean water for the park. WRM, on the other side of the wall, has no such resources and, hence, uses untreated water for irrigation and domestic purposes. Consequently, contaminants flowing through the irrigation water used in the WRM garden can build up in the soil and affect the quality and success of the crop yield that ultimately feeds the community. In fact, Mymoena, the director, and Kyle, the project manager, have both observed inconsistent crop yields in the garden over the years, which they attributed to changes in water quality, the number of workers and funds, and climate.

The stark inequality apparent across the wall entrenches the divide created under apartheid's segregation policies and laws. This inequality is now governed by neoliberal economics and the myth of trickle-down theory. This inequality is expressed in the experience of poverty, hunger and ill-health with which most Vrygrond residents are constantly conflicted, and which has necessitated WRM as an organisation working to support the community. The right to nutritious food, a clean environment and safe drinking or irrigation water are not easily accessible to the people living and working in Vrygrond, yet on the other side of the wall there is an attempt to provide these basic rights to those making use of the business park's premises, many of whom have the mobility and means to address that which cannot be met by the governing body of the park and the broader area.

Pollution is another phenomenon revealing the inequality of the space. The material inescapability of living in waste experienced here materialises as a form of waste siege similar to that which Stamatopoulou-Robbins (2020) observed in Palestine. In this way, waste is politicised to inflict slow violence upon the community in Vrygrond, as was detailed in Chapter 3. In the end, the proliferation of litter and pollution in the area is a serious issue that needs to be better addressed. Meanwhile, water samples taken from WRM and tested at the SABS reveal both the bureaucratic inefficiencies within SA's institutions which exposes the need for a citizen science within the country, as well as results showing elevated levels of determinants – notably heavy metals – within the water samples which poses a risk to soil, plant and human health at WRM, especially in terms of bioaccumulation. Inadequate water quality, therefore, adds another barrier to the habitability of people at WRM, and within broader Vrygrond, since it not only affects human health but also increases the challenges of growing produce within the area (such as documented in Chapter 1 at WRM), thereby adding another dimension of slow violence as experienced in this case study.

In terms of future research, a recommendation is to explore effective and long-lasting waste management interventions in this area, and others alike. Furthermore, the impacts on residents' health from the air pollution emanating from the Coastal Park Landfill itself, as well as the methane flaring onsite, needs additional assessment. At the same time, more research needs to be conducted on the water quality of drinking and irrigation water sources available to people in Vrygrond, as well as possible treatment solutions and the establishment of a citizen science. This aligns with Malakar, Snow and Ray's (2019, p. 3) call for "modern guidelines, regulations and research to understand the

complex nature of irrigation water" which will become increasingly important as water sources continue to be polluted, overused and subject to climate change.

Additionally, it would be useful in future research to further investigate various persuasive strategies to resource a network, such as in the CBP, to act and foster more caring communities. This could also be facilitated by a more forceful approach than I was able to execute. At the same time, future research could conduct a more thorough analysis of the CBP's influences in the surrounding communities which I was not able to uncover. Lastly, it might be useful to conduct future research on the impacts of the charity, and organisational, support that is imparted in Vrygrond.

Acknowledgements

In closing, I would like to thank Mymoena Scholtz, and the staff/volunteers, at WRM for embracing me during my volunteer work and field research, my supervisor, Professor Lesley Green, for her guidance in the execution of this thesis, Dr Nikiwe Solomon and Dr Cecilia Ojemaye for their direction on conducting water tests, and all my colleagues, friends and family for their support during this research period. Lastly, I want to thank all those who supported in the wait for the water test results to be released from the SABS.

Appendix 1

Ethics Clearance Letter

Environmental Humanities South
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University of Cape Town
Private Bag X3, Rondebosch 7701, Cape Town, South Africa
Telephone: +27.(0)21.650.3682
Email: nikiwe.solomon@uct.ac.za

To whom it may concern,

RE: Ethical Clearance for Application Number: EHS 2022-BERNING
Carey Berning is registered at UCT's Environmental Humanities South section of Anthropology from 2022 (UCT student number: BRNCAR031). The Masters research proposal has been presented to the ethics review committee and was approved.

