Municipal regulation of communicable and vector-borne disease control in terms of South African law

Diedericks MN

 **orcid.org/0000-0002 5156 4477**

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Supervisor:	Prof AA du Plessis
Co-supervisor:	Dr NR Steyn
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Student number:	24688266

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ABSTRACT

Communicable and vector-borne diseases have always been a longstanding public health threat to populations across the globe. In 2019 communicable diseases accounted for approximately 18 per cent of all global deaths. Recent disease outbreaks, such as the coronavirus and monkeypox, highlighted the fact that cities often act as epicentres for the transmission of diseases and could create health threats of international concern.

South African cities are not exempt from this risk as the country faces a double burden of health challenges. These challenges include communicable diseases such as TB, HIV and AIDS, influenza and pneumonia, and chronic lower respiratory tract infections. In 2018 these diseases were among the top ten leading underlying natural causes of morbidity and mortality in South Africa. Factors that contribute to the spread of communicable and vector-borne diseases are rapid urbanisation, the mushrooming of informal urban settlements, and municipalities' inability to deliver basic services consistently and effectively.

In terms of the *Constitution of the Republic of South Africa*, 1996 local government is established across the whole territory of South Africa and has legal jurisdiction over all urban settlements, including cities and towns. Local government also has the duty to provide a safe and healthy environment and to provide basic municipal services. These services are necessary to ensure a reasonable quality of life and to guard against endangering public health or safety and the environment. Despite these provisions, rapid urbanisation and its subsequent developments continue to challenge municipalities' ability to provide basic services that are essential for communicable and vector-borne disease control and prevention. This study will explore the extent to which South African national and city-level law provides for the municipal regulation of communicable and vector-borne disease control.

Keywords: Municipal regulation; communicable and vector-borne diseases; local government law; health law; disaster risk management; South Africa.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
CSIR	Council for Scientific and Institutional Research
DMA	Disaster Management Act 57 of 2002
EI	Environmental International
GOARN	Global Outbreak Alert and Response Network
HET	Human and Experimental Toxicology
HI	Habitat International
HIV	Human Immunodeficiency Virus
ICESCR	International Covenant on Economic, Social and Cultural Rights
IGO's	International Governmental Organisations
IHR	International Health Regulations
ILO	International Labour Organisation
IMF	International Monetary Fund
Int.J.Hyg.Environ.Health	International Journal of Hygiene and Environmental Health
IUDF	Integrated Urban Development Framework 2016
NDMF	National Disaster Management Framework 2005
NGO	Non-Governmental Organisation
NHA	National Health Act 61 of 2003
NUA	New Urban Agenda
PIP Framework	Pandemic Influenza Preparedness Framework
SADC	Southern African Development Community
SAHR	South African Health Review
SAJPH	Southern African Journal of Public Health
SARS	Severe Acute Respiratory Syndrome

SAMJ	South African Medical Journal
SDG	Sustainable Development Goals
SFDRR	Sendai Framework for Disaster Risk Reduction 2015-2030
South.Afr.J.Infect.Dis.	South African Journal of Infectious Diseases
SSM	Social Science and Medicine
STA	Standard Material Transfer Agreements
TB	Tuberculosis
UN	United Nations
WHO	World Health Organisation
WTO	World Trade Organisation

CHAPTER 1 INTRODUCTION

1.1 Background

Urbanisation has become a prominent trend.[1] By the time of the adoption of the *2030 Agenda for Sustainable Development* in 2015,[2] 54 percent (4 billion) of the world's population resided in urban areas (cities and towns).[3] This number is estimated to increase to 62 percent by 2036.[4] Most of this urban growth is estimated to be occurring in developing regions such as Asia and Africa.[5] South Africa is no exception, considering that its urban population is expected to increase from 60 per cent to 70 per cent by 2030 and with 80 per cent of people expected to be living in urban areas by 2050.[6]

Historically urbanisation has proven vital for economic growth and social development.[7] Today rapid and unmanaged urbanisation is often met with high unemployment rates, increased urban poverty, environmental degradation, pollution, insufficient essential services, and inadequate housing.[8] The coronavirus

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1 Department of Social and Economic Affairs of the United Nations *World Urbanisation Prospects*;Smit 2020 *Cities and Health* 1; United Nations Human Settlements Programme of the UN *World Cities Report 2020: The Value of Sustainable Urbanization* 2; Galea, Freudenberg and Valhov 2005 *SSM* 1017; Botes *Legal Protection of Microclimate Regulation as an Urban Ecosystem Service in South Africa* 1.

2 *UN General Assembly Transforming Our World: The 2030 Agenda for Sustainable Development* A/RES/70/1 (2015).

3 United Nations Human Settlements Programme of the UN *World Cities Report 2020: The Value of Sustainable Urbanization* 11; Department of Social and Economic Affairs of the United Nations *World Urbanisation Prospects* 9.

4 United Nations Human Settlements Programme of the UN *World Cities Report 2020: The Value of Sustainable Urbanization* 11; Department of Social and Economic Affairs of the United Nations *World Urbanisation Prospects* 1.

5 Department of Social and Economic Affairs of the United Nations *World Urbanisation Prospects* 1.

6 Intergovernmental Relations Division of the National Treasury *Managing Urbanisation for Inclusive Growth* 4; Mumm *et al* 2017 *Pathogens and global health* 4.

7 Mokoele and Sebola 2018 *The Business Management Review* 574-575.

8 Zhang 2016 *HI* 247-248.

disease[9] outbreak showed that cities are also epicentres for transmitting contagious diseases and could create a health threat of international concern. [10]

It follows that growing urban communities create environments conducive to communicable and vector-borne disease transmission, amongst other ills.[11] Conditions like inadequate housing could lead to an increase in rodent and vector-borne diseases, for example.[12] Insufficient and polluted water, waste and sanitation access, and management challenges could further increase the diarrhoeal and vector-borne diseases.[13] A lack of effective ventilation systems in buildings may lead to respiratory tract disease.[14] Overcrowding in densely populated urban areas may affect the risk of infection spread, especially diseases transmitted through the faecal-oral route.[15]

The public health risks mentioned above are all possible triggers for health-related disasters, such as the outbreak of the coronavirus disease in cities and areas beyond. This is especially concerning in countries like South Africa that already face a double burden of health challenges.[16] These health challenges include communicable diseases such as tuberculosis (hereafter TB),[17] human immunodeficiency virus (hereafter HIV) and acquired immune deficiency syndrome

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9 Coronavirus disease is defined as "an infectious disease caused by a newly discovered coronavirus. It generally causes mild to moderate respiratory illness in humans"; World Health Organisation date unknown https://www.who.int/health-topics/coronavirus#tab_1; Coronavirus is also known as "COVID-19 caused by the virus SARS-Co-V2"; Acuto 2020 *One Earth* 317.

10 WHO *World Health Statistics 2021* 51.

11 Neiderud 2015 *Infection Ecology and Epidemiology* 1.

12 Neiderud 2015 *Infection Ecology and Epidemiology* 2.

13 Alirol *et al* 2011 *The Lancet* 132; Steyn *et al* 2022 *QUEST* 17.

14 Neiderud 2015 *Infection Ecology and Epidemiology* 2; Steyn *et al* 2022 *QUEST* 17.

15 It is also held that "people living in crowded and densely populated areas increase shared airspace, exposing them to the risk of influenza, measles and tuberculosis"; Alirol *et al* 2011 *The Lancet* 132; see Smit 2020 *Cities and Health* 1-3 for a view on how density in African informal settlements facilitated the spread of the coronavirus.

16 The double burden of health challenges includes "communicable and non-communicable diseases, maternal and child fatalities, and violence and injuries.". Basu 2018 *South African Journal of Public Health* 48; Department of Statistics South Africa of the Republic of South Africa *Mortality and Causes of Death in South Africa: Findings from Death Notification in South Africa* 1.

17 Tuberculosis is defined as "lung infection generally caused by bacteria such as Mycobacterium tuberculosis, Mycobacterium bovis, or Mycobacterium africanum."; Hawker *et al Communicable Disease Control and Health Protection Handbook* 239.

(hereafter AIDS),[18] influenza[19] and pneumonia,[20] and chronic lower respiratory tract infections.[21] The diseases were among the top ten leading underlying natural causes of morbidity and mortality in South Africa in 2018.[22]

South African cities pose several risks concerning communicable and vector-borne disease transmission. These risks include the slow spatial transformation in cities and towns, mushrooming informal urban settlements, and municipalities' failure to provide essential services to a growing number of urbanites.[23] As is true elsewhere in the world, South African cities are remarkably heterogeneous - they are spatially and temporally dynamic; hence the mentioned health risks may continuously change over time.[24]

The South African government consists of three spheres: national, provincial, and local.[25] These spheres are distinctive, interdependent, and interrelated.[26] The local sphere of government consists of metropolitan, district and local municipalities established for the whole territory of the Republic.[27] These municipalities have legal authority over all urban settlements, namely towns, cities, and metropolitan areas, as they fall within their jurisdiction.[28]

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18 AIDS is as a result of an advanced infection with HIV. Hawker *et al Communicable Disease Control and Health Protection Handbook* 138.

19 Influenza is "an acute viral disease of the respiratory tract characterised by fever, headache, myalgia, prostration, coryza, sore throat and cough". Heyman *Control of Communicable Diseases Manual* 307.

20 Pneumonia is "an acute lower respiratory tract bacterial infection characterised by high fever, pleural pain, dyspnoea, tachypnoea and cough productive of rusty sputum". Heyman *Control of Communicable Diseases Manual* 451.

21 Lower respiratory tract infections are "infectious that affect the airways it includes acute bronchitis, bronchiolitis and influenza. Infections are caused by viruses and bacteria and are passed directly between people by coughing, sneezing or indirectly through contaminated surfaces." Temple Health 2021 https://www.templehealth.org/services/conditions/lower-respiratory-tract-infections.

22 Department of Statistics South Africa of the Republic of South Africa *Mortality and Causes of Death in South Africa: Findings from Death Notification in South Africa* 38-39.

23 Smit 2020 *Cities and Health* 1-2.

24 Flies *et al* 2019 *Environmental International* 133; Du Plessis and Nel "Introduction" 36-37.

25 Section 40(1) of the *Constitution of the Republic of South Africa*, 1996 (hereafter the *Constitution*).

26 Section 40(1) of the *Constitution*.

27 Section 151(1) of the *Constitution*.

28 Van der Waldt "Municipal Management: An Orientation" 5-6.

Municipalities are constitutionally obliged to provide essential municipal services to communities in urban settlements.[29] In *Joseph v City of Johannesburg*,[30] the Constitutional Court described "the provision of basic municipal services as a cardinal function, if not the most important function of every municipality."[31] Section 1 of the *Local Government: Municipal Systems Act* 32 of 2000 (hereafter the *Systems Act*), further defines basic services as-

> a municipal service that is necessary to provide a decent and reasonable quality of life, and if not provided, it would endanger public health or safety or the environment.

The constitutional objects of local government highlight the importance of local government's developmental mandate,[32] indicated by section 153 of the *Constitution*. This section requires municipalities to structure and manage their administration, budgeting, and planning processes to prioritise communities' basic needs.[33]

Schedules 4B and 5B of the *Constitution* list local government's areas of functional competence, which inform the scope of its duty to deliver basic services. The obligation to provide basic municipal services includes, amongst others, the delivery of municipal health services.[34] Currently, the health services provided by municipalities predominantly relate to environmental health.[35] Environmental health is the subdivision of public health concerned with all aspects of the natural and built environment that may affect human health.[36] Environmental health is primarily concerned with preventing the outbreak and spread of environmentally linked diseases and creating health-supportive environments.[37] Municipal health services

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29 Madumo 2012 *Administratio Publica* 44; May and Agenbag "Environmental health and municipal public health services" 26.

30 *Joseph v City of Johannesburg* 2009 ZACC 30 para 34 (hereafter *Joseph v City of Johannesburg*).

31 *Joseph v City of Johannesburg* para 34.

32 Thornhill and Cloete *South African Municipal Government and Administration* 21 and 86; Madumo 2012 *Administratio Publica* 43.

33 Madumo 2012 *Administratio Publica* 43.

34 May and Agenbag "Environmental health and municipal public health services" 27.

35 May and Agenbag "Environmental health and municipal public health services" 8-9.

36 Matthee and Wright 2014 *SAHR* 106.

37 Agenbag and Balfour-Kaipa 2008 *SAHR* 150.

are a specific function of metropolitan and district municipalities.[38] The *National Health Act* 61 of 2003 (hereafter the *NHA*), indicates that municipal health services consist of nine components, including the surveillance and prevention of communicable diseases and vector control.[39] Section 32(1) of the *NHA* holds that municipalities must provide these services efficiently and equitably.

The rapid rate of urbanisation and developmental pressures often causes severe challenges for municipalities across South Africa. Municipalities' ability to render essential services, such as municipal health services, is hampered by poor urban planning, insufficient resources, and limited financial and administrative capacity.[40] This is of concern in as far as communities' health depends on the provision of basic services such as safe water, sanitation, waste removal, and household electricity.[41] Canvassed against the above, it merits to explore the South African law and policy framework for the municipal regulation of communicable and vector-borne disease control in cities.

As explained above, cities and urban expansion create conditions conducive to communicable and vector-borne diseases. These conditions arguably require remedies above and beyond those existing in the health sector. The disaster risk management sector also has the potential to play a role in identifying and managing health risks in South African cities.[42]

Disaster risk management has been defined as "a comprehensive process of planning and the implementation of measures aimed at reducing the risks of disasters".[43] In South Africa, disaster risk management is multi-disciplinary and

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38 Section 84(1)(j) of the *Local Government: Municipal Structures Act* 117 of 1998 (hereafter the *Structures Act*).

39 Other municipal health services include "water quality monitoring, food control, waste management, the surveillance of premises, environmental pollution control, disposal of the dead and chemical safety."; See section 1 of the *National Health Act* 61 of 2003.

40 Van der Waldt "Municipal Management: An Orientation" 10.

41 Matthee and Wright 2014 *SAHR* 106.

42 Chan 2020 *International Journal of Nursing Sciences* 382-383; WHO *Disaster Risk Management for Health Communicable Diseases and Disaster Management* 1; WHO *Disaster Risk Management for Health Overview* 1.

43 Section 1 of the *Disaster Management Act* 57 of 2002 (hereafter the *DMA*); Van Niekerk "Local Government Disaster Risk Management" 257; Keim 2017 *Prehospital and Disaster Medicine* 3.

multi-sectoral.[44] It is not the responsibility of one stakeholder; instead, it involves multiple stakeholders such as government agencies, civil society, the private sector, and non-governmental organisations (hereafter NGOs).[45] Disaster risk management entails managing resources and responsibilities to deal with all aspects of disaster or the risk of disaster through disaster prevention, mitigation, preparedness, response, and recovery.[46] It is anticipated that disaster risk management could help reduce communicable and vector-borne disease risks in South African cities by identifying, monitoring, characterising, and avoiding health risks.[47]

Communicable and vector-borne diseases have epidemic and pandemic potential and may result in health disasters.[48] South African cities are not only at risk of such health disasters but face various challenges in mitigating the risk of communicable and vector-borne diseases. Consequently, this calls for examining the South African law and policy framework relating to communicable and vector-borne disease control and regulation at the municipal level. The prevalence of communicable and vector-borne diseases in South Africa's eight metropolitan cities underscores the need for legal research in this field.[49]

Based on the above, this study critically assesses the relevant municipal by-laws and disaster risk management plans of Buffalo City Metropolitan Municipality, the City of Cape Town, the City of eThekwini, the City of Johannesburg Metropolitan Municipality, the City of Tshwane Metropolitan Municipality, the City of Ekurhuleni Metropolitan Municipality, Mangaung Metropolitan Municipality, and Nelson Mandela Bay Metropolitan Municipality relating to communicable and vector-borne diseases. The objective is to evaluate how the current municipal by-laws and plans of these municipalities regulate and seek to manage the risks of communicable and vector-borne diseases at the local government level.

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44 Van Niekerk "Local Government Disaster Risk Management" 257.
45 Van Niekerk 2006 *Politeia* 96.
46 Van Der Berg *Legal Perspectives on the Function of Public- Private Partnerships in Local Disaster Management in South Africa* 13.
47 Keim 2017 *Prehospital and Disaster Medicine* 8.
48 WHO *Disaster Risk Management for Health Communicable Diseases and Disaster Management* 1; Negri "Communicable disease control" 265.
49 See Chapter 5 below.

1.2 Research objectives

The primary objective of this study is to determine if and how South African national and city-level laws provide for the municipal regulation of communicable and vector-borne disease control.

The ancillary objectives of this study include the following:

- To define and analyse the meaning of communicable and vector-borne diseases as relevant in the South African city / urban context;
- To explore how relevant international law instruments and policies direct states (including sub-national authorities) to control and prevent the transmission of communicable and vector-borne diseases;
- To critically evaluate local government, health, and disaster risk management legislation in South Africa with a view to determining to what extent the legal framework provides for the municipal regulation of communicable and vector-borne disease control; and
- To critically assess the by-law and municipal policy frameworks of the eight metropolitan municipalities in South Africa to determine to what extent it provides for the municipal regulation of communicable and vector-borne disease control.

1.3 Study outline

Chapter 2 of this study provides a theoretical perspective on communicable and vector-borne diseases in cities. Chapter 3 investigates how relevant international instruments and policies direct states (including sub-national authorities) to control and prevent communicable and vector-borne diseases. Chapter 4 explores the South African national law and policy framework for the municipal regulation of communicable and vector-borne diseases. Chapter 5 examines the country's eight metropolitan municipalities' legislative and disaster risk management strategies in response to communicable and vector-borne disease risks, along the lines of benchmarks established in chapter four. Chapter 6 is the concluding chapter.

1.4 Research methodology

The study is a desk-top study comprising a legislative analysis (international instruments, policies, and national law) in combination with a case-study-based evaluation of the by-laws and municipal plans and policies of the eight metropolitan municipalities in South Africa. The study traverses primary and secondary sources of law. The primary sources include the *International Health Regulations* (2005) (hereafter the *IHR*), the *Constitution*, the *DMA*, the *NHA*, and the *Systems Act*, which relate to various subjects in the study, namely disaster risk management, public and environmental health, and urban governance. Secondary sources relevant to communicable and vector-borne diseases, disaster risk management, municipal regulation, and governance are analysed. These secondary sources comprise scholarly books, journal articles, research reports available in the public domain, theses, and internet sources.

While this study is premised on South African law and international law of contextual relevance, it will, to a lesser extent, be informed by sources from disciplines such as environmental health sciences, social and behavioural sciences, and epidemiology. This is necessary because knowledge and information on communicable and vector-borne disease control originate from these sciences.

As mentioned above, South Africa's eight metropolitan municipalities serve as exemplary cases in this study. This is due to the prevalence of communicable and vector-borne diseases and the rapid urbanisation rate in these cities. However, it is acknowledged that the risks of communicable and vector-borne diseases are also prevalent in secondary cities, many of which are almost as densely populated as some of the metropolitan areas. The limited case-study-based analysis aims to determine to what extent city-level law provides for the municipal regulation of communicable and vector-borne disease control and prevention. The analysis is based on benchmarks developed in Chapter 4. Chapter 5 discusses how the eight metropolitan municipalities' by-laws and plans measure up against the benchmarks distilled in Chapter 4.

CHAPTER 2 THE MEANING OF COMMUNICABLE AND VECTOR-BORNE DISEASES AS RELEVANT FOR THE SOUTH AFRICAN CITY CONTEXT

2.1 Introduction

Communicable and vector-borne diseases pose a significant public health risk to populations worldwide.[50] Despite the advances in medical sciences and public health,[51] communicable and vector-borne diseases accounted for approximately 18 per cent of global deaths in 2019.[52] Emerging and re-emerging communicable and vector-borne diseases continue to challenge practitioners, who track and contain these diseases as it continues to escape control methods.[53] Rapid urbanisation and city development enable the transmission of infectious diseases to all corners of the world. As stated in Chapter 1, cities create environments conducive to the risk of contracting and the transmission of communicable and vector-borne diseases.[54] To fully grasp the risk involved, a brief discussion on 'communicable diseases and vector-borne diseases is necessary.

This chapter aims to set out the theoretical basis of this study. It conceptualises the term "communicable and vector-borne diseases" as relevant for the South African city context and the need for a legal response. Furthermore, it defines and analyses urbanisation and city development to explore how urbanisation contributes to the prevalence of communicable and vector-borne disease risks. The chapter is divided into three parts. Part one defines and discusses communicable and vector-borne diseases with a view to understanding the transmission and distribution of these diseases in cities and towns. Part two discusses urbanisation, city formation and

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50 Negri "Communicable disease control" 265; WHO and UNICEF *Global Vector Control Response 2017-2030* 1.

51 Tulchinsky and Varavikova *The New Public Health* 149.

52 WHO *Disaster Risk Management for Health Communicable Diseases and Disaster Management* 1; Negri "Communicable disease control" 265.

53 Heyman *Control of Communicable Diseases Manual* xviii; Tulchinsky and Varavikova *The New Public Health* 152.

54 Neiderud 2015 *Infection Ecology and Epidemiology* 1.

matters of health. Part three considers the occurrence of communicable and vector-borne diseases in South African cities and the concomitant need for a legal response.

2.2 Definition and classification of communicable and vector-borne diseases

The term "communicable diseases" describes illnesses either directly or indirectly transmitted from one infected individual to another.[55] Usually, the term communicable disease is used interchangeably with terminology on other types of infectious diseases and may also be synonymous with transmissible or contagious diseases.[56] A communicable disease can be defined as infectious diseases:

> caused by an infectious agent or its toxic products that arises through transmission of that agent or its products from an infected person, animal, or inanimate reservoir to a susceptible host. Transmission may be direct from person to person or indirect through an intermediate plant or animal host, vector, or inanimate environment.[57]

This definition articulates the nature of communicable diseases and the so-called epidemiological triangle (also referred to as the host-agent-environment triad).[58] The nature of a communicable disease refers to the progress of a disease in an individual over time without intervention.[59] After exposure to an infectious agent, there is a period of subclinical or inapparent pathological changes within an individual, which could end with the display of symptoms.[60] The symptoms indicate the transition from the subclinical phase to the clinical phase in which the diagnosis is often made.[61] An infectious disease may or may not result in clinical symptoms, making it possible for an individual to carry an infectious agent without showing or experiencing any symptoms.[62]

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55 Straif-Bourgeois, Ratard and Kretzschmar "Infectious Disease Epidemiology" 2051.
56 Straif-Bourgeois, Ratard and Kretzschmar "Infectious Disease Epidemiology" 2051.
57 Tulchinsky and Varavikova *The New Public Health* 150.
58 Hawker *et al Communicable Disease Control and Health Protection Handbook* 5. Tulchinsky and Varavikova *The New Public Health* 152.
59 Hawker *et al Communicable Disease Control and Health Protection Handbook* 5.
60 Hawker *et al Communicable Disease Control and Health Protection Handbook* 5.
61 Hawker *et al Communicable Disease Control and Health Protection Handbook* 5.
62 Tulchinsky and Varavikova *The New Public Health* 151.

The epidemiological triangle is the traditional model of infectious disease causation.[63] It aids in understanding the transmission of infectious diseases and their control, the changing patterns of disease and those newly emerging or escaping current methods of control.[64] As mentioned above, this triangle has three components: the infectious agent, the host, and the environmental factors that bring the host and the infectious agent together.[65] The infectious agent is a specific agent or agent causing diseases (i.e. organisms like viruses, parasites, fungi and bacteria).[66] Hosts could be people, or other animals, that acts as incubators or breeding places to an infectious agent.[67] Environmental factors are external factors that provide the infectious agent with opportunities to reach a new susceptible host.[68]

Communicable diseases may be classified or identified through various methods; for example, through their clinical manifestations (clinical symptoms), methods of prevention (e.g., vaccine-preventable), the characteristics of a pathogen (microbiology) and their modes of transmission (epidemiology).[69] According to the latter classification, communicable diseases can be subdivided into contagious, vehicle-borne and vector-borne diseases.[70] These diseases can be transmitted either directly or indirectly.[71] Direct transmission occurs through close proximity or the physical transfer of microorganisms.[72] Indirect transmission could occur through contact with an inanimate object.[73] Infectious disease agents could, for example,

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63 Hawker *et al Communicable Disease Control and Health Protection Handbook* 5.
64 Tulchinsky and Varavikova *The New Public Health* 152.
65 Hawker *et al Communicable Disease Control and Health Protection Handbook* 5.
66 Heyman *Control of Communicable Diseases Manual* xxiii; Hawker *et al Communicable Disease Control and Health Protection Handbook* 5.
67 Tulchinsky and Varavikova *The New Public Health* 152.
68 Tulchinsky and Varavikova *The New Public Health* 153.
69 Negri "Communicable disease control" 265.
70 Negri "Communicable disease control" 265; National Institute for Communicable Diseases 2019 https://www.nicd.ac.za/communicable-diseases-overview/.
71 Negri "Communicable disease control" 266; Straif-Bourgeois, Ratard and Kretzschmar "Infectious Disease Epidemiology" 2051; National Institute for Communicable Diseases 2019 https://www.nicd.ac.za/communicable-diseases-overview/.
72 Straif-Bourgeois, Ratard and Kretzschmar "Infectious Disease Epidemiology" 2057; National Institute for Communicable Diseases 2019 https://www.nicd.ac.za/communicable-diseases-overview/.
73 Straif-Bourgeois, Ratard and Kretzschmar "Infectious Disease Epidemiology" 2057; National Institute for Communicable Diseases 2019 https://www.nicd.ac.za/communicable-diseases-overview/.

enter a susceptible host through the inhalation of air, eating and drinking contaminated food or water, the faecal-oral route or through viruses and parasites transmitted by vectors such as mosquitoes, flies, and ticks.[74]

2.3 Cities, urbanisation, and matters of health

2.3.1 Communicable and vector-borne diseases as public health risks in cities

Historical, current, and future trends indicate that cities are often at the heart of economic growth, technological innovations, and social developments.[75] Cities are perceived to provide opportunities for better education, employment, services, cultural enrichment, a better life and improved health.[76]

Unfortunately, as explained earlier, rapid and unmanaged urbanisation creates environments conducive to transmitting communicable and vector-borne diseases.[77] The coronavirus disease outbreak illustrates how infectious diseases could spread from a single medium-sized city (Wuhan, China) to the rest of the world in a short period, creating a public health threat of global concern.[78] The globalisation of international trade and travel, the cross-border movement of large numbers of people, and environmental conditions such as climate change create pathways and opportunities for worldwide pandemics.[79]

Urbanisation has shifted some infectious diseases traditionally perceived as rural to urban areas.[80] Pathogens adapt to the urban environment and spread more vigorously in densely populated areas.[81] Neglected tropical diseases such as

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74 Straif-Bourgeois, Ratard and Kretzschmar "Infectious Disease Epidemiology" 2054; National Institute for Communicable Diseases 2019 https://www.nicd.ac.za/communicable-diseases-overview/.

75 Kuddus, Tynan and McBryde 2020 *Public Health Reviews* 1.

76 Moore, Gould and Keary 2003 *International Journal of Hygiene and Environmental Health* 269.

77 See section 1.1 above; Neiderud 2015 *Infection Ecology and Epidemiology* 1.

78 WHO *World Health Statistics 2021* 51.

79 Neiderud 2015 *Infection Ecology and Epidemiology* 5; Negri "Communicable disease control" 265; Tulchinsky and Varavikova *The New Public Health* 149.

80 Negri "Communicable disease control" 4.

81 Negri "Communicable disease control" 2.

leishmaniasis,[82] Dengue,[83] the West Nile virus,[84] and Chagas[85] are examples of rural diseases frequently found in cities.[86] These diseases are transmitted by vectors that successfully adapt to the urban environment.[87] For example, solid waste (rife in volume in cities) can serve as breeding sites for infectious disease vectors, such as flies, mosquitoes and rodents.[88] A large amount of waste in cities typically facilitates the urban transmission cycle.[89]

Densely populated areas are a defining attribute of cities. Overcrowded and densely populated areas increase shared airspace and surfaces, exposing people to the risk of influenza, measles, and TB.[90] Diseases transmitted through the respiratory and faecal-oral routes are more frequent during crowding situations.[91] According to the WHO, lower respiratory tract diseases remain one of the world's deadliest communicable diseases, accounting for approximately 2.6 million deaths in 2019.[92]

Inadequate and polluted water, inadequate access to waste and sanitation services, and management challenges such as inadequate service delivery could further increase diarrhoeal and vector-borne diseases in cities.[93] Diarrhoeal diseases are a

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82 Leishmaniasis is "a polymorphic protozoan disease of skin and mucous membranes caused by several species of the genus Leishmania." Hawker *et al Communicable Disease Control and Health Protection Handbook* 322.

83 Dengue fever is "an acute febrile viral disease characterized by sudden onset, fever for 2–7 days (sometimes biphasic), intense headache, myalgia, arthralgia, retro-orbital pain, anorexia, nausea, vomiting and rash." Hawker *et al Communicable Disease Control and Health Protection Handbook* 160.

84 West Nile virus is "a mosquito-borne flavivirus that is maintained in an enzootic cycle between mosquitoes and birds". "Humans and horses are incidental dead-end hosts." Heyman *Control of Communicable Diseases Manual* 260.

85 Chagas disease is an "acute disease, with variable fever, lymphadenopathy, malaise, and hepatosplenomegaly it primarily occurs in children; although the majority of infections are asymptomatic or paucisymptomatic." Hawker *et al Communicable Disease Control and Health Protection Handbook* 603.

86 Alirol *et al* 2011 *The Lancet* 134-135; Neiderud 2015 *Infection Ecology and Epidemiology* 4-5; Flies *et al* 2019 *Environmental International* 5.

87 Neiderud 2015 *Infection Ecology and Epidemiology* 4.

88 Moore, Gould and Keary 2003 *International Journal of Hygiene and Environmental Health* 273.

89 Mokoele J and Sebola M 2018 *The Business and Management Review* 575*;* Neiderud 2015 *Infection Ecology and Epidemiology* 4*.*

90 Alirol *et al* 2011 *The Lancet* 132; Moore, Gould and Keary 2003 *International Journal of Hygiene and Environmental Health* 272.

91 Moore, Gould and Keary 2003 *International Journal of Hygiene and Environmental Health* 272.

92 WHO 2020 https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death.

93 Alirol *et al* 2011 *The Lancet* 132.

more significant cause of death in developing countries than elsewhere.[94] It is also one of the leading causes of death in children under the age of five.[95] Inadequate sanitation is a considerable risk for diarrhoeal diseases and could lead to the transmission of helminths (worms) and other intestinal parasites.[96]

Urbanisation could further adversely affect an urban population's nutritional health, especially that of the urban poor. Urban dwellers are at risk of contracting foodborne illnesses when consuming street food that has been prepared in unhygienic conditions, for example.[97] Migration enables the movement of foodborne parasites to various cities across the globe.[98] The variability of foodborne parasites infecting other people or animals usually depends on the susceptible individuals' access to water, sanitation and hygiene, and also their and demographic status.[99]

Rapid urbanisation further causes the expansion of built-up areas and infrastructure for housing, social amenities, and other urban land uses.[100] Inadequate housing and poor living conditions in areas not keeping up with growing demands could increase the risk of communicable and vector-borne diseases.[101] Urban dwellers living in damp and mouldy housing conditions are further exposed to various respiratory conditions, for example.[102] Children living in these conditions are more likely to develop asthma, asthmatic symptoms or wheezing cough than those living in houses without mould.[103]

Generally, public health risks that cause ill health are situated in the Global South's poverty-stricken homes, communities, and workplaces.[104] Cities located in

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94 WHO 2022 https://www.who.int/news-room/fact-sheets/detail/levels-and-trends-in-child-under-5-mortality-in-2020.

95 WHO 2022 https://www.who.int/news-room/fact-sheets/detail/levels-and-trends-in-child-under-5-mortality-in-2020.

96 Moore, Gould and Keary 2003 *International Journal of Hygiene and Environmental Health* 273; Kuddus, Tynan and McBryde 2020 *Public Health Reviews* 2.

97 Kuddus, Tynan and McBryde 2020 *Public Health Reviews* 2

98 Robertson *et al* 2014 *Trends in Parasitology* 39.

99 Robertson *et al* 2014 *Trends in Parasitology* 39.

100 Zhang 2016 *HI* 245.

101 Neiderud 2015 *Infection Ecology and Epidemiology* 2; WHO and UN Habitat *Global Report on Urban Health Equitable, Healthier Cities for Sustainable Development* 69.

102 Alaazi and Aganah 2019 *Global Health Promotion* 67-68.

103 Alaazi and Aganah 2019 *Global Health Promotion* 67-68.

104 Chokoe and Meso 2017 *African Journal of Public Affairs* 170.

developing countries are often home to highly unequal societies that grow much faster than local governments could feasibly manage. This intensifies human vulnerability and the risk of exposure in urban areas.[105]

2.3.2 Urbanisation and city formation

In 2007 the UN found that the more people resided in cities than in rural areas. This officially made the world more urban than rural.[106] Since then, the world's future has been declared "urban".[107] Generally, the advent of the Neolithic Age and the Industrial Revolution are the two significant historic advances responsible for the development and occurrence of cities today.[108]

During the Neolithic Age, cities emerged between 10 000 to 4500–2000 BC in Mesopotamia and Egypt.[109] Several factors, such as commercialisation, trade, politics and religion, presumably advanced the formation of these cities.[110] During the Neolithic Age cities were primarily agricultural and rural and their populations mainly remained small.[111] Historical evidence suggests that urban population growth during this era was ultimately restricted by the scarcity of surplus energy supplies (food and water) and the inability to control infections and parasitic diseases, which thrive in densely populated areas.[112] The distribution of urban populations and urban living patterns changed in the nineteenth century due to the industrialisation and rapid economic growth of cities in developed countries (i.e. the Industrial Revolution).[113] The combination of technological and institutional innovations in this

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105 WHO and UN Habitat *Global Report on Urban Health Equitable, Healthier Cities for Sustainable Development* 69.

106 Department of Social and Economic Affairs of the United Nations *World Urbanisation Prospects* 9; McGranahan and Satterthwaite *Urbanisation, Concepts and Trends* 7; Zhang 2016 *HI* 241.

107 Department of Social and Economic Affairs of the United Nations *World Urbanisation Prospects* 1; *Integrated Urban Development Framework* 2016 (hereafter the *IUDF*).

108 De Leeuw and Simos "Cities and Health from the Neolithic to the Anthropocene" 4; De Leeuw and Simos "Cities and Health from the Neolithic to the Anthropocene" 4; Frey and Zimmer "Defining the City" 14-16; Tisdell and January *The Malthusian trap and development in pre-industrial societies: a view differing from the standard one* 2.

109 De Leeuw and Simos "Cities and Health from the Neolithic to the Anthropocene" 4.

110 Frey and Zimmer "Defining the City" 14-15; De Leeuw and Simos "Cities and Health from the Neolithic to the Anthropocene" 4.

111 Frey and Zimmer "Defining the City" 14-15.

112 Fox 2012 *Population and Development Review* 258.

113 Zhang 2016 *HI* 241.

era began to resolve the energy and infectious disease control constraints.[114] It also made it possible for people to reside in urban centres away from rivers, dams, and other natural resources.[115]

Based on predictions made in 2018, the world's urban population is estimated to reach five billion and six billion people by 2028 and 2041, respectively.[116] In contrast, their rural counterparts may presumably never reach four billion people.[117] Although the rate of urbanisation slowed down significantly between 1975 and 2015, the world continues to experience an increase in its urban population.[118] Most of this urban growth (90 percent) is estimated to occur in developing regions such as Asia and Africa, as indicated earlier.[119] Among these two developing regions, Asia has the highest number of urban dwellers and is home to twenty-eight of the world's fastest-growing cities.[120] On the other hand, Africa has rapidly urbanised at growth rate of 3.7 percent annually between 2010 and 2015 and contains seven of the world's fastest-growing cities.[121]

The constant migration of people from rural to urban areas is generally defined as urbanisation.[122] In this instance, urbanisation profoundly affects land use, economic activity and culture, and how people reside and work in cities.[123] McGranahan and

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114 Fox 2012 *Population and Development Review* 258.

115 Frey and Zimmer "Defining the City" 15; De Leeuw and Simos "Cities and Health from the Neolithic to the Anthropocene" 3; Department of Social and Economic Affairs of the United Nations *World Urbanisation Prospects* 1; Zhang 2016 *HI* 241.

116 Department of Social and Economic Affairs of the United Nations *World Urbanisation Prospects* 10.

117 Department of Social and Economic Affairs of the United Nations *World Urbanisation Prospects* 10.

118 The Organisation for Economic Co-operation and Development of the European *Cities in the World A New Perspective on Urbanisation* 16; United Nations Human Settlements Programme of the UN *World Cities Report 2020: The Value of Sustainable Urbanization* 11.

119 See section 1.1 above; United Nations Human Settlements Programme of the UN *World Cities Report 2020: The Value of Sustainable Urbanization* 11; Department of Social and Economic Affairs of the United Nations *World Urbanisation Prospects* 1.

120 United Nations Human Settlements Programme of the UN *World Cities Report 2020: The Value of Sustainable Urbanization* 12; Department of Economics and Social Affairs Population Division of the United Nations *The World's Cities in 2018 Data Booklet* 7.

121 United Nations Human Settlements Programme of the UN *World Cities Report 2020: The Value of Sustainable Urbanization* 12; Department of Economics and Social Affairs Population Division of the United Nations *The World's Cities in 2018 Data Booklet* 7.

122 Zhang 2016 *HI* 241; Kuddus, Tynan and McBryde 2020 *Public Health Reviews* 1.

123 Zhang 2016 *HI* 241; McGranahan and Satterthwaite *Urbanisation, Concepts and Trends* 6.

Satterthwaite hold that interpreting the term "urbanisation" in this manner could be problematic because the subsequent changes related to urbanisation do not coincide.[124] The authors suggest that when urbanisation is interpreted as a demographic phenomenon, it could liken urbanisation to urban population growth.[125] This could be problematic because only half of the world's urban population growth can be attributed to rural-urban migration. The rest occurs through natural population growth and other developments such as city expansion and city densification.[126] For the purposes of this study, urbanisation is best defined along the lines of the description by Montgomery *et al*[127] as:

> A complex socio-economic process that transforms the built environment, converting formerly rural into urban settlements while also shifting the spatial distribution of a population from rural to urban areas. It includes changes in dominant occupations, lifestyle, culture and behaviour, thus altering urban and rural areas' demographic and social structure.

One garners from this definition that urbanisation is not limited to rural-urban migration or population growth. Urbanisation involves social and economic growth, land use and distribution changes, and technological advancements and innovation,[128] contributing to the risk and control of communicable and vector-borne diseases in cities.

2.4 The need for a legal response

Health risks in cities, including South African cities, generally share four essential features, namely:

(i) health hazards are not bound by borders, ranging from infectious diseases to non-communicable diseases, and injuries;

(ii) health hazards have common underlying causes such as dangerous pathogens, unhealthy behaviours, or unsafe environments;

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124 McGranahan and Satterthwaite *Urbanisation, Concepts and Trends* 6.

125 McGranahan and Satterthwaite *Urbanisation, Concepts and Trends* 8.

126 The Organisation for Economic Co-operation and Development of the European *Cities in the World A New Perspective on Urbanisation* 20; McGranahan and Satterthwaite *Urbanisation, Concepts and Trends* 8.

127 Department of Social and Economic Affairs citing Montgomery and others in Department of Social and Economic Affairs of the United Nations *World Urbanisation Prospects* 3.