Please contact me should you require further information.

Regards

Dr Nikiwe Solomon
Acting Chair: Ethics in Environmental Humanities South Research Committee
19 January 2023

Appendix 2

SABS Water Results

DETERMINANDS	RESULTS	REFERENCE LIMITS					Riemann Study (2021) Levels
	Borehole (CT0017)	SANS 241-1 (2015) Drinking Water	SA Domestic Use	WHO Drinking Water	FAO Agriculture	SA Agri. Use: Irrigation	
pH value at 25°C	**7,7**	≥5,0 to ≤9,7	6,0-9,0	6,5-8,5	6,5-8,4	6,5-8,4	Median: 7,2
Electrical Conductivity at 25°C in mS/m	**74**	≤170	0-70		0-3	≤40	Median: 94,8
Turbidity in NTU	**0,28**	≤1	0-1	<1			Median: 9,5
Dissolved Solids at 180°C in mg/L	**461**	≤1200	0-450		<500		Median: 576
Total Alkalinity as T-Alk in mg/L	**175**						
Chemical Oxygen Demand as 02 in mg/L	**22**						
Sulphate as SO4 in mg/L	**93,31**	250	0-200		0-20		Median: 40,4
Sodium as Na in mg/l	**37,67**	200	0-100			70	Median: 59
Iron as Fe in mg/l	**0,05**	300	0-0,1		5	5	Median 1,18
Magnesium as Mg in mg/l	**5 364**		0-30		0-5		
Calcium as Ca in mg/l	**80,66**		0-32		0,01		
Chloride as Cl in mg/l	**71,1**	300	0-100			100	Median: 94
Aluminium as Al in mg/l	**0,02**	300	0-0,15		5	5	Median 0,05
Ammonia as NH3 in mg/l	**0,09**	1,5	0-1				Median: 0,2
Arsenic as As in mg/l	**0,003**	10	0-10 000	0,01	0,1	0,1	
Boron as B in mg/l	**0,03**	2400				0,5	
Lead as Pb in mg/l	**0,004**	10	0-10 000	0,01	5	0,2	Median: 13,65
Nitrate as NO3 in mg/l	**1,95**	11	0-6	50	0-10	5	Median 4,04
Mercury as Hg in mg/l	**0,0001**	6	0-1 000		0,2		

Table 5

Borehole water sample: Chemical analysis results and standards from the SABS.