128 Zhang 2016 *HI* 24.

(iii) they are exacerbated by inequalities linked to the socio-economic determinants of health; and

(iv) they require a coordinated, multi-sectoral global response.[129]

As indicated above, the risk of communicable and vector-borne diseases is further exacerbated by rapid urbanisation, industrialisation, poor economic growth, and the like.[130] These features, urbanisation and its consequent developments often cause severe challenges for municipalities across South Africa. These challenges and the communicable and vector-borne disease risks in cities could exceed the ability of authorities to control and prevent these diseases.[131] A crucial element in response to these challenges may therefore be the strategic use of law.[132]

The 2019 Lancet Commission on the legal determinants of health argues that law is a crucial determinant of health.[133] Law influences the environment which people inhabit and face disease.[134] Law can impact health by controlling and preventing risk factors known as the social determinants of health.[135] Generally, the law also provides populations and individuals with rights that protect them from elements that negatively affect health and well-being.[136]

Scholars in the field of public health and law usually use different terms and categories to indicate the role of law in health. Burris *et al*,[137] for instance, refers to the term "legal epidemiology". This term describes the deployment of law as a factor in scientific study of the cause, distribution, and prevention of disease and injury.[138] The term has three subsequent components: legal control and prevention, legal aetiology and policy surveillance.[139] Legal control and prevention refer to the use of

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129 Gostin *et al* 2019 *The Lancet* 1858-1859.
130 Matthee *et al* 2018 *Development Southern Africa* 284.
131 See section 1.1 of Chapter 1 above.
132 Gostin *et al* 2019 *The Lancet* 1859; Genn 2019 *Current Legal Problems* 162.
133 Genn 2019 *Current Legal Problems* 162; Gostin *et al* 2019 *The Lancet* 1859.
134 Genn 2019 *Current Legal Problems* 162.
135 Gostin *et al* 2019 *The Lancet* 1859.
136 Genn 2019 *Current Legal Problems* 162.
137 Burris *et al* 2016 *Annual review of public health* 139.
138 Burris *et al* 2016 *Annual review of public health* 139.
139 Burris *et al* 2016 *Annual review of public health* 139.

legal tools to change unhealthy behaviour and environments.[140] Legal aetiology is the study of laws incidental to or with unintended consequences for health.[141] Surveillance is a means through which public health officials track the occurrence, geographical spread and nature of disease or injury, as well as risk factors among the population.[142]

Gostin *et al* identify four legal determinants of health to indicate the linkages between law and health and how the law could be used to strengthen the overall global health agenda.[143] The first legal determinant of health can translate the vision for sustainable development, specifically SDG3,[144] into action.[145] This determinant relates to the power of law to channel the concept for "ensuring healthy lives and to promote well-being for all ages."[146] The second legal determinant holds that law could strengthen the governance of national and international health institutions.[147] Legal determinant three holds that law can be used to implement adequate evidence-based health interventions.[148] This determinant is similar to the term legal epidemiology, as identified above. In this case, statutes and regulations can be used to implement interventions that lower the exposure to risk factors across entire populations.[149] The use of law to control and prevent exposure to risk factors and to change behaviour and conduct that influence health is also one of the oldest and most well-developed legal epidemiology methods.[150] Legal determinant four indicates that law can be used to strengthen governments capacity to pass laws and to implement and enforce public health laws.[151] These laws can be used to reduce health risks in cities, for example, through vector control and immunisation against

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140 Burris *et al* 2016 *Annual review of public health* 139.
141 Burris *et al* 2016 *Annual review of public health* 140.
142 Burris *et al* 2016 *Annual review of public health* 141.
143 Gostin *et al* 2019 *The Lancet* 1860.
144 See SDG 3 of the *2030 Agenda for Sustainable Development* (2015).
145 Gostin *et al* 2019 *The Lancet* 1870.
146 Gostin *et al* 2019 *The Lancet* 1870.
147 Gostin *et al* 2019 *The Lancet* 1877.
148 Gostin *et al* 2019 *The Lancet* 1882.
149 Gostin *et al* 2019 *The Lancet* 1882.
150 Burris *et al* 2016 *Annual review of public health* 139.
151 Gostin *et al* 2019 *The Lancet* 1901.

infectious diseases, food reformulation, healthy built environments for non-communicable diseases and the like.[152]

2.5 Concluding remarks

Based on the definitions of communicable and vector-borne diseases, the aim of this chapter was to grasp the extent of the risks in cities. Considerations of the definition of communicable diseases indicated that communicable diseases refer to any type of infectious disease.[153] These diseases could be classified in several ways, including along the lines of the epidemiological classification.[154] The epidemiological classification, in turn, subdivides communicable diseases into contagious, vehicle-borne and vector-borne diseases.[155] This classification enables non-medical practitioners to gain insight into infectious disease transmission and standard prevention methods.[156]

From the discussion in this chapter, it can be gathered that urbanisation and its subsequent development contribute significantly to the risk of communicable and vector-borne diseases.[157] The risk is unique within and among cities because cities are spatially and temporally dynamic.[158]

The discussion has highlighted that the use of law at all levels is crucial to responding to the risk of communicable and vector-borne diseases.[159] The infectious disease risk in South African cities is exacerbated by urbanisation, industrialisation, the socio-economic factors in communities and local governments' inability to deliver basic services.[160] Law could influence health by structuring, preserving, and mediating risk factors such as overcrowding, poor solid waste management, and underlying conditions known to affect health in cities, such as air pollution and

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152 See Gostin *et al* 2019 *The Lancet* 1892.
153 See section 2.3 above.
154 See section 2.3 above.
155 See section 2.4 above.
156 Negri "Communicable disease control" 265.
157 See section 2.3.1 and 2.3.2 above.
158 See section 2.3.3 above.
159 See section 2.4 above.
160 See section 2.4 above.

environmental degradation. Law also provides protective rights and entitlements to individuals and the population shield them from factors that are harmful to their health.

Consequently, it is meaningful to identify and critically evaluate in the next chapter how international law and policy instruments and policies direct national and sub-national governments' responses to communicable and vector-borne disease control. The evaluation contextualises the need for and relevance of multi-level law and policy reform in the South African domestic context, to which the study turns in Chapter 4.

CHAPTER 3 INTERNATIONAL LAW AND POLICY DIRECTIVES ON COMMUNICABLE AND VECTOR-BORNE DISEASE CONTROL AND PREVENTION BY STATES

3.1 Introduction

It follows from Chapter 2 that communicable and vector-borne diseases pose a significant public health risk to populations worldwide and urbanisation facilitates the transmission of infectious diseases. Populations across the globe are vulnerable to the risk of emerging and re-emerging infectious diseases since these diseases do not abide by national borders or state sovereignty.[161] This poses several challenges beyond an individual state's governance capabilities, demanding national and international legal responses, amongst others.[162]

International law is a set of norms or regulations commonly regarded as binding between nation states.[163] The international human rights law indicate that these norms or regulations also apply to non-state actors.[164] International law can also substantially affect private parties, such as corporations, concerning trade law and individuals in terms of human rights law.[165] International law enables international institutions, governments, and other stakeholders to address the risk of communicable and vector-borne diseases in cities and to protect health worldwide.[166]

The discussion below reveals that although international law mainly governs the conduct of states,[167] international health institutions such as the WHO were created

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161 Durrance-Bagale *et al* 2021 *International Journal of Health Policy and Management* 1; Aginam 2002 *Bulletin of the World Health Organization* 946-947.

162 Toebes 2015 *Indian Journal of International Law* 300.

163 Gostin *et al* 2019 *The Lancet* 1861; Knobler *et al* "The Impact of Globalization on Infectious Disease Emergence and Control: Exploring the Consequences and Opportunities: a Workshop Summary" 184.

164 Knobler *et al* "The Impact of Globalization on Infectious Disease Emergence and Control: Exploring the Consequences and Opportunities: a Workshop Summary" 184.

165 Gostin *et al* 2019 *The Lancet* 1861.

166 Negri "Communicable disease control" 268; Aginam 2002 *Bulletin of the World Health Organization* 946.

167 Gostin *et al* 2019 *The Lancet* 1861.

by states to deal with infectious diseases and other international public health problems.[168] These international health institutions have law-making powers or act as forums to facilitate the negotiation of treaties by member states.[169] Additionally, these international health institutions can generate norms, guidelines, best practices and policies for adoption by states in their respective territories.[170] These norms, guidelines, best practices and policies are not legally binding on member states, but remains authoritative.[171] They have effects comparable to that of binding law and are important for benchmarking, monitoring and transparency. International health institutions such as the WHO prefer using soft law because of its comparable advantages.[172] Governments are often prepared to sign up for goals framed as targets or declarations rather than obligations.[173]

The premise of this chapter is that international law and policy set out valuable precedents in relation to communicable and vector-borne disease control and prevention. These precedents are significant for the municipal regulation of communicable and vector-borne disease control in South Africa. Consequently, this chapter will consider the obligations that international law and policy place on states to control and prevent the transmission of communicable and vector-borne diseases cities, *inter alia*. The objective is to explore how the relevant international law instruments and policies direct states (including sub-national authorities) to control and prevent the spread of communicable and vector-borne diseases. This chapter is divided into three sections. Section one considers the main institutional organisations and the relevance of state communicable and vector-borne disease control and prevention. Section two considers the applicable international law, while

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168 Knobler *et al* "The Impact of Globalization on Infectious Disease Emergence and Control: Exploring the Consequences and Opportunities: a Workshop Summary" 186.

169 Gostin *et al* 2019 *The Lancet* 1861.

170 Knobler *et al* "The Impact of Globalization on Infectious Disease Emergence and Control: Exploring the Consequences and Opportunities: a Workshop Summary" 189.

171 Knobler *et al* "The Impact of Globalization on Infectious Disease Emergence and Control: Exploring the Consequences and Opportunities: a Workshop Summary" 189; Gostin *et al* 2019 *The Lancet* 1861.

172 Knobler *et al* "The Impact of Globalization on Infectious Disease Emergence and Control: Exploring the Consequences and Opportunities: a Workshop Summary" 189; Gostin *et al* 2019 *The Lancet* 1862.

173 Gostin *et al* 2019 *The Lancet* 1862.

section three considers the applicable soft-law instruments related to urbanisation, disaster risk management and influenzas.

3.2 International relevance of communicable and vector-borne disease control and prevention

Infectious disease control has been described as being at the heart of international public health law.[174] The origins of communicable diseases and international health law can be traced back to the mid-nineteenth century when France convened the first International Sanitary Conference in 1851.[175] This conference was held in response to the European cholera epidemics of 1830 and 1847.[176] It aimed to negotiate agreements and regulations to combat the cholera epidemics, protect states against the transmission of communicable diseases across geopolitical boundaries, and minimise the burden of quarantine on international trade.[177] The negotiations at the conferences led to the International Health Regulations of 1851, the first example of international legal norms regulating maritime quarantine.[178] Since then, several sanitary conventions have been concluded to prevent and control the international spread of specific infectious diseases and harmonise public health measures.[179] Most of the conventions negotiated at these conferences were not ratified by the participating countries and never entered into force. Nevertheless, the diplomatic effort involved highlighted the importance of multilaterally addressing the cross-border spread of disease through international conventions.[180]

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174 Negri "Communicable disease control" 269.

175 Aginam 2002 *Bulletin of the World Health Organization* 946; Delfino 2020 *Araucaria* 362.

176 Aginam 2002 *Bulletin of the World Health Organization* 946; Negri "Communicable disease control" 269; Delfino 2020 *Araucaria* 362.

177 Aginam 2002 *Bulletin of the World Health Organization* 946; Negri "Communicable disease control" 269; Delfino 2020 *Araucaria* 362.

178 Delfino 2020 *Araucaria* 362; Aginam 2002 *Bulletin of the World Health Organization* 946.

179 Delfino 2020 *Araucaria* 362; Aginam 2002 *Bulletin of the World Health Organization* 946; Burci and Negri 2020 *NYUJ Int'l L & Pol* 502.

180 Aginam 2002 *Bulletin of the World Health Organization* 947.

The 20th century saw the creation of four permanent international health organisations.[181] These were the Pan American (originally the International) Sanitary Bureau in 1902, the Office International d'Hygiene Publique (1907), the Health Organisation of the League of Nations (1923), and the Office International des Epizooties (1924, now known as the World Organisation for Animal Health).[182] These organisations played an essential role in the institutionalisation of international cooperation in the field of public health and communicable disease control.[183] However, it was not until after the Second World War and the negotiation and conclusion of various sanitary agreements that led to international cooperation to address health problems.[184] The WHO was established in 1948. It is a specialised agency of the UN based on Article 57 of the UN Charter[185] and Article 69 of the WHO's Constitution itself.[186]

In 1946 the WHO was established as the principal international institution in the field of public health.[187] Under the governance framework of the WHO's 1946 Constitution and the third edition of the *International Health Regulations* (2005) (hereafter the *IHR* (2005)) the WHO has the authority to adopt regulations,[188] and to direct and coordinate international health work.[189] This includes advancing work to eliminate epidemic, endemic and other diseases,[190] and promoting environmental hygiene,[191] amongst others. Various existing health institutions were incorporated into the WHO to create a comprehensible governance model targeted towards achieving global health security and universal enjoyment of the right to health.[192]

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181 Burci and Negri 2020 *NYUJ Int'l L & Pol* 502; Negri "Communicable disease control" 270; Aginam 2002 *Bulletin of the World Health Organization* 947.
182 Delfino 2020 *Araucaria* 362; Burci and Negri 2020 *NYUJ Int'l L & Pol* 502.
183 Delfino 2020 *Araucaria* 362.
184 Negri "Communicable disease control" 270; Delfino 2020 *Araucaria* 362.
185 *Charter of the United Nations and the Statute of the International Court of Justice* (1945).
186 *Constitution of the World Health Organisation* (1946).
187 Burci and Negri 2020 *NYUJ Int'l L & Pol* 502; Negri "Communicable disease control" 270; *International Health Regulations* (2005).
188 Foreword of the *IHR* (2005).
189 Article 2 of *the Constitution of the WHO*.
190 Article 2(g) of the *IHR* (2005).
191 Article 2(i) of the *IHR* (2005).
192 Burci and Negri 2020 *NYUJ Int'l L & Pol* 502.

The WHO represents a landmark step to combat and prevent the global transmission of infectious diseases.[193]

Other actors that play a role in the international governance of health include Intergovernmental Organisations (hereafter IGOs), non-state actors and organisations involved in disaster relief and humanitarian activities, for example.[194] Together these actors can contribute to communicable and vector-borne disease control by providing their expertise and resources.[195] For instance, part of the International Labour Organisation's (hereafter the ILO) objective is to protect workers against illness and disease that arise from their employment,[196] including communicable diseases. In response to specific health risks, the ILO developed international standards that guide the establishment of health protection in many industries, provide guidance for dealing with HIV and AIDS in the workplace, and help to set up systems of health protection.[197] Disaster and Humanitarian Relief Organisations such as the International Committee of the Red Cross/Red Crescent and the United Nations International Children's Emergency Fund, as well as NGOs and national medical associations, provides international medical aid and the distribution and management of resources such as safe potable water, food and medical supplies.[198]

These international developments indicate the progressive shift from states' domestic and exclusive jurisdiction over health issues to multilateral cooperation, institutionalisation, and later to global health governance.[199] Legal scholars studying global health governance have critically described the international framework as fragmented, with a lack of coordination, weak leadership and undefined boundaries

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193 Negri "Communicable disease control" 270; Burci and Negri 2020 *NYUJ Int'l L & Pol* 502.

194 General Comment 14 para 65; Toebes 2015 *Indian Journal of International Law* 325; Moon "Global health law and governance: concepts, tools, actors and power" 44.

195 Toebes 2015 *Indian Journal of International Law* 325.

196 Meier and Gostin *Human rights in global health: Rights-based governance for a globalizing world* 7.

197 Meier and Gostin *Human rights in global health: Rights-based governance for a globalizing world* 7.

198 General Comment 14 para 65; Toebes 2015 *Indian Journal of International Law* 325.

199 Negri "Communicable disease control" 269.

towards other fields of global governance.[200] This is exacerbated by challenges of urbanisation and communicable and vector-borne disease transmission.[201] The institutional ecosystem of global health governance does not include cities or formal coordination mechanisms between cities and institutions such as the WHO.[202] However, the success of international public health interventions may rest on national and sub-national authorities' ability to organise themselves and promote health under the global health governance architecture.[203] Generally, this occurs when authorities such as cities cooperate with the WHO or other international organisations, as mentioned above, or the through multi-stakeholder governance of health at the local level.[204]

3.3 Framework of applicable international law

3.3.1 International Health Regulations (2005)

The World Health Assembly adopted the *IHR* (2005) on 23 May 2005.[205] This international treaty entered into force in 2007 and is an essential instrument used to protect populations against international disease transmission.[206] The *IHR* (2005) is a notable development in international law and public health that followed as a result of the revision of the *International Health Regulations* (1969) (hereafter the *IHR* (1969).[207] The *IHR* (1969)), originally concerned six quarantinable diseases which was decreased to three diseases in 1973 and 1981.[208] This decrease in the amount of quarantinable diseases, in the *IHR* (1969) also indicated the global eradication of smallpox.[209] The *IHR* (1969) set out to protect states from importing communicable diseases and guaranteed maximum health security with minimum

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200 Iaione and de Nictolis "The Role of Cities in the Global Governance of Health" 267.
201 See section 2.3.1 above.
202 Iaione and de Nictolis "The Role of Cities in the Global Governance of Health" 268.
203 Katz *et al* 2012 *Administrative sciences* 136.
204 Iaione and de Nictolis "The Role of Cities in the Global Governance of Health" 270-271; Toebes 2015 *Indian Journal of International Law* 323.
205 Preamble of the *IHR* (2005).
206 Preamble of the *IHR* (2005); Negri "Communicable disease control" 268.
207 Baker and Fidler 2006 *Emerging Infectious Diseases* 85; Fidler and Gostin 2006 *Journal of Law, Medicince and Ethics* 85.
208 The list of diseases were decreased to "yellow fever, the plague and cholera."; see the preamble of the *IHR* (2005).
209 Preamble of the *IHR* (2005).

interference with world traffic.[210] Regardless of these goals the IHR (1969) imposed restrictive measures that inhibited the international movement of goods and persons.[211] It also inhibited state parties (and sub-national authorities) interference with diseases that fell outside of the scope of the IHR (1969).[212] In 1995, the World Health Assembly ordered the Director-General to revise the *IHR* (1969) because it did not provide an effective framework to prevent the international disease transmission.[213] Some of the issues pertaining to the *IHR* (1969) include the narrow scope of the regulations, non-compliance by states, and the lack of strategies to respond to global public health risks.[214]

These issues, along with the outbreak of Severe Acute Respiratory Syndrome (hereafter the SARS) in 2003, accelerated the *IHR* (1969) revision process, resulting in the *IHR* (2005).[215] The purpose and scope of the *IHR* (2005) include to:

> prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade.[216]

Fidler and Gostin[217] argue that the purpose and scope of the *IHR* (2005) seek to strike a balance between the state's right to protect the health of its citizens and the state's obligations to take health protection measures in ways that do not necessarily interfere with international trade and travel. Negri holds that the *IHR* (2005) defines specific rights and imposes proactive conduct and obligations on states at a domestic and international level by requiring states to strengthen their health systems for large-scale emergencies.[218] In support of the purpose and scope of the *IHR* (2005) introduced a number innovations and obligations on states, including the development of specific minimum public health capacities; notifying the WHO of events that might constitute a public health emergency of international

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210 Negri "Communicable disease control" 272.
211 Negri "Communicable disease control" 272.
212 Negri "Communicable disease control" 272.
213 Fidler and Gostin 2006 *Journal of Law, Medicine and Ethics* 85.
214 Fidler and Gostin 2006 *Journal of Law, Medicine and Ethics* 85.
215 Preamble of the *IHR* (2005); Negri "Communicable disease control" 272.
216 Preamble of the *IHR* (2005); Article 2 of the *IHR* (2005).
217 Fidler and Gostin 2006 *Journal of Law, Medicine and Ethics* 86.
218 Negri "Communicable disease control" 274.

concern, and providing data and information to the WHO.[219] The *IHR* (2005) sets out procedures to determine if an event may cause public health emergency of international concern and provides for the issuance of corresponding temporary recommendations.[220] It sets out provisions related to the protection of the human rights, and the establishment of National IHR Focal Points and WHO IHR Contact Points for urgent communications between states parties and the WHO.[221]

The *IHR* (2005) requires states to develop, strengthen and maintain core surveillance and response capacities.[222] The *IHR* (2005) defines surveillance as:

> The systematic ongoing collection, collation and analysis of data for public health purposes and the timely dissemination of public health information for assessment and public health response as necessary.[223]

This continuous data collection and analysis makes surveillance fundamental to guiding effective public health actions against transnational disease threats.[224] As part of the core surveillance and response capacity requirements, each state party must develop and maintain capabilities to detect, assess, and report disease events at the local, intermediate, and national levels.[225] All government spheres must immediately report all crucial and available information to the relevant health care response level.[226] For example, the local community or public health response level must report to the state or intermediate response level.[227] The local or primary health care response level are also responsible for identifying and detecting events of disease or death that occur outside of its usual season or territory.[228] The intermediate response level must assess and confirm the status of reported events.[229] If such an event is classified as urgent it must be reported to the state

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219 Preamble of the *IHR* (2005).
220 Preamble of the *IHR* (2005).
221 Preamble of the *IHR* (2005).
222 Article 5.1 of the *IHR* (2005); Fidler and Gostin 2006 *Journal of Law, Medicine and Ethics* 88.
223 Article 1 of the *IHR* (2005).
224 Baker and Fidler 2006 *Emerging Infectious Diseases* 1060.
225 Article 5.1 and Annexure 1 of the *IHR* (2005); Baker and Fidler 2006 *Emerging Infectious Diseases* 1060.
226 Annex 1 of the *IHR* (2005).
227 Annex 1 of the *IHR* (2005).
228 Annex 1 of the *IHR* (2005).
229 Annex 1 of the *IHR* (2005).

level of response by the intermediate response level.[230] The state level must assess all reports within 48 hours.[231] The state level is responsible for reporting events that may constitute, a public health emergency of international concern, to the WHO through the National IHR Focal Point.[232]

A public health emergency of international concern is defined as an event that may develop into a public health risk to other states through global disease transmission.[233] This event "may require an internationally coordinated response".[234] Annex 2 of the *IHR* (2005) provides a decision instrument that state parties must use to determine if an event constitutes a public health emergency of international concern. Annex 2 distinguishes between the mandatory notification of events concerning a restricted number of diseases, which may appear unusual and unexpected and pose a serious risk of adverse impact on public health, and the mandatory notification of other events meeting at least two of the four conditions set out in Annex 2.[235] The WHO's Director General is responsible for determining whether an event constitutes a public health emergency of international concern.[236] The Director General may convene meetings with the IHR Emergency Committee for advice on whether an event constitutes a public health emergency of international concern.[237]

The *IHR* empowers the WHO to collect reports from other sources, and to request consultations and notifications from state parties where an event may allegedly be

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230 Annex 1 of the *IHR* (2005).

231 Annex 1 of the *IHR* (2005).

232 The regulations require that WHO establish IHR contact points that are always accessible to state parties; Article 6.1 and annex 1 of the *IHR* (2005); The "establishment of contact and focal points forms part of the surveillance initiative in *IHR* (2005)"; "It facilitates the rapid sharing of surveillance and information to the WHO IHR contact points and the dissemination of information within the State Party"; see Baker and Fidler 2006 *Emerging Infectious Diseases* 1060 and Article 4 of the *IHR* (2005).;Annex 1 of the *IHR* (2005).

233 Article 1 of the *IHR* (2005).

234 Article 1 of the *IHR* (2005).

235 The restricted number of diseases include "Smallpox, Poliomyelitis due to wild type poliovirus, Human influenza caused by a new subtype and SARS"; Negri "Communicable disease control" 276; Annex 2 of the *IHR* (2005).

236 Article 12(1) of the *IHR* (2005).

237 Negri "Communicable disease control" 277; Article 48(1)(a) of the *IHR* (2005).

occurring.[238] States must respond within 24 hours to such verification requests.[239] The WHO must also provide the relevant state parties with information on the most efficient and effective measures to respond to a public health emergency of international concern.[240] In support of this, the WHO set up the Global Outbreak Alert and Response Network (hereafter the GOARN), to combat the international spread of disease.[241] The GOARN provides a multidisciplinary and technical response to outbreaks and epidemics with a universal outlook.[242] GOARN also supports countries in actions directed at disease control by providing technical support, investigating and calculating risks in epidemics, and by providing technical advice and guidance to help control disease outbreaks.[243]

As a key international instrument for protection against the international spread of disease, the *IHR* (2005) primarily directs states to develop, strengthen and maintain surveillance and response strategies.[244] The WHO provides states with the necessary support to fulfil this task.[245] Notably, although most of the focus is on states and the implementation of health measures by states, international bodies such as the WHO increasingly recognise that a multi-stakeholder approach should be taken to achieve health at the national and city level.[246] The WHO and other international organisations often cooperate with cities and city networks, and welcome them in delegations at these organisations.[247] Like states, cities are directed to develop, strengthen and maintain surveillance and response strategies for communicable and vector-borne disease control and prevention.

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238 Article 9 of the *IHR* (2005).
239 Article 10.2 of the *IHR* (2005).
240 Article 11 of the *IHR* (2005).
241 Negri "Communicable disease control" 276.
242 Lazcano-Ponce, Allen and González 2005 *Archives of Medical Research* 732.
243 Lazcano-Ponce, Allen and González 2005 *Archives of Medical Research* 732.
244 Article 13(1) of the *IHR* (2005).
245 Article 13(3) of the *IHR* (2005).
246 Toebes 2015 *Indian Journal of International Law* 322.
247 Iaione and de Nictolis "The Role of Cities in the Global Governance of Health" 270.

3.3.2 Article 12 of the International Covenant on Economic, Social and Cultural Rights

International human rights law plays an important role in international health law.[248] The right to health was first recognised with the establishment of the WHO in 1948.[249] The WHO's 1946 Constitution holds that the right to health is a fundamental human right that must be recognised without distinction.[250] It further defines health as a state of mental, physical and social well-being and not just the absence of disease or infirmity.[251] Since then, the right to health has been reiterated in a number of international (and regional) human rights instruments such as the *Universal Declaration on Human Rights* (hereafter the *UNDHR*),[252] the *International Covenant on Economic, Social and Cultural Rights* (hereafter the *ICESCR*),[253] the *Convention on the Elimination of all Forms of Discrimination Against Women*,[254] the *Convention on the Rights of the Child*,[255] the *African Charter on Human and Peoples' Rights*,[256] the *Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa* and the *African Charter on the Rights and Welfare of the Child*,[257] among others.[258]

The *ICESCR* specifically recognises the right of everyone to the enjoyment of the highest attainable standard of physical and mental health.[259] To realise this right, Article 12 mentions four distinct duties for states.[260] This include improving all aspects of environmental and industrial hygiene and preventing, treating, and

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248 Toebes 2015 *Indian Journal of International Law* 308.
249 Moyo "Realising the right to health in South Africa" 382; Toebes 2015 *Indian Journal of International Law* 308; Ngwena and Cook "Rights concerning health" 108.
250 Preamble of the *Constitution of the WHO* (1946).
251 Preamble of the *Constitution of the WHO* (1946).
252 *Universal Declaration of Human Rights* (1948).
253 *International Covenant on Economic, Social and Cultural Rights* GA RES 2200A (XXI) (1966).
254 *Convention on the Elimination of All Forms of Discrimination against Women* GA RES 34/180 (1979).
255 *Convention on the Rights of the Child* GA RES 44/25 (1989).
256 *African Charter on Human and Peoples Rights* (1981).
257 *African Charter on the Rights and Welfare of the Child* (1990).
258 Moyo "Realising the right to health in South Africa" 382.
259 Article 12(1) of the *ICESCR* (1966).
260 See Article 12(2) of the *ICESCR* (1966) for a comprehensive view of the undertakings placed on state parties for the full realisation of the right to the highest attainable standard of health; Toebes 2015 *Indian Journal of International Law* 309.

controlling endemic, epidemic, occupational, and other diseases.[261] The Committee on Economic, Social and Cultural Rights (the Committee) adopted General Comment 14 in 2000, which provides the Committee's interpretation of the right to health. Although this document is not legally binding and can be characterised as soft law it is still considered authoritative by many scholars and practitioners in the field.[262]

General Comment 14 holds that the right to health should not be understood as the right to be healthy.[263] Instead, the right to health caters for the provision of health care services, and a wide range of socio-economic factors that promote the conditions in which people can live a healthy life, and it extends to the underlying determinants of health.[264] This includes access to safe and potable water, adequate sanitation, food and nutrition, housing, and a healthy environment.[265] To fulfil the right to health, healthcare facilities, goods and services must be available, accessible, acceptable and of good quality.[266] Additionally, the core obligations imposed on states include that states must ensure access to basic shelter, housing and sanitation, and an adequate supply of safe and potable water,[267] provide immunisation against the major infectious diseases occurring in the community,[268] and take measures to prevent, treat and control the epidemic and endemic diseases.[269]

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261 Article 12(b) and (c) of the *ICESCR* (1966).

262 Toebes 2015 *Indian Journal of International Law* 309.

263 Article 8 of *CESCR General Comment No. 14: The Right to the Highest Attainable Standard of Health* UN Doc E/C12/2000/4 (2000) (hereafter General Comment No 14).

264 Article 4 of *General Comment No 14* (2000).

265 Article 4 of *General Comment No 14* (2000); Additionally, there are other General Comments that speak to the rights mentioned above such as *CESCR General Comment No 15 The Right to Water* UN Doc E/C12/2002/11 (2002); *CESCR General Comment No 12: The Right to Adequate Food* UN Doc E/C12/1999/5 (1999); *CESCR General Comment No 4: The Right to Adequate Housing* UN Doc E/1992/23 (1991); and *CESCR General Comment No 7: The Right to Adequate Housing* UN Doc E/1998/22 (1997).

266 Article 12 of *General Comment No 14* (2000).

267 Article 43 of *General Comment No 14* (2000).

268 Article 44 of *General Comment No 14* (2000).

269 Article 44 of *General Comment No 14* (2000).

3.4 Framework for applicable international policy and soft-law

3.4.1 United Nations 2030 Agenda for Sustainable Development

On 25 September 2015, 193 members of the UN met to adopt 17 Sustainable Development Goals (hereafter the SDGs) and 169 targets.[270] The SDGs cover a range of critical global issues, such as poverty, universal education and climate chang.[271] SDGs 3 and 11 are of particular importance for the purposes of this study. SDG 3 aims to "ensure healthy lives and promote well-being at all ages" and sets out a single unifying health goal for the SDG's.[272] Thirteen targets support SDG 3. Part of this SDG aims to put an end to communicable disease epidemics.[273] This includes diseases such as HIV and Aids, TB, malaria, neglected tropical diseases and hepatitis, water-borne diseases and other communicable diseases.[274] Additionally, it seeks to support the research and development of vaccines and medicines for the treatment of communicable and non-communicable diseases.[275] This SDG aims to strengthen countries, especially developing countries, capacity for early warning detections, risk reduction and the management and global and national health risks.[276]

SDG 11 aims to make "cities and human settlements more inclusive, safe, resilient and sustainable". It is the only SDG with an exclusive urban focus. This SDG ambitiously commits to ensuring everyone access to adequate, safe and affordable housing, and essential services.[277] It also proposes the upgrading of slums.[278] It aims to significantly reduce the amount of people affected by disasters. It urges cities and human settlements to adopt and implement plans and policies in line with the *Sendai Framework for Disaster Risk Reduction* 2015-2030 (hereafter, the *SFDRR*).[279]

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270 Preamble of the *2030 Agenda for Sustainable Development* (2015).
271 Lenzi 2019 *Acta Bio-medica: Atenei Parmensis* 182.
272 SDG 3 of the *2030 Agenda for Sustainable Development* (2015); Gostin *et al* 2019 *The Lancet*
273 SDG 3 of the *2030 Agenda for Sustainable Development* (2015).
274 SDG 3 of the *2030 Agenda for Sustainable Development* (2015).
275 SDG 3 of the *2030 Agenda for Sustainable Development* (2015).
276 SDG 3 of the *2030 Agenda for Sustainable Development* (2015).
277 SDG 11 of the *2030 Agenda for Sustainable Development* (2015).
278 SDG 11 of the *2030 Agenda for Sustainable Development* (2015).
279 SDG 11 of the *2030 Agenda for Sustainable Development* (2015); *Sendai Framework For Disaster Risk Reduction 2015 - 2030* UNISDR Doc UNISDR/GE/2015 (2015).

Lastly, the goal aims to reduce the adverse environmental impact of cities by paying particular attention to air quality and municipal and other waste management.[280] Other SDGs are also relevant to the control and prevention of communicable and vector-borne diseases in cities. For example, SDG 6: "ensures the availability and sustainable management of water and sanitation for all";[281] SDG 7: "ensures access to affordable, reliable, sustainable and modern energy for all";[282] and SDG 13: "takes urgent action to combat climate change".[283]

3.4.2 New Urban Agenda

The *New Urban Agenda* 2017 (hereafter the *NUA*) recognises that urbanisation is one of the 21st century's most transformative trends.[284] Cities continue to concentrate populations, economic and social activities, and environmental and humanitarian impacts that pose significant challenges in terms of housing, infrastructure, health, essential services, and natural resources.[285]

Like the SDGs, the *NUA* represents a shared vision for better and more sustainable futures.[286] The *NUA* primarily focuses on setting standards and principles for the planning, construction, development, management and improvement of urban areas through national and urban legislation, regulations and policies.[287] By addressing how cities are planned, designed, governed and managed, the *NUA* aims to end poverty and hunger, promote inclusive and sustainable economic growth, improve human health and well-being, foster resilience and protect the environment.[288]

The *NUA* envisions cities and human settlements that promote inclusivity and ensure that all residents inhabit safe, healthy, sustainable, and resilient cities.[289] To foster

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280 SDG 11 of the *2030 Agenda for Sustainable Development* (2015).
281 SDG 6 of the *2030 Agenda for Sustainable Development* (2015).
282 SDG 7 of the *2030 Agenda for Sustainable Development* (2015).
283 SDG 13 of the *2030 Agenda for Sustainable Development* (2015).
284 *New Urban Agenda* UN Doc A/RES/71/256 (2017).
285 Para 2 of the *NUA* (2017).
286 Para 9, 11 and 12 of the *NUA* (2017).
287 Foreword of the *NUA* (2017); Para 15(b) of the *NUA* (2017).
288 Para 5 of the *NUA* (2017).
289 Para 11 of the *NUA* (2017).

healthy communities the *NUA* indicates that cities should provide access to adequate public services and a clean environment, and that cities must consider the air quality guidelines set out by the WHO.[290] Cities must provide social infrastructure and facilities such as health- and reproductive healthcare services.[291] Additionally, the *NUA* recognises that cities are vulnerable to the impact of climate change and other man-made hazards, including earthquakes, water scarcity, droughts, water and air pollution, vector-borne diseases and sea level rise.[292]

Cities are implicitly obliged by the provisions of the *NUA* to control and prevent communicable and vector-borne diseases through the provision of adequate public services. For example, the lack of access to clean running water results in high levels of water-borne diseases, and stagnant water contributes to the proliferation of mosquitoes and other vectors of infectious diseases.[293] Effective waste management in cities can address environmental risk factors linked to communicable and vector-borne disease transmission.[294] Sound urban planning can also reduce citizens health risks exposure to air pollution or the effects of climate change through measures that mitigate the risks for communities situated in areas prone to floods, mudslides and other extreme weather events.[295]

3.4.3 Sendai Framework for Disaster Risk Reduction 2015-2030

The *SDFDRR* was adopted on 18 March 2015 at the Third United Nations World Conference in Sendai, Japan.[296] The main aim of the *SDFDRR* is:

> the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.[297]

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290 Para 55 of the *NUA* (2017).
291 Para 55 of the *NUA* (2017).
292 Para 64 of the *NUA* (2017).
293 WHO *Health as the Pulse of the New Urban Agenda: United Nations Conference on Housing and Sustainable Urban Development* 4.
294 WHO *Health as the Pulse of the New Urban Agenda: United Nations Conference on Housing and Sustainable Urban Development* 4.
295 WHO *Health as the Pulse of the New Urban Agenda: United Nations Conference on Housing and Sustainable Urban Development* 4-5.
296 Preamble of the *SFDRR* (2015).
297 Para 16 of the *SFDRR* (2015).

To achieve this goal the *SDFDRR* holds that states must prevent and reduce existing disaster risks through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational and environmental, measures that prevent and reduce hazard exposure and vulnerability to disasters, increase preparedness for response and recovery, and thus strengthen resilience.[298] Additionally, unlike its predecessor, the *Hyogo Framework for Action* 2005-2015,[299] the *SFDRR* focuses on natural and manmade hazards including environmental and biological hazards and risks.[300] Biological hazards are "natural substances that threatens the health of people and other living organisms".[301] Biological hazards are one of the subdivisions of natural disasters and could be managed in terms of disaster risk management.[302]

The adoption of the *SFDRR* by the UN member states includes an agreement on seven global targets to assess global progress in disaster risk reduction.[303] These targets are measured at a global level and complemented by appropriate indicators.[304] Five of the seven global targets are relevant to health.[305] These targets

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298 Para 17 of the *SFDRR* (2015).

299 *Hyogo Framework for Action* UNISDR Doc A/CONF206/6 (2005); The Hygo Framework for Action only made three explicit references to health; see para 4(19)(ii)(e) of the *Hygo Framework for Action* (2005).

300 Foreword of the *SFDRR* (2015); The *SDRDRR* (2015) "makes over thirty explicit references to health, which refer to the implementation of all-hazards approaches and links to epidemics and pandemics in addition to the *IHR* (2005);" Aitsi-Selmi and Murray 2015 *Bull World Health Organ* 362; Murray, Amina Aitsi-Selmi and Blanchard 2015 *Int J Disaster Risk Sci* 171.

301 Types of biological hazards are "viruses such as Covid-19, toxins from biological sources, spores, fungi, pathogenic micro-organisms, and bio-active substances" see Australian Government 2022 https://www.comcare.gov.au/safe-healthy-work/prevent-harm/biological-hazards.

302 Generally, natural disasters can be divided into five subgroups "geophysical (e.g. earthquakes), meteorological (e.g. storms), hydrological (e.g. floods), climatological (e.g. heatwaves) and biological (e.g. pandemics)"; see Chan 2020 *International Journal of Nursing Sciences* 382-383; and *National Disaster Management Framework* 2005 (hereafter the *NDMF*) for more detail; Disaster risk management is commonly defined as "the application of disaster risk reduction policies and strategies to prevent new disaster risk, reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and the reduction of disaster losses."; see Reduction date unknown https://www.undrr.org/ and Van Niekerk "Disaster risk reduction and climate change adaptation and resilience" 6; This definition "covers all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards." Van Niekerk "Disaster risk reduction and climate change adaptation and resilience" 6.

303 Para 18 of the *SFDRR* (2015).

304 Para 18 of the *SFDRR* (2015).

305 Para 19 of the *SFDRR* (2015); Aitsi-Selmi 2015 *Int J Disaster Risk Sci* 171.

are to reduce global mortality,[306] to substantially reduce the number of people affected by disaster risk,[307] to reduce disaster economic loss,[308] to reduce disaster damage to critical infrastructure and disruption to basic services such as health and educational facilities,[309] to increase the number of countries with national and local disaster risk reduction strategies,[310] to enhance international cooperation with developing countries,[311] and to increase the availability of access to multi-hazard early warning systems as well as the dissemination of disaster risk information and assessments.[312]

The *SFDRR* makes specific references to health and health resilience throughout.[313] This includes health targets and indicators for reporting and monitoring disaster risk management,[314] enhancing the resilience of national health systems through training and capacity development,[315] supporting the implementation of the *IHR* (2005),[316] strengthening the design and implementation of inclusive policies and social safety-net mechanisms such as basic health care services,[317] and improving the resilience of critical infrastructure to ensure new and existing health facilities remain operational in emergencies and disasters.[318] The *SFDRR* also directs states to control and prevent communicable and vector-borne disease transmission in cities by setting up effective public health emergency response systems and networks, assessing disaster risks, and providing education and training to health officials and the public on infection control practices.[319] It urges health scientists to be more

306 Para 18(a) of the *SFDRR* (2015).
307 Para 18(b) of the *SFDRR* (2015).
308 Para 18(c) of the *SFDRR* (2015).
309 Para 18(d) of the *SFDRR* (2015).
310 Para 18(e) of the *SFDRR* (2015).
311 Para 18(f) of the *SFDRR* (2015).
312 Para 18(g) of the *SFDRR* (2015).
313 Foreword of the *SFDRR* (2015).
314 Para 18 of the *SFDRR* (2015).
315 Para 30(i) of the *SFDRR* (2015).
316 Para 30(i) of the *SFDRR* (2015).
317 Para 30(j) of the *SFDRR* (2015).
318 Para 33(c) of the *SFDRR* (2015).
319 Chan 2020 *International Journal of Nursing Sciences* 383-384; Djalante, Shaw and DeWit 2020 *Progress in Disaster Science* 5.

involved in disaster risk management and *vice versa*, to develop better manpower and resource planning and community preparedness and response.[320]

3.4.4 Pandemic Influenza Preparedness Framework

The *Pandemic Influenza Preparedness Framework* (hereafter the *PIP Framework*)[321] was adopted on 23 May 2011 by the World Health Assembly in line with Article 23 of the Constitution of the WHO. The objective of the PIP Framework is:

> to improve pandemic influenza preparedness and response, and to strengthen the protection against the pandemic influenza by improving and strengthening the WHO global influenza surveillance and response system (WHO GISRS).[322]

To achieve this objective, the *PIP Framework* makes use of a combination of non-binding norms and legally binding contracts such as the Standard Material Transfer Agreements (hereafter the SMTAs).[323] The SMTAs are used to bind non-state actors who would usually not be subjects of international law, such as pharmaceutical companies or academic institutions.[324] To improve preparedness and response to influenzas the PIP Framework requires Member States and non-state actors to provide biological materials on the H5N1 and other influenza viruses with pandemic potential to the WHO Collaborating Centre on Influenza or the WHO H5 Reference Laboratory of the originating Member States choice.[325] The PIP Framework also urges member states to contribute to the PIP Benefit Sharing System.[326] The PIP Benefit Sharing System operates *inter alia* to provide pandemic surveillance, risk assessments and early warning information and services to all countries.[327] It also builds capacity[328] and provides benefits such as the provision of vaccines and

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320 Chan 2020 *International Journal of Nursing Sciences* 383; Djalante, Shaw and DeWit 2020 *Progress in Disaster Science* 5-6.
321 *Pandemic Influenza Preparedness Framework* WHA Doc A64/VR/10 (2011).
322 Article 3 of the *PIP Framework* (2011).
323 Gostin *et al* 2019 *The Lancet* 1867.
324 Gostin *et al* 2019 *The Lancet* 1867; See section 5.4 of the *PIP Framework* (2011) and Annex 1.
325 Article 5.1.1 of the *PIP Framework* (2011).
326 Article 6 of the *PIP Framework* (2011).
327 Article 6.0.2 of the *PIP Framework* (2011).
328 Article 6.0.2 of the *PIP Framework* (2011).

medicines to countries affected by influenzas and countries that cannot produce their own vaccines or pharmaceuticals.[329]

In addition to this contribution, Member States are expected to collaborate with the WHO in order to coordinate the influenza pandemic preparedness and response in accordance with the *IHR* (2005) and the *PIP Framework*.[330] Contrary to the *IHR* (2005), the *PIP Framework* has limited scope and application. The *PIP Framework* is only applicable to the H5N1 influenza and other influenzas with pandemic potential. Seasonal influenza viruses or other non-influenza pathogens or substances is excluded from this *Framework*.[331]

3.5 Concluding remarks

The objective of this chapter was to determine how key international law and policy instruments direct states (including sub-national authorities) to control and prevent communicable and vector-borne diseases.