		Results	REFERENCE LIMITS					Riemann Study (2021) Levels
Determinand	**Risk**	**Tap (CT 0018)**	**SANS 241-1 (2015) Drinking Water**	**SA Domestic Use**	**WHO Drinking Water**	**FAO Agriculture**	**SA Agri. Use: Irrigation**	
Physical and aesthetic determinands								
Colour in mg/L Pt-Co	Aesthetic	**6**	15		15			Median 1 Range 1-42
Conductivity at 25 •c in mS/m	Aesthetic	**22**	170		0-70	0-3	40	Median 94,8 Range 65-413
Dissolved solids at 180°C in mci/L	Aesthetic	**140**	1200		0-450	500	450	Median 576 Range 348-2982
Turbidity in NTU	Operational	**0,14**	1	1	0-1			Median 9,5 Range 0,5-855
	Aesthetic	**0,14**	5					
pH at 25 ·c b	Operational	**8,02**	5-9,7	6,5-8,5	7,0-9,0	6,5-8,4	6,5-8,4	Median 7,2 Range 6,7-8
Chemical determinands - macro-determinands								
*Free chlorine as C'2 in mg/L d	Chronic health	**0,05**	5	5		5		Median 0,28 Range 0,11-1,19
*Monochlorine in mg/L cd	Chronic health	**0,05**	3					3
Fluoride as F·in mg/L	Chronic health	**0,09**	1,5	1,5	0-1	1	2	
Nitrate as **N** in mg/L *et*	Acute health	**0,22**	11	50		5		Median 4,04 Range 0,4-168
Nitrite as **N** in mg/L etc	Acute health	**0,01**	0,9	3				Median 0,01 Range 0,01-94
*Combined nitrate plus nitrite *etc*	Acute health	**0,22**	1		0-6	0-10	5	Median 4,14 Range 004-168
Ammonia as **N** in mg/L	Aesthetic	**0,09**	1,5		0-1			Median 0,20 Range 0,1-17,4
Sulfate as SO_4 2• in mg/L	Acute health	**37,85**	500		0-200	0-20		Median 40,40 Range 0,21-626
	Aesthetic	**37,85**	250					
Chloride as c1· in mg/L	Aesthetic	**42,8**	300		0-100	0-30	100	Median 94 Range 28-2779
Sodium as Na in mg/L	Aesthetic	**18,08**	200		0-100	0-40	70	Median 59 Range 23-1005
Zinc as Zn in mg/L	Aesthetic	**10**	5		0-3	2	1	
Chemical determinands - microdeterminands[14]								
Antimony as Sb in µg/L	Chronic health	**<0.1**	20		20			
Arsenic as As in µg/L	Chronic health	**0.7**	10	10	10	100	100	
Barium as Ba in µg/L	Chronic health	**<20**	700		1 300	100		
Boron as B in µg/L	Chronic health	**37**	2 400		2 400	2 000	500	
Cadmium as Cd in µg/L	Chronic health	**<3**	3	5	3	10	10	
#Total Chromium as Cr in µg/L	Chronic health	**<30**	50	50	50	100	100	
Copper as Cu in µg/L	Chronic health	**<10**	2 000	1 000	2 000	200	200	
Cyanide (recoverable) as CN· in µg/L	Acute health	**8.5**	200			200		
Iron as Fe in µg/L	Chronic health	**70**	2 000	10 000		5 000	5 000	Median 1,18 Range 0,04-663,27
	Aesthetic	**70**	300	10				
Lead as Pb in µg/L	Chronic health	**<4**	10	10	10	5 000	200	

[14] For this section of the results, the FAO and SA Agriculture water quality guidelines were calculated by converting (multiplying by 1000) the given standard in mg to µg for comparison.

Manganese as Mn in µg/L	Chronic health	**<4**	400	50	80	200	20	Median 0,014 Range 0,001-6,606
	Aesthetic	**<4**	100					
Mercury as Ha in µg/L	Chronic health	**<0.1**	6	1	6	200		
Nickel as Ni in µg/L	Chronic health	**<5**	70		70	200	200	
Selenium as Se in µg/L	Chronic health	**<0.3**	40	20 000	40	20	20	
Uranium as U in µg/L	Chronic health	**<0.3**	30	70	30		10	
Aluminium as Al in µg/L	Operational	**<20**	300	150		5 000	5 000	Median 0,05 Range 0,02-0,91
Chemical determinands - organic determinands								
Dissolved organic carbon as C in mg/L	Chronic health	**3,2**	10	5				Median 3,3 Range 1-36
Combined trihalomethane	Chronic health	**0,084**	1	1	1			
Chloroform in µg /L	Chronic health	**0,045**	300	200	300			
Bromoform in µg /L	Chronic health	**0,002**	100	100	100			
Dibromochloromethane in µg /L	Chronic health	**0,017**	100	10	100			
Bromodichloromethane in µg /L	Chronic health	**0,02**	60	60	60			
Phenols in µg /L	Aesthetic	**0,025**	10		9			

Table 6

Tap water sample: Chemical analysis results and standards from the SABS.