It was shown that whereas the global health governance architecture generally does not make specific provision for cities to play a role in communicable and vector-borne disease control and prevention.[332] Cities can in fact play such a role by cooperating with international institutions, for example.[333] This is significant for the present study, which is focused on cities in South Africa, to the extent that cities would do well to organise themselves under the global health governance architecture to help control and prevent communicable and vector-borne diseases in their areas of jurisdiction. The international laws and policies discussed above indirectly guides cities- in terms of how to control and prevent communicable and vector-borne disease transmission by setting up effective surveillance and response systems,[334] notifying the WHO of events that may constitute a public health emergency,[335] providing essential services that could reduce health risks and the

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329 Article 6.0.2 of the *PIP Framework* (2011).
330 Article 6 of the *PIP Framework* (2011).
331 See Article 3 of the *PIP Framework* (2011).
332 See section 3.2 above.
333 See section 3.2 above.
334 See section 3.3.1, section 3.3.2
335 See section 3.3.1, 3.4.3 and 3.4.4 above.

adverse effects of climate change,[336] using urban planning and policies to create safe and health environments for their citizens.[337] It merits at this point to turn to the provisions and dictates of the relevant national law and policy framework in South Africa.

[336] See section 3.3.2, 3.4.1 and 3.4.2 above.
[337] See section 3.4.2 above.

CHAPTER 4 SOUTH AFRICAN NATIONAL LAW AND POLICY FRAMEWORK

4.1 Introduction

The international law and policy framework applicable to communicable and vector-borne disease control and prevention provides a meaningful canvas for understanding the multi-level risks and impacts of these diseases as well as the need for a comprehensive response on the part of authorities. In this chapter, the focus turns to the South African national law framework with the objective of determining to what extent this framework provides for the municipal regulation of communicable and vector-borne diseases control. It further aims to identify what is required in terms of municipal action to regulate communicable and vector-borne diseases in South African cities. This includes actions envisioned in national law and policy to be provided for in municipal environmental health by-laws[338] and local disaster management plans, for example.

The scope of this chapter is confined to a review of South African local government, health, and disaster risk management legislation as relevant for the municipal control and prevention of communicable and vector-borne diseases. The chapter consists of three parts. Part one considers the development of local government in service delivery and municipal health services with a view to deciphering local governments' authority to regulate communicable and vector-borne diseases in South African cities. This section also considers the local government actors involved in municipal health service delivery. Part two turns to the national legislative and policy framework relevant to the role of local government in communicable and vector-borne disease control and prevention. This includes the surveillance of communicable and vector-borne diseases, the inspection and investigation of premises, the reporting of notifiable medical conditions, and preparedness and response. Part three establishes how the national legislative and policy framework addresses the municipal regulation of communicable and vector-borne disease

[338] Also referred to as public health by-laws or municipal health services by-laws.

control along the lines of eleven municipal duties and functions provided for in national law. These actions (duties and functions) are subsequently translated into national law and policy benchmarks for purposes of the analysis in Chapter 5.

4.2 Development of local government in service delivery and municipal health services

Local government is the sphere of government that serves the needs of the community.[339] According to May and Agenbag the health and well-being of communities are at the heart of local government's developmental mandate.[340] This developmental mandate not only translates into attempts to create the ideal environment for the health and safety of a community,[341] but it also relates to the control of the spread of communicable and vector-borne disease. Before turning to the national law and policy framework, the following section considers the delivery of basic municipal services, local government, and municipal health services as relevant for communicable and vector-borne disease control.

4.2.1 Delivery of basic municipal services

Local government has a specific constitutional mandate to deliver basic services to communities.[342] As mentioned in Chapter 1, basic services are municipal services that are necessary for a reasonable quality of life, and to protect the health and safety of the public.[343]

Section 152(1)(b) and (d) of the *Constitution* holds that it is an object of local government to "ensure the provision of services to communities in a sustainable manner" and to "promote a safe and healthy environment". Municipalities must strive to achieve these objects within their financial and administrative capacity.[344]

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339 Van der Waldt "Municipal Management: An Orientation" 8.

340 May and Agenbag "Environmental health and municipal public health services" 4.

341 May and Agenbag "Environmental health and municipal public health services" 4.

342 Nealer "Local Government and Service Delivery" 179; May and Agenbag "Environmental health and municipal public health services" 27.

343 See section 1.1 above.

344 Section 152(2) of the *Constitution*; see *Nelson Mandela Bay Metropolitan Municipality v Nobumba* 2010 (1) SA 579 (ECG) para 11; *Liebenberg v Bergrivier Municipality* 2013 (5) SA 246

They must prioritise the basic needs of the community by structuring and managing their administration, budgeting and planning processes.[345] Local government directly serves the needs of the community and must ensure that communities have access to the minimum level of basic services.[346] The minimum level of basic services are access to sufficient water, basic sanitation, waste removal, basic energy, and environmental health.[347] For the present purposes this could arguably suggest that there is a direct link between the delivery of basic services and health. Thus, the provision of safe water and sanitation, waste removal and household electricity alone could significantly decrease the burden of disease,[348] more specifically, the burden of communicable and vector-borne diseases.

Subject to national and provincial legislation, municipalities have the right to govern the affairs of their communities, on their own initiative.[349] Section 156(1)(a) of the *Constitution* holds that a municipality has the authority to govern matters listed in Part B of Schedule 4 and Part B of Schedule 5. Municipalities also have executive and legislative authority in respect of other matters assigned to them by national or provincial legislation.[350] Municipalities may make and administer by-laws for the effective administration of matters that fall within their area of competence. Furthermore, national, and provincial governments must support and strengthen the capacity of municipalities to manage their own affairs, to exercise their powers and to perform their functions, through legislative and other measures.[351]

Part B of Schedule 4 and Part B of Schedule 5 of the *Constitution* describe functions of local government, thus suggesting the scope of municipal services in South Africa.

(CC) para 40; and *Kungwini Local Municipality v Silver Lakes Home Owners Association* 2008 (6) SA 187 (SCA) para 31.

345 Section 153(a) of the *Constitution*.

346 Section 73(a) and (c) of the *Systems Act*.

347 Fuo "Municipal service delivery and the environment" 2.

348 May and Agenbag "Environmental health and municipal public health services" 29.

349 Section 151(3) of the *Constitution*.

350 Section 156(1)(b) of the *Constitution*.

351 Section 154(1) of the *Constitution*; section 155(7) of the *Constitution* holds that "the national government, subject to section 44, and the provincial governments have the legislative and executive authority to see to the effective performance by municipalities of their functions in respect of matters listed in Schedules 4 and 5, by regulating the exercise by municipalities of their executive authority referred to in section 256(1)."

The duty to deliver basic municipal services pertaining to municipal health services, air pollution, building regulations, municipal airports, storm water management systems, and water and sanitation services, amongst others.[352] These municipal services must be equitable and accessible, and must be provided in a manner that is conducive to the prudent, economic, efficient, and effective use of available resources, as well as to the improvement of standards of quality over time.[353] These services must be financially and environmentally sustainable, and their provision must be regularly reviewed with a view to upgrading, extending and improving the services.[354]

The *Systems Act* further provides the core principles, mechanisms and processes necessary for advancing communities and the provision of essential services.[355] Municipalities may exercise their legislative and executive powers by adopting policies, plans, strategies and programmes,[356] implementing applicable legislation and by-laws,[357] providing municipal services to the local communities,[358] monitoring and regulating municipal services,[359] and promoting a safe and healthy environment.[360] They may adopt or implement by-laws, regulations or policies for municipal health services and disaster risk management.[361] These governance instruments could aid municipalities with the control of communicable and vector-borne diseases in their areas of jurisdiction.

4.2.2 Delivery of municipal health services

During the apartheid period in South Africa, local government was responsible for delivering the full spectrum of primary health care services.[362] This included the

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352 May and Agenbag "Environmental health and municipal public health services" 27.
353 Section 73)(2)(a)-(b)(iii) of the *Systems Act*.
354 Section 73(2)(c)-(e) of the *Systems Act*.
355 Preamble of the *Systems Act*.
356 Section 11(3)(a) of the *Systems Act*.
357 Section 11(3)(e) of the *Systems Act*.
358 Section 11(3) (f) of the *Systems Act*.
359 Section 11(3)(g) of the *Systems Act*.
360 Section 11(3)(l) of the *Systems Act*.
361 May and Agenbag "Environmental health and municipal public health services" 57; Section 55(2) of the *DMA*.
362 May and Agenbag "Environmental health and municipal public health services" 8, 39.

provision of the personal, curative, and rehabilitative aspects of primary health care delivered by municipal clinics and the promotive and preventative aspects of environmental health.[363] However, this health care system was disunified and fragmented, with only a few municipalities equipped to deliver these services.[364]

There was thus a need to develop a system that would enable all citizens to access health care services.[365] The *NHA* represents national government's effort to create such a uniform health system in the Republic.[366] In this health system, the delivery of municipal health services is primarily local governments responsibility,[367] which, as mentioned in Chapter 1, mainly relate to environmental health.[368] The WHO defines environmental health as:

> Comprising of those aspects of human health, including quality of life, that are determined by physical, chemical biological, social and psychosocial factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling, and preventing those factors in the environment that can potentially adversely affect the health of present and future generations.[369]

This definition indicates that environmental health is a diverse science that is primarily concerned with preventing disease and creating health supportive environments.[370] Environmental health also aims to promote the health and well-

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363 May and Agenbag "Environmental health and municipal public health services" 8, 39.

364 Christmas 2008 *Local Government Bulletin* 14; Agenbag and Balfour-Kaipa 2008 *SAHR* 151; May and Agenbag "Environmental health and municipal public health services" 8, 39.

365 Christmas 2008 *Local Government Bulletin* 14.

366 Christmas 2008 *Local Government Bulletin* 14; see Agenbag and Balfour-Kaipa 2008 *SAHR* 150-153; May and Agenbag "Environmental health and municipal public health services" 40-45; *Independent Municipal and Allied Workers Union v President of the RSA* (unreported) 2008 JDR 0374and the MHS Report 2017 for further details on the history and development of health services at the local government level.

367 Balfour *Municipal health services in South Africa, opportunities and challenges* 2; According to Agenbag and Balfour the legal framework for the establishment of municipal health services "is rooted in the *Constitution*, the *Structures* Act, and the *NHA*."; see Agenbag and Balfour-Kaipa 2008 *SAHR* 151.

368 May and Agenbag "Environmental health and municipal public health services" 8-9.

369 Frumkin *Environmental Health: from Global to Local* xxxi; Balfour *Municipal health services in South Africa, opportunities and challenges* 5-6.

370 Agenbag and Balfour-Kaipa 2008 *SAHR* 150; Frumkin *Environmental Health: from Global to Local* xi; Wright, Matthee and Oosthuizen 2013 *South African Medical Journal* 20; It should be noted that although this section of the thesis primarily focuses on the role of local government in environmental health in South Africa, environmental health services are siloed across all three spheres of government. The national level of environmental health includes monitoring all environmental health, supporting provinces and municipalities with the execution of these services, being responsible for the *IHR* (2005), the *Hazardous Substances Act* 15 of 1973, relevant sections of the *NHA*, and cooperating with other government departments on air

being of people, and centres around the linkage between people and their environment.[371] In South Africa section 24(a) of the *Constitution* provides for the protection of public health against environmental health hazards, while section 27 of the *Constitution* outlines the right to access to health care services, sufficient food, and water.[372] Section 26 of the *Constitution* delineates the right to access to adequate housing, which forms an essential part of communicable and vector-borne disease control and prevention.

Local government, as mentioned in Chapter 1,[373] is responsible for:

> water quality monitoring, food control, waste management, the health surveillance of premises, the surveillance of communicable diseases excluding immunisations, vector-control, environmental pollution control, the disposal of the dead, and chemical safety.[374]

The *Constitution* specifically lists municipal health services as a functional area of competence for local government.[375] These services are a specific function of metropolitan and district municipalities.[376] Every district and metropolitan municipality must provide municipal health services efficiently and effectively provided in their respective areas.[377] Agenbag[378] notes that while standardised

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quality, water treatment chemical safety, health care waste, and water and sanitation. The provincial government is responsible for monitoring and supporting municipalities with the execution of municipal health services, malaria control, port health services, and hazardous substances; Balfour *Municipal health services in South Africa, opportunities and challenges* 2.

371 Frumkin *Environmental Health: from Global to Local* xxxii.

372 Wright, Matthee and Oosthuizen 2013 *South African Medical Journal* 20; Matthee and Wright 2014 *SAHR* 112.

373 See section 1.1 above.

374 Section 1 of the *NHA*.

375 Schedules 4B and 5B of the *Constitution*.

376 Section 32 of the *NHA*; Section 155 of the *Constitution* provides for the establishment of three categories of municipalities, namely category A, B and C. Category A municipalities have exclusive municipal executive and legislative authority in their areas and are referred to as metropolitan areas; see section 155(1)(a) of the *Constitution*; Category B municipalities share municipal executive and legislative authority in their areas with category C municipalities and are referred to as local municipalities; see section155(1)(b) of the *Constitution*; Category C municipalities have municipal and executive authority in areas that include more than one municipality and are referred to as district municipalities; see section 155(1)(c) of the *Constitution*; There are 8 metropolitan municipalities, 44 district municipalities and 228 local municipalities in South Africa; These municipalities are situated across the country and are focused on growing local economies and maintaining the provision of basic municipal services to communities, including the delivery of municipal health services; see Nealer "Local Government and Service Delivery" 177; and section 151(1) of the *Constitution*.

377 Section 32(1) of the *NHA*.

378 May and Agenbag "Environmental health and municipal public health services" 69.

systems and the provision of appropriate equipment are vital for the efficient implementation of municipal health services, municipalities will not be able to deliver municipal health services with limited human resources even with ample financial and physical resources.[379] South Africa has a general shortage of environmental health practitioners.[380] This is particularly pressing in rural areas where their services are needed the most.[381] This shortage may force environmental health practitioners to abandon their core responsibilities, which are integral to public health, which would create a gap in the provision of environmental health services i.e. the control and prevention of communicable and vector-borne diseases.[382] This shortage may force environmental health practitioners to take a reactive approach to inspections and investigations.[383] Generally, environmental health practitioners are expected to take an active and preventative approach to compliance monitoring and inspections.[384] The *Municipal Health Services (MHS): Status Quo Report* 2017-2018 indicates that there is also a lack of environmental health practitioners in South Africa's metropolitan cities.[385] Municipalities are forced to render municipal health services to communities with limited staff.[386]

Generally, environmental health practitioners form the backbone of environmental health services.[387] They are well-trained and ideally situated to resolve

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379 May and Agenbag "Environmental health and municipal public health services" 69; see the MHS Report and Mbazima, Mbonane and Masekameni 2021 *International Journal of Environmental Health Research* 9 for statistics on environmental health practitioners in South Africa.

380 Mbazima, Mbonane and Masekameni 2021 *International Journal of Environmental Health Research* 9 for further details on the shortage of environmental health practitioners.

381 Mbazima, Mbonane and Masekameni 2021 *International Journal of Environmental Health Research* 9.

382 Mbazima, Mbonane and Masekameni 2021 *International Journal of Environmental Health Research* 9.

383 Mbazima, Mbonane and Masekameni 2021 *International Journal of Environmental Health Research* 9.

384 Mbazima, Mbonane and Masekameni 2021 *International Journal of Environmental Health Research* 9.

385 South African Local Government Association *Municipal Health Services (MHS) Status Quo Report* 26, 30-33, 36, and 39.

386 South African Local Government Association *Municipal Health Services (MHS) Status Quo Report* 26, 30 - 33, 36, and 39.

387 Wright, Matthee and Oosthuizen 2014 *SAfrMedJ* 20; An environmental health practitioner is "a person registered in terms of section 34 of the *Health Profession Act* 56 of 1974 who performs the functions contemplated in Annexure A to the Regulations defining the scope of environmental health practitioners".

environmental health challenges and to prevent diseases of environmental origin.[388] A broad range of duties binds environmental health practitioners to protect public health from exposure to environmental risk.[389] For instance, the surveillance of communicable diseases includes, amongst other matters, the epidemiological surveillance of diseases, the establishment of effective environmental health surveillance and information systems, and the collection, analysis and dissemination of epidemiological data and information.[390] Vector control includes, amongst other things, the identification of vectors, their habitats and breeding places; the removal or remedying of conditions resulting from or favouring the prevalence or increase of rodents, insects, disease carriers or pets; and the investigation of zoonotic diseases and other vector-borne diseases in the working and living environment.[391]

4.3 National legislative and policy framework on the role of local government

South Africa has several national laws and policies designed to protect the environment and public environmental health.[392] The discussion to follow focuses on some of the legislation and policies relevant to the municipal regulation of communicable and vector-borne disease control. The following discussion expands on communicable and vector-borne disease surveillance, the inspection and investigation of premises and the reporting of notifiable medical conditions as provided for in the law and policy framework. The objective is to establish to what extent this framework provides for the municipal regulation of communicable and vector-borne disease control in relation to these functions, which are critical in the urban environment for the reasons given in Chapter 1.

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388 Matthee and Wright 2014 *SAHR* 112.
389 See May and Agenbag "Environmental health and municipal public health services" 71; Matthee and Wright 2014 *SAHR* 112.
390 Reg 5 in GN R 698 in GG 32334 of 26 June 2009.
391 Reg 6 in GN R 698 in GG 32334 of 26 June 2009.
392 Matthee 2011 *Journal of Public Health Policy* 40.

4.3.1 Communicable and vector-borne disease surveillance

Surveillance for communicable and vector-borne diseases is one of the most important steps to take in addressing public health challenges such as disease outbreaks.[393] Surveillance is an information-based activity in which data is collected, analysed, and interpreted.[394] These data could originate from a variety of sources, and analysis thereof makes it possible to calculate, predict and reduce harm that may be caused by outbreak, epidemic and pandemic situations.[395] The information could also increase knowledge about which factors contribute to the harm caused by outbreak, epidemic and pandemic situations.[396] It creates awareness of public health problems, provides evidence in support of advocacy actions and actions, facilitates accurate planning for service delivery and makes it possible to monitor for the impact of interventions.[397] Surveillance can be active or passive. Active surveillance of a disease or condition requires health authorities to actively search for the occurrence of a disease or condition in a defined population including the general population who do not necessarily seek health care.[398] In contrast, passive surveillance requires health providers to notify health authorities of notifiable diseases when providing health care.[399] Communicable and vector-borne disease surveillance at the local government level specifically, is discussed in the following paragraphs.

4.3.1.1 Surveillance of communicable and vector-borne diseases and information systems

The *NHA* provides for the establishment of the national health information system.[400] Every district and metropolitan municipality that provides health services must

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393 McCarthy and Quan 2018 *SAHR* 88.
394 Section 1 of the *National Public Health Institute of South Africa Act* 1 of 2020.
395 Section 1 of the *NPHISA*.
396 Section 1 of the *NPHISA*.
397 McCarthy and Quan 2018 *SAHR* 88.
398 Weber *Evaluation of the notifiable disease surveillance system in Gauteng Province, South Africa* 5.
399 Weber *Evaluation of the notifiable disease surveillance system in Gauteng Province, South Africa* 5.
400 Section 74 of the *NHA*.

establish, maintain, facilitate, and implement a health information system as part of the national health information system.[401] This has resulted in the establishment of the District Health Information Management System (hereafter the DHIS).[402] It is one of the building blocks in information gathering and planning in the public health system.[403] The DHIS spans district health councils, provincial health departments and the National Department of Health.[404] The National Department of Health must facilitate other governmental departments and the private sector with the establishment, implementation and maintenance of the health information systems at all levels of government level[405] to create a comprehensive national health information system.[406]

Part of the mission of the DHIS is to collect and analyse data from all health facilities and communities in line with national norms and standards and international best practices.[407] The objective of this is to convert the data into good quality and all-encompassing information to measure and enhance service delivery and the health impact for a discrete population in a district.[408] Communicable disease surveillance is a country-wide initiative with a multidisciplinary team, each with a specific role to play in the DHIS.[409] The *District Health Information System Policy* 2011 (hereafter

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401 Section 76 of the *NHA*.

402 May and Agenbag "Environmental health and municipal public health services" 72; The "DHIS was developed between 1996- 1997 as a repository for the collection of routine health data from various sources"; English *et al* 2011 *SAHR* 82; Although it is most commonly known "as an open and free software solution or electronic database for the collection, storage and analysis of information, it also includes people, policies, procedures, hardware, software, networks and datasets required to ensure a well-functioning information system." *District Health Information System Policy* 2011; English *et al* 2011 *SAHR* 82.

403 May and Agenbag "Environmental health and municipal public health services" 72.

404 May and Agenbag "Environmental health and municipal public health services" 72; Lebelo and van Wyk "Communicable disease Surveillance in the City of Ekurhuleni: Environmental Health Practitioners' Perceptions" 371.

405 This includes "the local government sphere"; see section 74(1) o the *NHA*.

406 Section 74(1) of the *NHA*.

407 The ''national norms and standards for the DHIS are provided for in the *DHIS Policy*'' and international best practices for communicable and vector-borne disease surveillance include those in the *WHO Health Systems Framework* (2007) and the *IHR* (2005)'"; see section 1 of the *DHIS Policy* 2011 and Lebelo and van Wyk "Communicable disease Surveillance in the City of Ekurhuleni: Environmental Health Practitioners' Perceptions" 372 for more information.

408 May and Agenbag "Environmental health and municipal public health services" 72;section 1 of the *DHIS Policy* 2011.

409 Lebelo and van Wyk "Communicable disease Surveillance in the City of Ekurhuleni: Environmental Health Practitioners' Perceptions" 371.

the *DHIS Policy*) formally standardises the implementation of the DHIS and attempts to clarify the role and responsibilities of each level of the health system in the DHIS.[410] Despite this, practice has revealed a lack of clarity regarding the role of different stakeholders in communicable disease surveillance,[411] the duties that the different role-players must fulfil and the standing operating procedures and the norms for the collection and insertion of health data into the system.[412] This appears to undermine the efficiency and resourcefulness of the DHIS. A lack of data collection also makes it challenging to identify trends of exposure to environmental stressors in communities.[413] However, as mentioned previously, in terms of the surveillance of communicable diseases, environmental health practitioners in local government are responsible for the promotion of health and hygiene,[414] the collection and analysis of epidemiological data and information,[415] and the use of Participatory Hygiene and Sanitation Training approaches for effective control measures at community level.[416] Environmental health practitioners are also responsible for the epidemiological surveillance of diseases,[417] the establishment of an effective Environmental Health Surveillance and Information System,[418] and the development of environmental health measures with protocols with specific reference to epidemics, emergencies, diseases and the migration of populations.[419]

4.3.1.2 Inspections and investigations

Monitoring health nuisances and environmental health threats in the city environment may include routine inspections and investigations at different types of premises by environmental health practitioners.[420] The *NHA* defines premises as:

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410 May and Agenbag "Environmental health and municipal public health services" 73.
411 Lebelo and van Wyk "Communicable disease Surveillance in the City of Ekurhuleni: Environmental Health Practitioners' Perceptions" 375.
412 May and Agenbag "Environmental health and municipal public health services" 72.
413 Mbazima, Mbonane and Masekameni 2021 *International Journal of Environmental Health Research* 13.
414 Reg 5(a) of the GN R 698 in GG 32334 of 26 June 2009.
415 Reg 5(b) of the GN R 698 in GG 32334 of 26 June 2009.
416 Reg 5(c) of the GN R 698 in GG 32334 of 26 June 2009.
417 Reg 5(d) of the GN R 698 in GG 32334 of 26 June 2009.
418 Reg 5(e) of the GN R 698 in GG 32334 of 26 June 2009.
419 Reg 5(f) of the GN R 698 in GG 32334 of 26 June 2009.
420 May and Agenbag "Environmental health and municipal public health services" 71.

> any building, structure or tent with the land on which it is situated and the adjoining land uses in connection with it and includes any land without any building, structure or tent and any vehicle, conveyance or ship.421

These premises generally include- childcare centres, nursing homes, maternity homes, initiation schools, accommodation establishments, swimming pools and spa baths, food premises and premises for keeping animals and poultry.[422]

The health surveillance of premises requires municipal environmental health practitioners to conduct environmental health impact assessments of housing projects by assessing aspects such as ventilation and indoor air quality, thermal quality, lighting, moisture proofing, structural safety, and floor space, amongst others.[423] The environmental health practitioners must evaluate different types premises where overcrowded, dirty, or other unhygienic health conditions may exist on premises.[424] They should monitor all buildings and all other permanent or temporary physical structures used for residential, public, or institutional purposes and ensure the prevention and abatement of any condition on any premises which is likely to constitute a health hazard.[425]

Environmental health inspections are unannounced and follow a risk management approach.[426] The risk profile of premises usually informs how frequently environmental health inspections are conducted at the premises.[427] For example, the minimum frequency of health inspections at childcare centres is at least once every quarter; nursing and maternity homes, schools, accommodation establishments, beauty salons, swimming pools and spa baths must be inspected at least twice a year; while premises where animals are kept are inspected at least

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421 Section 1 of the *NHA*.
422 Schedule 1 in G 46048 in GoN 1885 of 15 March 2022.
423 Reg 4(a) and (b) in GN R 698 in GG 32334 of 26 June 2009.
424 These premises include but are not limited to "residential, commercial, industrial, or other occupied premises"; Reg 4(c) in GN R 698 in GG 32334 of 26 June 2009.
425 Reg 4(d) and (f) in GN R 698 in GG 32334 of 26 June 2009; See Reg 4 in G 46048 in GoN 1885 of 15 March 2022 for further details on the abatement of a public health hazard or environmental health nuisance.
426 Reg 2(6) and (9) in GN 1229 in GG 39561 of 24 December 2015.
427 Reg 2(1) in GN 1229 in GG 39561 of 24 December 2015.

once a year.[428] An inventory or database of all premises is kept and maintained by environmental health practitioners for control and monitoring purposes.[429]

Environmental health inspections and investigations are conducted in terms of the *NHA*.[430] The *NHA* establishes the Office of Health Standards Compliance.[431] Part of the objects of the Office of Health Standards Compliance protect the health and safety of people by investigating complaints of non-compliance at health premises.[432] The Office should also monitor and enforce compliance with the norms and standards, set out by the Minister, at health establishments.[433] Under the Office of Health Standards Compliance, health officers (environmental health practitioners) may enter any premises, excluding private dwellings, at any reasonable time and inspect the premises to ensure compliance.[434] Environmental health investigations may also be carried out by health officers when there are reasonable grounds to believe that a condition exists which contravenes section 24 of the *Constitution*, constitutes pollution detrimental to health, is likely to cause a nuisance, or causes a health nuisance.[435] Inspectors employed by the Office of Health Standards Compliance may, on the other hand, only enter any health establishment to inspect and ensure compliance.[436]

4.3.2 Preparedness and response

As mentioned in Chapter 1, communicable and vector-borne diseases have epidemic and pandemic potential that may result in health disasters. Given the variety of communicable and vector-borne disease risks in South African cities, the

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428 Reg 2(2) in GN 1229 in GG 39561 of 24 December 2015.
429 Reg 2(7) in GN 1229 in GG 39561 of 24 December 2015.
430 Reg 2(11) in GN 1229 in GG 39561 of 24 December 2015; Section 82 and 83 of the *NHA*; also see Reg 2 and 3 in G 46048 in GoN 1885 of 15 March 2022 for further details on environmental health inspections and investigations by environmental health practitioners.
431 Section 77 of the *NHA*; May and Agenbag describe the Office of Health Standards Compliance as an "inspectorate unit responsible for inspecting health facilities to ensure compliance with accepted health standards." See May and Agenbag "Environmental health and municipal public health services" 47.
432 Section 78(a) of the *NHA.*
433 Section 78(b) of the *NHA*.
434 Section 82(1) of the *NHA*.
435 Section 83(1)(a)-(e) of the *NHA*.
436 Section 82(1)(a) of the *NHA*.

environmental health sector faces various challenges in mitigating or reducing these risks. Arguably, South Africa has a well-established disaster management framework that could aid local government with communicable and vector-borne disease control. The following section analyses some disaster management legislation and policies to determine to what extent this framework provides for the municipal regulation of communicable and vector-borne diseases control, and further, to identify what is required in terms of municipal action.

4.3.2.1 Preparedness

Preparedness could be defined as the pre-disaster phase, which is responsible for capacity building.[437] According to the United Nations for Disaster Risk Reduction preparedness refers to:

> The knowledge and capacities developed by governments, response and recovery organisations, communities and individuals to effectively anticipate, respond to and recover from impacts of likely, imminent or current disasters.[438]

This definition indicates that preparedness is based on examining disaster risk and preparing for the anticipated disaster risks by developing plans, stockpiling equipment, and providing education and training.

According to Van Niekerk local government is the most important government sphere for the effective implementation of disaster risk management (preparedness).[439] Municipalities function in close proximity to the causes and impacts of human vulnerability and disaster risks.[440] In principle municipalities may

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437 Chan 2020 *International Journal of Nursing Sciences* 383.

438 Section 1 of the *DMA*.

439 Van Niekerk "Disaster risk reduction and climate change adaptation and resilience" 14; Like, the delivery of municipal health services, disaster management is siloed across all three spheres of government. Disaster management is specifically listed as a functional area of competence of national and provincial government in Schedule 4A of the *Constitution*; This means that "national and provincial government has the power to execute and develop laws in this area "; International Federation of the Red Cross and Red Crescent Society *Analysis of Legislation Related to Disaster Risk Reduction in South Africa* 25; However, national and provincial government must assign a matter listed in Part A of Schedule 4 and 5 to local government if the matter would most effectively be administered, locally, and if the municipality has the capacity to administer it"; see section 156(4) of the *Constitution*.

440 Van Niekerk "Disaster risk reduction and climate change adaptation and resilience" 14.

be well suited to help identify and deal with the risks and effects of disasters.[441] As mentioned previously, South African cities are spatially and temporally dynamic, cities therefore different risks and threats of different magnitudes.[442] To combat or prepare for the various threats, local government must ensure that effective strategies, policies and plans are at the local level.[443] This is done when municipalities develop and implement standing plans, policies, procedures, and rules.[444] Generally, Integrated Development Plans (hereafter IDPs) serve as the overarching strategic framework plans for disaster risk reduction, which must guide the implementation of projects in any municipality.[445]

The so-called municipal "disaster risk management plan" is a vital component of the IDP.[446] To set up this plan each municipality must carry out a disaster risk assessment for its municipal area, identify and map risks, and threats to vulnerable communities and ecosystems that may face hazards, disasters or other threats.[447] This plan must set out its role and responsibilities in terms of a disaster management framework, its capacity to fulfil its responsibilities, and its role in relation to emergency response and disaster recovery.[448] The plan must also set out principles that apply to disaster management within a municipal area, it must contain strategies and contingency plans and procedures to deal with disasters, and set out measures to address the needs of vulnerable groups during disasters.[449] Each municipality must "align the implementation of its plan with other state organs and institutional role-players".[450] In the disaster risk management plan the municipality must also develop early warning mechanisms and procedures for the risks identified in the municipal area.[451] This could aid municipalities in the municipal regulation of communicable and vector-borne disease control in cities, as it enables cities to track

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441 Van Niekerk "Disaster risk reduction and climate change adaptation and resilience" 14.
442 Van Niekerk "Disaster risk reduction and climate change adaptation and resilience" 17.
443 Van Niekerk "Disaster risk reduction and climate change adaptation and resilience" 16.
444 Van Niekerk "Disaster risk reduction and climate change adaptation and resilience" 16.
445 Van Niekerk "Disaster risk reduction and climate change adaptation and resilience" 16.
446 Section 53(2)(a) of the *DMA*.
447 Section 52(1)(a) and (b) of the *DMA*.
448 Section 53(c)(ii)-(iv) of the *DMA*.
449 Section 53(c)(1) and (v)- (vii) of the *DMA*.
450 Section 53(d) of the *DMA*.
451 Section 53(f) of the *DMA*.

and contain diseases. A municipality must regularly review and update its disaster management plans.[452]

In terms of the *DMA*, every district and metropolitan municipality must establish a municipal disaster management centre.[453] A municipal disaster management centre is responsible for ensuring the existence of appropriate institutional capacity for disaster risk management and the implementation of the *DMA*.[454] Disaster management centres must specialise in issues concerning disasters and disaster management,[455] prevention and mitigation,[456] development planning,[457] research,[458] the recruiting and training of volunteers,[459] the preparation of a disaster management plan,[460] developing a clear purpose, and creating a clear understanding of risk, vulnerability, institutional arrangements, planning, warnings, and disaster prevention exercises.[461] All of which are essential for communicable and vector-borne disease control and prevention. Disaster management centres must for instance provide information to communities on hand hygiene, putting on masks, social distancing, home quarantine and avoiding mass gatherings.[462] Disaster management centres may also need to provide regular training to health officials or health care providers on the handling of critically ill-patients, personal protective equipment, and proper sanitising.[463]

Municipalities, specifically district and metropolitan municipalities, must establish and implement a framework for disaster management in their areas.[464] The framework is aimed at ensuring an integrated and uniform approach to disaster

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452 Section 53(g) of the *DMA*.
453 Section 43 of the *DMA*; Local municipalities may "establish disaster management centres"; section 43(4) of the *DMA*.
454 Section 44(b) of the *DMA*; Van Niekerk "Disaster risk reduction and climate change adaptation and resilience" 21.
455 Section 44(a) of the *DMA*.
456 Section 44(b) of the *DMA*.
457 Section 44(c) and (d) of the *DMA*.
458 Section 44(i) of the *DMA*.
459 Section 44(g) of the *DMA*.
460 Section 44 of the *DMA*.
461 Section 44 of the *DMA*.
462 Chan 2020 *International Journal of Nursing Sciences* 384.
463 Chan 2020 *International Journal of Nursing Sciences* 384.
464 Section 42(a) of the *DMA*.

management by the different entities and stakeholders in its area.[465] District municipalities may establish their frameworks only after consultation with the local municipalities in their areas.[466] These municipal disaster management frameworks must be established according to the principles of the *DMA*, the National Disaster Management Framework[467] and the disaster management framework of the province concerned.[468]

Additionally, the *National Guidelines on Epidemic Preparedness and Response*[469] aims to assist health care workers responsible for communicable disease control with improving epidemic preparedness and rapid response strategies. This is to reduce morbidity, mortality, and disability due to infectious diseases.[470] Part of the objective of the *National Guideline on Epidemic Preparedness and Response* is to assist the process of Outbreak Response by strengthening Outbreak Response Teams, developing a list of priority diseases, developing a functional Epidemic Priority and Response Plan for priority diseases, and strengthening capacity at all levels, amongst other matters.[471] The Outbreak Response Teams should be established at all levels including the District and Sub-District levels.[472] These Outbreak Response Teams are multi-disciplinary and multi-sectoral, with representation from the Department of Health, health facilities, coordinators, surveillance officers or health information officers of Centres for Communicable Disease Control and Prevention, Environmental Health, Laboratory Services, public health specialists, and representatives of other relevant government departments.[473] To reduce the morbidity and mortality of infectious diseases the Outbreak Response Teams must corroborate any rumour of a disease outbreak at all levels, carry out outbreak investigations, and co-ordinate the implementation of the plan of action and epidemic prevention and control strategies. The Outbreak Response Teams

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465 Section 42(a)-(d) of the *DMA*.
466 Section 42(2) of the *DMA*.
467 *National Disaster Management Framework* 2005.
468 Section 42(3) of the *DMA*.
469 Section 2 of the *National Guidelines on Epidemic Preparedness and Response* 2008 (hereafter referred to as the *National Guidelines on Epidemic Preparedness and Response*).
470 Section 2 of the *National Guidelines on Epidemic Preparedness and Response*.
471 Section 2 of the *National Guidelines on Epidemic Preparedness and Response*.
472 Section 2 of the *National Guidelines on Epidemic Preparedness and Response*.
473 Section 2.1.2 of the *National Guidelines on Epidemic Preparedness and Response*

should also monitor and evaluate overall preparedness, response, and documentation.[474]

4.3.2.2 Response and recovery

"Response" refers to the intra-emergency response phase, which is a phase of confronting and combatting the disaster (epidemic or pandemic) directly.[475] The response phase is often the most publicly visible in disaster risk management.[476] It can take on multiple forms depending on the hazard type.[477] For a response pertaining to communicable and vector-borne disease control and prevention, it could consist of providing medical treatment, providing simple health-based guidance, or co-ordinating the provision of equipment, food, water and other supplies.[478] When disasters occur, municipal disaster management centres must initiate assessments to determine the magnitude of the disaster, inform the national and relevant provincial disaster management centres of the magnitude of the disaster and the potential severity.[479] The municipal disaster management centre should also alert role-players that may be of assistance and initiate any contingency plans and emergency procedures that may be applicable in the circumstances.[480]

In the case of an outbreak or epidemic of a priority disease such as the recent coronavirus pandemic or monkey pox outbreak, the Outbreak Response Teams referred to above should assist the community with the implementation of measures aimed at containing the outbreak.[481] This response is immediate and all efforts and resources are aimed at controlling the outbreak.[482] The response activities are to include strengthening case management, updating the skills of health staff, and providing emergency immunisation campaigns, surveillance, and health

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474 Section 2.2 of the *National Guidelines on Epidemic Preparedness and Response*.
475 Chan 2020 *International Journal of Nursing Sciences* 384.
476 Blanchard "Defining the Role of Public Health in Disasters and Emergency Management" 77.
477 Blanchard "Defining the Role of Public Health in Disasters and Emergency Management" 77.
478 Blanchard "Defining the Role of Public Health in Disasters and Emergency Management" 77.
479 Section 49(a) and (b) of the *DMA*.
480 Section 49(c) and (d) of the *DMA*.
481 Section 5.2 of the *National Guidelines on Epidemic Preparedness and Response*.
482 Section 5.1 of the *National Guidelines on Epidemic Preparedness and Response*.

education.[483] Other response activities include the provision of access to clean water, the safe disposal of human waste, enforcing hygienic food handling practices, controlling the exposure to mosquitoes and other vectors, and disseminating technical recommendations appropriate to the outbreak.[484]

The response phase is followed by the recovery process and related activities. This sees the restoration of services and processes as they were before the disaster or emergency event,[485] but it also aims to ensure a more resilient and prepared system in response to future disasters.[486] This may include monitoring performance and evaluating the efficacy of disaster risk management plans and prevention and mitigation activities.[487]

4.4 National legislative framework in summary

Despite the existence of this expansive law and policy framework, municipalities still experience challenges such as the overall shortage of environmental health practitioners in cities versus the increasing population growth in urban areas.[488] Further, several of the legislative provisions identified as relevant to this study do not provide specific or explicit standards for communicable disease control in South African cities.[489] A closer inspection of the national legislative and policy framework along with the knowledge and understanding of communicable disease transmission in cities does, however, reveal a some of required actions for the municipal regulation of communicable and vector-borne disease control. For instance, the legislation and policy make explicit provision for the surveillance of communicable diseases and the inspection and investigation of various premises in the city environment to combat the infestation of vermin and vectors.[490] The framework also

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483 Section 5.2 of the *National Guidelines on Epidemic Preparedness and Response*.
484 Section 5.2 of the *National Guidelines on Epidemic Preparedness and Response*.
485 Blanchard "Defining the Role of Public Health in Disasters and Emergency Management" 79.
486 Blanchard "Defining the Role of Public Health in Disasters and Emergency Management" 79.
487 Section 48 of the *DMA*.
488 See section 4.2.2 above.
489 For example, such legislative provisions include the "National Norms and Standards for Environmental Health" i.e. GN 1229 in GG 39561 of 24 December 2015; see Lebelo and van Wyk "Communicable disease Surveillance in the City of Ekurhuleni: Environmental Health Practitioners' Perceptions" 372.
490 See sections 4.3.1.1, 4.3.1.2 and 4.3.1.3 above.

makes provision for epidemic preparedness and response.[491] The discussion above indicates that South African law and policy is largely in line with international law and policy standards as discussed in Chapter 3.

The national legislative and policy framework serves as a valuable yardstick for the municipal regulation of communicable and vector-borne disease control. It provides a valuable set of benchmarks to assess, for example, the relevant municipal by-laws and plans of South Africa's municipalities. The benchmarks distilled in this study will be returned to in Chapter 5 and are presented below in question format:

- Since the delivery of municipal health services consists of nine components[492] do the by-laws and plans provide for water quality monitoring, food control, waste management, the health surveillance of premises, the surveillance of communicable diseases, vector control, environmental pollution control, the disposal of the dead and chemical safety, and the provision of these services to communities?

- Given the fact that surveillance is one of the most important steps to combat health challenges,[493] do the municipal by-laws and plans provide for the active and/or passive surveillance of communicable and vector-borne diseases?

- As mentioned in Chapter 2, pathogens and vectors can adapt to the urban environment.[494] In this contest, does the by-laws and plans refer to the identification of vectors, their habitats and breeding places, and the removal or remedying of conditions resulting from or favouring the prevalence or increase of rodents, vectors or other disease carrying pests?

- The establishment of information and the collection and analysis of data and are an integral part of communicable and vector-bore disease control and

491 See section 4.3.2.1 and 4.3.2.2 above.
492 See section 1.1 of Chapter 1 above.
493 See section 4.3.1.1 above.
494 See section 2.3.1 above.

prevention.[495] To what extent if any do the by-laws and plans make reference to established health information systems?

- Do the by-laws and plans provide for routine inspections and investigations of different types of premises in the city environment?

- Are there any provisions in the municipal by-laws or plans that enables environmental health practitioners to conduct environmental health impact assessments of different projects and developments?