Appendix 3

Emails

The following tables document the email chains denoting the progression of sorting out payment for, and receiving the results of, the water sample testing via the SABS. The water samples were collected from WRM and delivered to the SABS laboratories in Mowbray on 22 June 2023. Payment and release of the results progressed through email communication as follows:

Email Chain Subject: *Quotation and Pro-forma for water testing*

(constituents include Nwabisi Majola, Carey Berning, Nikiwe Solomon, Willem Petersen, Zainab Adams, and Tebogo Phasha)

	Date	**Email Contents**
Initial correspondence	18-07-2023	Request (by N. Majola) for the quotation and pro-forma invoice from the SABS to be completed and signed.
	20-11-2023	Request (by W. Petersen) for the official tax invoice for the attached pro-forma invoice from the SABS, which was received. Address on tax invoice is incorrectly noted as UCT Medical Centre Ltd.
	14-12-2023	Request (by C. Berning) for the address to be changed to UCT Environmental Humanities South (EHS).
UCT closes	18-12-2023	SABS requires a formal request to modify the account details on the company letter head as requested by T. Phasha.

Table 7
Summarised set of email chain contents 2023.

Email Chain Subject: *Urgent: Release of water test results / directing the invoice to our account*

(constituents include Lesley Green, Nwabisi Majola, Tebogo Phasha, Carey Berning, Nikiwe Solomon, Willem Petersen, Zainab Adams, UCT Vendor, and Happiness Baliwe)

	Date	**Email Contents**
UCT Opens	17-01-2024	Urgent request (by L. Green) for directing the invoice to the correct account to allow for payment and reception of water results. Request (by T. Phasha / W. Petersen) for the completion of an account application form with the SABS and plans made to process payment via UCT Purchase Order.
	23-01-2024	Follow up (by C. Berning) on progress of payment and release of water results. The SABS is required to be registered as a UCT Vendor for the payment to be processed.

	02-02-2024	The supplier (T. Phasha at SABS) requests assistance with the new vendor request.
Student is required to re-register for the 2024 academic year at UCT.	07-02-2024	Plea for immediate processing of the payment and release of water results before registration for the 2024 academic year at UCT is required by the student (C. Berning). Not made possible.

Table 8
Summarised set of email chain contents 2024.

Email Chain Subject: *Water Test Results Follow-Up*

(constituents include Lesley Green, Carey Berning, Nikiwe Solomon, Willem Petersen, and Zainab Adams)

Date	Email Contents
20-02-2024	Follow-up made by C. Berning on progress of payment and release of water results.
11-03-2024	Another follow-up from C. Berning about the progress of payment and release of waters. Z. Adams states that a purchase order has been shared with the SABS, who subsequently sent another incorrectly annotated invoice. Awaiting corrected invoice from SABS to make payment.

Table 9
Summarised set of email chain contents 2024 contd.

Email Chain Subject: *Still No Water Results*

(constituents include Lesley Green, Carey Berning, Nikiwe Solomon, Willem Petersen, Zainab Adams, Nwabisi Majola, and Tebogo Phasha)

	Date	Email Contents
Payment processed and water results received	19-03-2024	Final follow-up made by C. Berning on progress of payment and release of water results, stressing urgency of the need for the results due to deadline to submit (1-04-2024) fast approaching. Payment finalised and water results finally released.
Final correspondence	20-03-2024	Requests from L. Green in relation to water results received: 1. "I note that you used industrial effluent standards as the reference. Please can you insert the agricultural water standard limits, and re-send urgently? ***Today would be appreciated as it is urgent***.

	2. Please advise the name and model of the instrument/s used for the analysis? 3. Please advise the method of analysis?”

Table 10
Summarised set of email chain contents 2024 contd.

These emails dictate the long and laborious process of obtaining my water test results – spanning 9 months – for this research project. The bureaucratic and administrative inefficiency of this process is highlighted here, notwithstanding the expense of the tests. What’s more, this process included a highly regarded tertiary institution and a statutory body in South Africa, both of which are supposedly dedicated to scientific and research development in the country, yet both organisations appear to place barriers in front of these pursuits – as demonstrated in the above process.

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