- Environmental health practitioners and other relevant stakeholders must be equipped with the necessary skills and training to mitigate and reduce the risk of communicable and vector-borne diseases in cities. Do the by-laws and plans provide for the necessary training, education, plans, and equipment to deal with communicable and vector-borne disease outbreaks or risks in cities?

- Do municipalities have updated disaster risk management plans in place?

- Have municipalities developed early warning mechanisms and procedures for the communicable and vector-borne disease risks identified in their area?

- Do municipalities have established disaster management centres?

- Have municipalities established and implemented a framework for disaster management in their area?

4.5 Concluding remarks

The objective of this chapter was to critically evaluate local government, health, and disaster risk management legislation and policy relevant to the municipal control and prevention of communicable and vector-borne diseases and to identify the actions required on the part of local government for purposes of their regulation of communicable and vector-borne diseases. In brief, the chapter revealed that although South Africa has a number of laws and policies to protect environmental

[495] See section 4.3.1 above.

and public health, it does not provide specific standards for the control and prevention of communicable disease. The analysis also found that the national and legislative policy framework requires municipal actions of different kinds. The national and legislative framework therefore serves as a valuable yardstick to assess city-level laws and plans for the municipal regulation of communicable and vector-borne disease.

The next chapter draws on the eleven benchmarks identified in this chapter to critically evaluate the environmental health by-laws and disaster management plans of South Africa's eight metropolitan municipalities.

CHAPTER 5 CASE STUDY-BASED ANALYSIS OF RELEVANT LOCAL LAWS AND PLANS IN METROPOLITAN AREAS

5.1 Introduction

Drawing on the national law and policy framework discussed in Chapter 4 of this thesis, this chapter analyses the extent to which city-level laws and plans provide for the municipal regulation of communicable and vector-borne disease control and prevention. This chapter considers the environmental health by-laws and disaster risk management plans of South Africa's eight metropolitan municipalities. These municipalities are Buffalo City Metropolitan Municipality, the City of Cape Town, eThekwini Metropolitan Municipality, the City of Johannesburg, the City of Tshwane Metropolitan Municipality, Ekurhuleni Metropolitan Municipality, the Mangaung Metropolitan Municipality, and the Nelson Mandela Bay Metropolitan Municipality.

Part one introduces the reader to the methodology and scope of the analysis. The second part of the chapter is a case-study-based evaluation of the identified municipalities' environmental health by-laws and disaster risk management plans. The benchmarks developed in Chapter 4 are used to assess these local instruments with a view to evaluate city-level governance efforts relevant to the scope of this study.

5.2 Methodology and scope of analysis

The purpose of the case study based analysis undertaken in this thesis is to determine how the municipal plans and by-laws of South Africa's metropolitan municipalities measure up against the eleven benchmarks for local action that were identified in Chapter 4. It should be noted that this analysis offers a limited picture of the *de facto* prevention and management of communicable and vector-borne disease control at local government level as there may also be programmes, institutional arrangements, and actions beyond the written word of the local plans and by-laws of the eight municipalities that were considered. It should further be noted that the intention is not to compare the eight municipalities but rather to get a comprehensive picture of the *status quo* in metropolitan areas across the country.

5.3 Buffalo City Metropolitan Municipality

5.3.1 City background

The Buffalo City Metropolitan Municipality is located on the east coast of the Eastern Cape Province.[496] This is a coastal city situated on the southeast coastline of the Indian Ocean.[497] There are several towns in this Municipality namely that of Bhisho, East London, and Qonce, as well as the large townships of Mdantsane and Zwelitsha.[498] Buffalo City's urban centre forms a development axis that is essential to the Eastern Cape.[499] This urban centre stretches from the "port city" of East London to the west of Buffalo City's land area.[500] Generally, this urban centre attracts people from the greater Amathole region in search of work and access to improved services and facilities.[501] The City's rapid urbanisation continues to challenge the Municipality's capacity to deliver basic services.[502] Additionally, it complicates the surveillance and treatment of communicable and vector-borne diseases as citizens shop for health services in the Metro and return to rural areas once the treatment plan has been effective.[503] In general, TB and HIV is the leading causes of natural death in the Buffalo City Metropolitan Municipality, followed by chronic lower respiratory diseases, influenza and pneumonia, as well as other viral diseases.[504]

5.3.1.1 The components of municipal health services

The *Buffalo City Municipality Noise and Environmental Health By-laws* makes provision for seven of the nine components related to municipal health service delivery, namely, water quality monitoring, food control, waste management, health

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496 Buffalo City Metropolitan Municipality *Integrated Development Plan* 37.

497 Buffalo City Metropolitan Municipality *Executive Summary of the Integrated Development Plan of the Buffalo City Metropolitan Municipality* 2021-2026 14; Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 37.

498 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 37.

499 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 37-38.

500 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 38.

501 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 38.

502 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 48; Buffalo City Metropolitan Municipality also "experiences intra-provincial migration with people choosing to live in the city, in the non-metro towns and (their peripheries) along the transport corridors"; Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 48.

503 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 48.

504 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 52.

surveillance of premises, the surveillance of communicable diseases vector control, and environmental pollution control.[505] For water quality monitoring, this by-law holds that owners or occupiers of premises may not pollute or contaminate water supplies.[506] Where water sources such as a well, spring, borehole, or the like are situated on the premises, the Council may serve a notice on the owners or occupiers to supply particulars of the water source within fourteen days.[507] If the water supply on the premises is used for domestic consumption the owner must furnish the Council with a certificate of analysis and bacteriological and chemical investigation issued by an analyst as defined in the *Foodstuffs, Cosmetics and Disinfectants Act*.[508] This could aid municipalities with the control and prevention of water-borne diseases that could be contracted through the consumption of contaminated water.

The *Buffalo City Metropolitan Municipality Noise and Environmental Health By-laws* do not explicitly mention food control. However, it indirectly refers to food control by stating that people may not slaughter or permit the slaughtering of any animals at any place other than an abattoir.[509] The meat may also not be sold for human and animal consumption unless it has been slaughtered at an abattoir.[510] This does not, however, apply to animals being slaughtered on a farm for consumption,[511] or for religious or cultural purposes.[512] Animals may not be kept in a proclaimed township area for religious or cultural purposes without the written permission of the Council.[513] Anyone who keeps an animal for the slaughtering of religious purposes must obtain the animal from an area that has not been declared a TB or

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505 To avoid the repetition and duplication of information throughout this chapter, the surveillance of communicable diseases and vector control is discussed in detail under the related headings below.

506 Section 9 of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.

507 Section 10(1) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.

508 Section 10(2) and (3) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010; *Foodstuffs, Cosmetics and Disinfectants Act* 54 of 1972.

509 Section 17(1)(a) and (b) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.

510 Section 17(1)(c) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.

511 Section 17(2)(1) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.

512 Section 17(2)(ii) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.

513 Section 35(1) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.

brucellosis quarantine area,[514] and must always handle the meat in a hygienic manner.[515]

This by-law also makes specific provision for medical waste management. According to this by-law health care risk waste may not be collected, disposed of, sorted, or treated in manner that could adversely affect human health or the environment.[516] All waste generators and transporters must be registered with the Council.[517] Transfer facilities or treatment facilities may not accept health care risk waste from unregistered waste generators or treatment facilities.[518] There are also specific references to waste management in related trades such as those of hairdressers and barbers. Any person operating a hairdressing or barber's establishments must collect all hair clippings[519] and other waste in an approved manner and store or dispose of the waste in an approved manner.[520]

The *Buffalo City Metropolitan Municipality Noise and Environmental Health By-laws*, stipulate the municipal health requirements for various premises within its municipal area.[521] For example, no person may cause a health nuisance anywhere in the municipal area.[522] Owners or occupiers of premises must also ensure that a health nuisance does not arise from those premises.[523] Health nuisances can be caused when owners or occupiers of premises allow any premises or any part thereof to be in such a state that it is offensive or injurious to health,[524] the premises are maintained in a manner that attracts, harbours or is conducive to the breeding of rodents or other pests,[525] and if any activities or process on the premises give rise

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514 Section 36(c) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
515 Section 36(d) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
516 Section 42(1) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
517 Section 41(a) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
518 Section 42(2) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
519 Section 65(d) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
520 Section 65(e) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
521 These premises include " property owned or occupied by the owners or occupiers of premises, accommodation establishments, hairdressers and barbers, tattooing and body piercing, child-care facilities, and swimming pools and spa-baths". See sections 8-18, 61, 64, 68, 71 and 72 of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
522 Section 5(1) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
523 Section 5(2) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
524 See section 6 and Schedule 1(a) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
525 Schedule 2(1)(a) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.

to air pollution.[526]. People may also not occupy, cause, or permit any premises for human habitation to be a health nuisance, by overcrowding or otherwise.[527]

Overall, the purpose of this by-law is to enable the Council to protect and promote the long-term health and well-being of people in the Buffalo City area.[528] To do this, the Council should control and prevent activities that may harm human health or the environment.[529] This by-law is premised on the constitutional environmental right and acknowledges that the Council has the constitutional duty to progressively promote a safe and healthy environment.[530] The Council must regulate all activities and administer all matters in a manner that avoids creating a health nuisance,[531] does not make it easier for any animal or human disease to spread,[532] and does not give rise to unsanitary conditions.[533] The Council should also prevent the consumption of unsafe food or drinks,[534] avoid creating favourable conditions for infestation by pests,[535] and improve the health of the public in the municipal area.[536]

5.3.1.2 Surveillance of communicable and vector-borne diseases

The *Buffalo City Noise and Environmental Health By-laws* makes no explicit mention of the surveillance of communicable and vector-borne diseases. However, the surveillance of communicable diseases can be implied through the general prohibition against the creation of health nuisances the specific provisions set out

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526 Schedule 3(d) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
527 Section 7 of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010; Overcrowding is defined as "a building or premises where more than twelve people share a bathroom or where rooms are occupied by more than one adult per four square metre, or more than one child occupies a room per two square metre."; see section 1 of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
528 Section 2 of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
529 Section 2 of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
530 Section 3(1) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
531 Section 3(2)(a) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
532 Section 3(2)(b) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
533 Section 3(2)(c) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
534 Section 3(2)(d) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
535 Section 3(2)(e) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
536 Section 3(2)(f) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.

relating to the components of municipal health services,[537] and the inspection and investigation of premises by the Council.[538]

5.3.1.3 Identification of vectors

The *Buffalo City Metropolitan Municipality Noise and Environmental Health By-laws* make specific references related to vector control, identification, and prevention. Part of the principles of this by-law holds that the Council must regulate and administer all activities in a manner that avoids creating conditions for the infestation of pests.[539] Property owners or occupiers are also prohibited from housing vermin, vagrants and wild animals through property that is overrun with bush or vegetation.[540] According to the Council these premises may also not pose a threat to the community.[541] Additionally, it holds that the premises for the keeping of animals and poultry must be kept in such a condition that it does not attract or provide harbourage for rodents.[542] All feed on these premises must be stored in an approved rodent proof place, container or storeroom.[543]

5.3.1.4 Collection and analysis of data and information systems

This *Buffalo City Municipality Noise and Environmental Health By-laws* do not make explicit mention of data and information systems.

5.3.1.5 Routine inspections and investigations at different types of premises

The *Buffalo City Municipal Noise and Environmental Health By-laws*, contain a general provision relating the inspection and investigation of premises.[544] To ensure compliance with this *By-law*, employees of the Council may enter and inspect any premises in the City.[545] The authorised employee must on request by any person

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537 See section 5.3.1.1 above for more detail.
538 See section 5.3.1.5 below.
539 Section 3(2)(e) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
540 Section 6 of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
541 Section 6 of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
542 Section 23(3) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
543 Section 23(2) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
544 See section 80 of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.
545 Section 80(1) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.

identify him or herself by producing written proof of authorisation.[546] According to this by-law the Council may, do anything that it considers reasonably necessary to ensure compliance with this by-law and to eliminate or eradicate any health nuisance.[547]

5.3.1.6 Environmental health impact assessments

No reference is made of environmental health impact assessments in the disaster management plan or the By-law.

5.3.1.7 Training, education, and other measures of support

The disaster management plan of Buffalo City Metropolitan Municipality does not explicitly mention the provision of training, education, or other measures of support for the municipal regulation of communicable and vector-borne disease control.[548] The disaster management plan does, however, indicate that the City provided training on event safety to various municipal departments, ambulance services, traffic service and law enforcement.[549] The City also provided training on Community Based Risk Reductions in Wards One and Two. The aim of this training is to equip the Community Risk Assessors can provide some aid during disaster assessments.[550] This could aid the Buffalo City Metropolitan Municipality with assessing communicable and vector-borne disease risks in the City.

5.3.1.8 Updated disaster risk management plan(s)

The Buffalo City Metropolitan Municipality adopted its disaster management plan in 2021. Currently, Buffalo City Metropolitan Municipality's Disaster Management plan

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546 Section 82(a) and (b) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.

547 Section 82(a) and (b) of the *Buffalo City Municipality Noise and Environmental Health By-laws* 2010.

548 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 203; It should be noted that the disaster management plan forms an essential part of the IDP. In all of the metropolitan municipalities, except the City of Cape Town, the disaster management plans were located in the IDPs. Therefore, throughout this Chapter references to the disaster management plans will be cited by referring to the IDPs.

549 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 203.

550 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 203.

broadly indicates the City's risk of exposure to epidemics and disease outbreaks without going into detail on the municipal regulation of communicable and vector-borne disease control and prevention.[551]

5.3.1.9 Early warning mechanisms and procedures

As mentioned above,[552] the Buffalo City Metropolitan Municipality identified epidemics such as the coronavirus outbreak as a challenge.[553] The disaster management plan does not provide further details on the early warning mechanisms and procedures followed to reduce this communicable and vector-borne disease risk in the City.

5.3.1.10 Local disaster management centre(s)

The Buffalo City Metropolitan Municipality has an established local disaster management centre.[554] The disaster management centre is expected to assist with providing relief during a disaster.

5.3.1.11 Local framework for disaster management

The Buffalo City Metropolitan Municipality adopted a Disaster Management Policy Framework on 26 February 2014.[555] This framework was reviewed during 2019 and 2020.[556] It acknowledges that disasters occur due to the socio-economic vulnerabilities that expose communities to hazards that may cause significant economic, and environmental losses and the loss of lives.[557]

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551 Buffalo City Metropolitan Municipality *Executive Summary of the Integrated Development Plan of the Buffalo City Metropolitan Municipality* 2021-2026 203.
552 See section 5.3.1.10 above.
553 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 203.
554 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 204.
555 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 201.
556 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 201.
557 Buffalo City Metropolitan Municipality *Integrated Development Plan* 2021-2026 201.

5.4 City of Cape Town

5.4.1 City background

The City of Cape Town is a vibrant and multi-ethnic society that provides various opportunities.[558] In the past few years, the City of Cape Town's economy has grown faster than the economy of the country as a whole.[559] This is primarily because Cape Town's economy is based on the services sector instead of the mineral sector.[560] Cape Town therefore attracts post-matric job-seekers looking for employment.[561] In terms of health, the City of Cape Town notes a decline in the prevalence of HIV and Aids and a decrease in the number of TB cases.[562] It should however be noted that rapid urbanisation, overcrowding, poverty and substance abuse exacerbate the prevalence of TB in the City of Cape Town.[563] To add to this, drug-resistant strains of TB, multidrug-resistant (hereafter MDR) TB and extensively drug-resistant (hereafter XDR) TB presents a challenge in the city.[564]

5.4.1.1 The components of municipal health services

The *City of Cape Town Environmental Health By-law* provides for five of the nine components of municipal health services. These components include medical waste management,[565] the health surveillance of premises, vector control and environmental pollution control, and the inspection and investigation of various premises.

In terms of the health surveillance of premises, the *City of Cape Town Environmental Health By-law* states that no person may occupy or cause a health

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558 City of Cape Town *Integrated Development Plan* 2017-2022 19.
559 City of Cape Town *Integrated Development Plan* 2017-2022 17.
560 City of Cape Town *Integrated Development Plan* 2017-2022 17.
561 City of Cape Town *Integrated Development Plan* 2017-2022 17.
562 City of Cape Town *Integrated Development Plan* 2017-2022 19.
563 City of Cape Town *Integrated Development Plan*2017-2022 20.
564 City of Cape Town *Integrated Development Plan* 2017-2022 20.
565 See section 23 of the City of Cape Town: Environmental Health By-law 2003

nuisance[566] on premises for habitable purposes by overcrowding or otherwise.[567] Other general provisions against the creation of a health nuisance include the prohibition against the pollution of water,[568] the carrying of any objectionable material or thing in any street or public place,[569] and causing or permitting any stream, ditch, pool, drain, gutter and the like to become so foul that it could be considered as a health nuisance.[570]

The by-law also sets out standards for accommodation establishments,[571] hairdressers and barbers,[572] the tattooing and body piercing of humans,[573] and childcare facilities.[574] Generally, these spaces must be clean and in good condition for the purposes of these trades. For example, the premises for accommodation establishments must be in good structural order internally and externally.[575] All furniture, linen, utensils, fittings, and equipment must be clean and in good order.[576] Rooms must have adequate lighting and ventilation.[577] In terms of the keeping of animals and poultry, this by-law holds that no person may keep or permit to keep animals or poultry without the permission of the Council.[578] To promote public health and restrict health nuisances the Council may occasionally determine the number, kinds, and sex of animals or poultry that may be kept in a unit area and areas where such animals and poultry may not be kept.[579] The Council may also determine the

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566 Section 1 defines a health nuisance as "any activity, condition, premises or thing that may be dangerous or injurious to health in the opinion of the Council or a duly authorised employee."; see the *City of Cape Town: Environmental Health By-law* 2003 for more details on a health nuisance.

567 Section 4 of the City of Cape Town: Environmental Health By-law 2003; According to this *By-law*, overcrowding is defined as
"a residential occupancy in excess of twelve occupants per sanitary convenience and or occupancy of habitable rooms for sleeping purposes where such occupation exceeds one adult person per four square metre and/or one child under ten years of age per two square metre."

568 Sections 7 and 8 of the *City of Cape Town: Environmental Health By-law* 2003.

569 Section 5 of the *City of Cape Town: Environmental Health By-law* 2003.

570 Section 6 of the *City of Cape Town: Environmental Health By-law* 2003.

571 See section 28 of the *City of Cape Town: Environmental Health By-law* 2003.

572 see section 29 of the *City of Cape Town: Environmental Health By-law* 2003.

573 See section 30 of the *City of Cape Town: Environmental Health By-law* 2003.

574 See section 31 of the *City of Cape Town: Environmental Health By-law* 2003.

575 Section 28(1)(a) of the *City of Cape Town: Environmental Health By-law* 2003.

576 Section 28(1)(b) of the *City of Cape Town: Environmental Health By-law* 2003.

577 Section 28(1)(c) of the *City of Cape Town: Environmental Health By-law* 2003; section 29(1)(a) of the *City of Cape Town: Environmental Health By-law* 2003.

578 Section 11 of the *City of Cape Town: Environmental Health By-law* 2003.

579 Section 12(1) of the *City of Cape Town: Environmental Health By-law 2003*.

kinds of animals for which a permit is required and the relevant application fee and registration for such a permit.[580] Additionally, this by-law sets out standards for the structures that accommodate animals and poultry.[581] These structures must for instance not be situated within 15 metres of any boundary of an erf.[582] This could help to reduce the transmission of pathogens and animal diseases to humans.

5.4.1.2 Surveillance of communicable and vector-borne diseases

No specific references are made to the surveillance of communicable and vector-borne diseases in the *City of Cape Town: Environmental Health By-law* 2003. However, the inspections and investigations of premises carried out by authorised employees could imply that the by-law makes provision for active disease surveillance.

5.4.1.3 Identification of vectors

The *City of Cape Town: Environmental Health By-law* 2003 contains provisions relating to the control and prevention of vermin and vectors. It holds that the premises of a person may be so unkempt that it endangers public health or safety or harbours vermin and vectors.[583] Owners or occupiers of premises must take precautionary measures against conditions that facilitate the breeding or occurrence of various pests, vermin.[584] Employees of the Council may serve a notice on such an occupier or owner with regards to the eradication of any such vermin or pests.[585] Owners or occupiers of premises will usually be given some time to eliminate or eradicate these pests or vectors.[586]

This by-law also provides similar provisions regarding the keeping of animals and poultry. For instance, all feed must be stored in a rodent proof place, container, or

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580 Section 12(2) of the *City of Cape Town: Environmental Health By-law* 2003.
581 Section 13(1) and (2) of the *City of Cape Town: Environmental Health By-law* 2003.
582 Section 13(4)(a) of the *City of Cape Town: Environmental Health By-law* 2003.
583 Section 1 of the *City of Cape Town: Environmental Health By-law* 2003.
584 Section 7 of the *City of Cape Town: Environmental Health By-law* 2003.
585 Section 7 of the *City of Cape Town: Environmental Health By-law* 2003.
586 Section 7 of the *City of Cape Town: Environmental Health By-law* 2003.

storeroom.[587] To avoid creating a health nuisance these premises should not be maintained in a manner that creates favourable environments to breed or shelter rodents.[588] Additionally, all manure must be disposed of regularly and kept under shelter in sealed fly-proof containers.[589] The Council may also hold that a person should build a permanent fly and rodent proof manure and feedstore on the premises where animals are being kept.[590]

5.4.1.4 Collection and analysis of data and information systems

The *City of Cape Town: Environmental Health By-law*, 2003 does not any make reference to information systems.

5.4.1.5 Routine inspections and investigations at different types of premises

The *City of Cape Town: Environmental Health By-law*, contains a general provision regarding the right of entry and inspection. This provision empowers employees of the Council to enter and inspect any premises in its municipal area to ensure compliance with the provisions of the *By-law*.[591] As in the case of the by-laws above, the duly authorised employee may serve a notice, demand or document on a person when the provisions of this by-law is not adhered to.[592]

5.4.1.6 Environmental health impact assessments

No references are made to environmental health impact assessments in the City of Cape Town's disaster management plan.

5.4.1.7 Training, education, and other measures of support

The Plan broadly provides for the training and education of stakeholders regarding disaster management.

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587 Section 14(2) of the *City of Cape Town: Environmental Health By-law* 2003.
588 Section 14(3) of the *City of Cape Town: Environmental Health By-law* 2003.
589 Section 14(1) of the *City of Cape Town: Environmental Health By-law* 2003.
590 Section 15 of the *City of Cape Town: Environmental Health By-law* 2003.
591 Section 38(1) of the *City of Cape Town: Environmental Health By-law* 2003.
592 Section 39 of the *City of Cape Town: Environmental Health By-law* 2003.

5.4.1.8 Updated disaster risk management plan(s)

The City of Cape Town disaster management plan was adopted in 2015. The disaster risk assessment, it identified human communicable disease outbreaks and animal communicable disease outbreaks as a risk in the City.[593] It notes that the loss or disruption of services is a major threat to the City and has a significant impact on the biological nature resulting in human communicable disease and animal communicable diseases.[594] As a result, the disaster management plan highlights the need to ensure coping capacity in the health sector beyond emergency services and decreasing the vulnerability of the poor.[595]

5.4.1.9 Early warning mechanisms and procedures

This disaster management plan notes that the primary objective of each stakeholder for disaster management must be to prevent the occurrence of emergencies or disasters that may occur in the City of Cape Town.[596] If such prevention is not possible, the secondary objectives are to reduce disaster risk and vulnerability, and to lessen the impact of an emergency or disaster.[597] The disaster management plan indicates that the executive director for City Health must ensure that disaster management plans are complied with and maintained to regulate communicable and vector-borne disease risks.[598] The director may also provide strategies to eliminate disaster risks presented by communicable diseases and make specific reference to the isolation of persons to decrease or eliminate the risk of communicable disease.[599] Furthermore, the director may provide strategies regarding the monitoring of large groups of people for contamination or other health effects, and establish preventative measures around communicable diseases for disrupted populations.[600] These strategies could arguably be applied to the

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593 City of Cape Town *Disaster Management Plan* 2015 39.
594 City of Cape Town *Disaster Management Plan* 2015 41.
595 City of Cape Town *Disaster Management Plan* 2015 41.
596 City of Cape Town *Disaster Management Plan* 2015 12.
597 City of Cape Town *Disaster Management Plan* 2015 12.
598 City of Cape Town *Disaster Management Plan* 2015 18.
599 City of Cape Town *Disaster Management Plan* 2015 18.
600 City of Cape Town *Disaster Management Plan* 2015 18.

environmental health services at the local level and may indirectly apply to municipal action for communicable and vector-borne disease control.

5.4.1.10 Local disaster management centre(s)

The City of Cape Town has a local disaster management centre.[601] The local disaster management centre is responsible for the developing and keeping the City of Cape Town's municipal disaster risk management plan updated.[602] This disaster management plan states that the local disaster management centre must specialise in issues of disasters and disaster risk management within the City of Cape Town.[603] It must perform its functions and powers in terms of section 44 of the *DMA*.[604] According to the national legislative provisions, the disaster management centre must also act as a depository of information concerning disasters and disaster risk management in the area.[605]

5.4.1.11 Local framework for disaster management

According to this City's disaster management plan, the City of Cape Town's Municipal Disaster Management Advisory Forum must establish and implement a policy framework for disaster risk management.[606] This framework must seek to provide an integrated and unified disaster risk management approach in the City.[607] It could not be determined from the disaster management plan whether the framework has been established or implemented, but this provision correlates with the directives of the *DMA*. The establishment and implementation of the disaster management framework could arguably hint at the City's municipal action to regulate disasters such as communicable and vector-borne disease outbreaks.

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601 City of Cape Town *Disaster Management Plan* 2015 8.
602 City of Cape Town *Disaster Management Plan* 2015 7.
603 City of Cape Town *Disaster Management Plan* 2015 11.
604 City of Cape Town *Disaster Management Plan* 2015 11.
605 City of Cape Town *Disaster Management Plan* 2015 11.
606 City of Cape Town *Disaster Management Plan* 2015 7.
607 City of Cape Town *Disaster Management Plan* 2015 7.

5.5 City of eThekwnini Metropolitan Municipality

5.5.1 City background

eThekwini Metropolitan Municipality is located on the east coast of South Africa in the Kwa-Zulu Natal Province.[608] It is one of the four coastal municipalities in South Africa with a hilly typograph encompassing gorges and ravines.[609] This metropolitan area is surrounded by the Ugu, iLembe and uMgungundlovu provincial districts.[610] The eThekwini Municipality has five functional municipal planning boundaries.[611] Each of the municipal planning regions consist of rural and urban settlements that is accompanied by economic, social and public infrastructure as well as formal and informal land uses.[612] The boundaries broadly contribute to the economic sector, trade, tourism and residential areas.[613] The eThekwini Municipality has a population of 3.9 million people, that accounts for 34.7 percent of the Kwa-Zulu Natal Province's population.[614] It is the third largest metropolitan municipality in South Africa following the City of Johannesburg and the City of Cape Town.[615] In terms of health, TB and HIV are the most prevalent communicable and vector-borne diseases in the City.[616]

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608 eThekwini Metropolitan Municipality date unknown https://www.durban.gov.za/pages/government/about-ethekwini.

609 eThekwini Metropolitan Municipality date unknown https://www.durban.gov.za/pages/government/about-ethekwini.

610 eThekwini Metropolitan Municipality date unknown https://www.durban.gov.za/pages/government/about-ethekwini.

611 These boundaries are "the North, Central, South and outer West Municipal Planning Regions."; eThekwini Metropolitan Municipality date unknown https://www.durban.gov.za/pages/government/about-ethekwini.

612 eThekwini Metropolitan Municipality *eThekwnini Municipality Integrated Development Plan* 68.

613 eThekwini Metropolitan Municipality date unknown https://www.durban.gov.za/pages/government/about-ethekwini.

614 eThekwini Metropolitan Municipality date unknown https://www.durban.gov.za/pages/government/about-ethekwini.

615 eThekwini Metropolitan Municipality date unknown https://www.durban.gov.za/pages/government/about-ethekwini.

616 eThekwini Metropolitan Municipality *eThekwnini Municipality Integrated Development Plan* 187.

5.5.1.1 The components of municipal health service delivery

The *eThekwini Metropolitan Municipality Public Health By-laws* provide six of the nine components, namely for food control,[617] health surveillance of premises,[618] environmental pollution,[619] vector control,[620] and the surveillance of communicable disease, and the inspection and investigation of different premises.

In terms of the health surveillance of premises, the *eThekwini Metropolitan Municipality Public Health By-law,* 1911 (as amended over many years) holds that no person may carry or conduct any trade, calling or manufacture in such a way that is likely to be a nuisance or injurious to health.[621] This by-law instructs the occupiers of any premises to maintain clean conditions in all parts of the premises, including closets, passages, staircases, yards, and drains.[622] If this is not adhered to, a Medical Officer may serve a notice on the owner or occupier of the premises to clean or tidy up the land or premises within a specified time.[623] When an owner or occupier refuses to carry out the measures within the specified time, the Medical Officer may arrange for the premises or land to be cleaned and any costs incurred will be recoverable from the person on whom the notice was served.[624]

This by-law also sets out a general provision on prohibited trades. This includes exposing or exhibiting in public any object causing a nuisance or that is dangerous to health in public.[625] Like the all the by-laws of the other cities, this by-law lays out specific norms and standards for the premises of tradesmen such as hairdressers and barbers.[626] It also sets out similar provisions and standards for several other premises and practices such as, the removal of weeds and undergrowth by owners

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617 See section 1(e) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
618 See section 3 and 4 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
619 See sections 1(m) and (n) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
620 See section 2(c) of the *eThekwini Metropolitan Municipality Public Health By-laws 1911.*
621 Section 1 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
622 Section 3(b) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
623 Section 3(2) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
624 Section 3(3) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
625 Section 1(i) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
626 See section 71 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.

and occupiers of overgrown property.[627] Furthermore, it holds that owners of any premises must maintain all buildings, and stormwater drains in good conditions,[628] and provide adequate lighting and ventilation in rooms or other structures used for human habitation or occupation.[629]

5.5.1.2 Surveillance of communicable and vector-borne diseases

Unlike the other by-laws of metropolitan municipalities, this by-law has specific provisions dedicated to quarantine and managing infectious diseases.[630] It holds that any person may be held accountable for non-compliance with the by-laws,[631] if he or she is suffering from any infectious disease, and exposes himself or herself in public without proper precautions against the disease transmission.[632] may be liable to a penalty for breach of the by-laws. This by-law delineates several other provisions related to infectious disease and quarantine including restrictions on the school attendance of children suffering from infectious diseases,[633] directing any person suffering from an infectious disease to a suitable hospital or place to quarantine,[634] the disinfection of clothing,[635] books being exposed to infection,[636] vehicles and the disinfection of vehicles,[637] the demolition of premises,[638] compulsory disinfection or decontamination,[639] and the destruction of contaminated bedding, etc.[640] This by-law affords the Medical Officer of Health or the Inspector- of Nuisance the power to give an owner or occupier of premises a notice to purify the premises to their satisfaction within a time period specified on the notice.[641]

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627 See section 8 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
628 Section 10(a) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
629 Section 10(d) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
630 Section 31 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
631 Section 31(2) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
632 Section 31(a) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
633 Section 32 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
634 Section 35 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
635 Section 40 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
636 Section 42 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
637 Section 43 and 44 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
638 Section 51 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
639 Section 52 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
640 Section 54 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
641 Section 51 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.

5.5.1.3 Identification of vectors

This by-law makes similar references to the identification of vermin and vectors.[642] For example, in terms of the keeping of animals and poultry it places a duty on property owners and occupiers to control and prevent the breeding or housing of vectors on land or premises.[643] These vectors can include mosquitoes, flies, rodents, or other vermin or pests.[644] Comparable to the by-laws of other cities, this by-law indicates the owners or occupiers of premises may be ordered by way of a notice to reduce conditions that are conducive to the occurrence of vermin and vectors. Owners or occupiers of property will be given some time to cut down all weeds and grass that may pose as a public health nuisance.[645] Any owner or occupier who fails to carry out or comply with the requirements of such a notice will be guilty of an offence.[646] If the owner or occupier refuses to carry out the measures specified in a notice under the *eThekwini Metropolitan Municipality Public Health By-laws*, the City Medical Officer of Health may arrange for such measures to be carried out and the expenses incurred in so doing will be recoverable by the Council from the person on whom the notice is served.[647]

5.5.1.4 Collection and analysis of data and information systems

The *eThekwini Metropolitan Municipality Public Health By-laws 1911* do not explicitly refer to information systems and the collection and analysis of data.

5.5.1.5 Routine inspections and investigations at different types of premises

The *eThekwini Metropolitan Municipality Public Health By-laws* hold that the Medical Officer of Health may enter any premises in which an infectious disease has been reported or is suspected to exist.[648] The Medical Officer of Health may make inquiries

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642 See section 5(4)(a) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
643 Section 5(4)(a) and 7(1) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
644 Section 7 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
645 Section 8(a) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
646 Section 8(b) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
647 Section 8(c) of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
648 Section 59 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.

and inspections of the premises as necessary.[649] If an infectious disease exist in any premises, the Medical Officer of Health may enter such premises and carry out a process of disinfection of such premises and any furniture and effects therein as the Officer deems fit.[650] This by-law also empowers the Medical Officer of Health to order that any house or building be closed and for the people to be removed if it appears that these premises are likely to be a danger to public health or favour the spread of plague or small-pox.[651]

5.5.1.6 Environmental health impact assessments

The disaster management plan of the eThekwini Metropolitan Municipality does not make reference to environmental health impact assessments.

5.5.1.7 Training, education and other measures of support

The eThekwini Metropolitan Municipality's disaster management plan does make explicit reference to the training of its disaster management volunteers. The disaster management centre trains its volunteers in first aid, basic disaster management, fire safety, public speaking, home-based care and counselling.[652]

5.5.1.8 Updated disaster risk management plan(s)

The eThekwini Metropolitan Municipality developed its disaster management sector plan in 2019. The eThekwini disaster management plan identifies disease as one of the top ten most pertinent hazards in the City.[653] This disaster management plan acknowledges the linkages between disease and the surrounding environment of communities in South Africa.[654] The eThekwini Health Unit focuses on social health

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649 Section 59 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
650 Section 56 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
651 Section 60 of the *eThekwini Metropolitan Municipality Public Health By-laws* 1911.
652 eThekwini Metropolitan Municipality *eThekwnini Municipality Integrated Development Plan* 2022-2026 909.
653 eThekwini Metropolitan Municipality *eThekwnini Municipality Integrated Development Plan* 2022-2026 940.
654 eThekwini Metropolitan Municipality *eThekwnini Municipality Integrated Development Plan* 2022-2026 944.

interventions at a community level in response to the risk of disease that places populations at risk.[655]

5.5.1.9 Early warning mechanisms and procedures

The eThekwini Metropolitan Municipality does not make explicit provision for early warning mechanisms and procedures related to the municipal regulation of communicable and vector-borne disease control. However, it does receive early weather warnings from the South African Weather Service, which is then disseminated to other relevant role-players and decision makers.[656] This information could be useful for the municipal regulation of communicable and vector-borne diseases since extreme weather events often increase the risk and transmission of communicable diseases and the prevalence of vermin and vectors.

5.5.1.10 Local disaster management centre(s)

The eThekwini Disaster Management Centre was established in 2010.[657] The local disaster management centre staff members must manage the Centre and develop various strategies and plans to mitigate or reduce disaster risks.[658] The disaster management centre is also responsible for disaster management operations and event management, internal training and capacity building, and unit administration.[659]

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655 eThekwini Metropolitan Municipality *eThekwnini Municipality Integrated Development Plan* 2022-2026 944.

656 eThekwini Metropolitan Municipality *eThekwnini Municipality Integrated Development Plan* 2022-2026 946.

657 eThekwini Metropolitan Municipality *eThekwnini Municipality Integrated Development Plan* 2022-2026 909.

658 eThekwini Metropolitan Municipality *eThekwnini Municipality Integrated Development Plan* 2022-2026 910.

659 eThekwini Metropolitan Municipality *eThekwnini Municipality Integrated Development Plan* 2022-2026 910.

5.5.1.11 Local framework for disaster management

The eThekwini Municipality developed a disaster management policy framework in 2009 and reviewed this framework in 2019.[660] This Framework is consistent with the *NDMF* and the *Provincial Disaster Management Framework*.[661]

5.6 City of Johannesburg

5.6.1 City background

The City of Johannesburg is currently the most densely populated metro in South Africa.[662] Johannesburg's population constitutes about forty percent of the Gauteng population and ten percent of South Africa's overall population.[663] Most people who migrate to the City of Johannesburg are people between the ages of twenty and thirty-nine years old. They migrate in search of work and better opportunities.[664] However, like the rest of South Africa, the City of Johannesburg has a high unemployment rate and a relatively low informal sector absorption rate.[665] To add to this, the majority of all citizens in Johannesburg live on only five per cent of the metropolitan area in densely populated and often overcrowded townships.[666] This inequitable spatial arrangement significantly contributes to unequal access to quality services and job opportunities.[667] In terms of communicable and vector-borne

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660 eThekwini Metropolitan Municipality *eThekwnini Municipality Integrated Development Plan* 2022-2026 911.

661 eThekwini Metropolitan Municipality *eThekwnini Municipality Integrated Development Plan* 2022-2026 911.

662 Johannesburg's population is "estimated to be 5.87 million people"; City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 14.

663 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 14-15.

664 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 15.

665 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 21-22.

666 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 25.

667 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 26.

disease risks influenza and pneumonia,[668] HIV,[669] and TB[670] were among the leading causes of death in the City of Johannesburg.[671]

5.6.1.1 The components of municipal health services

The *City of Johannesburg Public Health By-laws* provide for six of the nine components related to municipal health services, namely water quality monitoring, environmental pollution control, vector control, health surveillance of premises, waste management and the surveillance of communicable disease.

With regard to environmental pollution control and water quality monitoring, this by-law holds that no person may pollute or contaminate any water supply sources or store water in such a way that it causes a public health nuisance.[672] Where water from a borehole or other water supply sources located on the premise are being used for domestic consumption, the owners or occupiers of the premises must provide the Council with all particulars of the water resource available to the owner or occupier.[673] This information must be supplied within fourteen days if the information is requested by the Council.[674] Furthermore, a certificate of analysis and bacterial investigation must be submitted annually if the water resource is being used for domestic consumption.[675] As mentioned previously, this could help to reduce the risk of communities consuming contaminated water as well as the occurrence of water-borne diseases.

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668 According to the statistics provided in Johannesburg's Integrated Development Plan, "influenza and pneumonia accounted for 3.8% of deaths in 2016"; City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 30.

669 According to the statistics provided in Johannesburg's Integrated Development Plan, "HIV accounted for 3.7% of deaths in 2016"; City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 30.

670 According to the statistics provided in Johannesburg's Integrated Development Plan, "TB accounted for 4.8% of deaths in 2016 and was ranked as the second leading cause of death within the City"; City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 30.

671 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 30.

672 Section 36 of the *City of Johannesburg Public Health By-laws* 2004.

673 Section 40(1) of the *City of Johannesburg Public Health By-laws* 2004.

674 Section 40(1) of the *City of Johannesburg Public Health By-laws* 2004.

675 Section 40(3) of the *City of Johannesburg Public Health By-laws* 2004.

In terms of the health surveillance of premises, the *City of Johannesburg Public Health By-laws* states that every owner of premises that have access to municipal sewage works must ensure that all waste water drainage pipes are connected to the municipal sewer in an approved manner.[676] People may not impede or inhibit any sanitary service provided by the Council.[677] No person may establish or utilise any bucket toilet inside or under the same roof as a dwelling.[678] Owners or occupiers of premises must maintain and keep any drainage system in good condition.[679] Adequate sanitation could help to prevent the risk of contracting communicable diseases through the faecal-oral route. Like the other by-laws, this by-law also holds that no person may create a public health hazard anywhere in the municipal area.[680] Owners are also responsible for eliminating public health hazards within twenty-four hours.[681] If they are unable to eliminate it the owners or occupiers of a premises must take reasonable steps to reduce the public health risk and then report the existence of the public health hazard to the Council.[682]

Overall, the purpose of the *City of Johannesburg Metropolitan Municipality Public Health By-laws* is to enable the Council to protect and promote the long-term health and well-being of the people in the municipal area.[683] This can be done by managing and regulating activities that could potentially have adverse impacts on public health,[684] and by requiring premises to be properly maintained.[685] This by-law also recognises that everyone has the right to an environment that is not harmful to their health and well-being, and to have access to sufficient water.[686] Public health risks must be eliminated wherever reasonably possible. If it is not reasonably possible to eliminate such risks, it must be reduced to a level acceptable to the Council.[687]

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676 Section 19 of the *City of Johannesburg Public Health By-laws* 2004.
677 Section 20 of the *City of Johannesburg Public Health By-laws* 2004.
678 Section 23 of the *City of Johannesburg Public Health By-laws* 2004.
679 Section 28 of the *City of Johannesburg Public Health By-laws* 2004.
680 Section 5(1) of the *City of Johannesburg Public Health By-laws* 2004.
681 Section 6(a) of the *City of Johannesburg Public Health By-laws* 2004.
682 Section 6(b) of the *City of Johannesburg Public Health By-laws* 2004.
683 Section 1 of the *City of Johannesburg Public Health By-laws* 2004.
684 Schedule 1 of the *City of Johannesburg Public Health By-laws* 2004.
685 Schedule 1 of the *City of Johannesburg Public Health By-laws* 2004.
686 Schedule 1 of the *City of Johannesburg Public Health By-laws* 2004.
687 Schedule 1 of the *City of Johannesburg Public Health By-laws* 2004.

5.6.1.2 Surveillance of communicable and vector-borne diseases

The City of *Johannesburg Public Health By-laws* do not explicitly refer to the surveillance of communicable and vector-borne diseases. Still, like the by-laws mentioned earlier, communicable disease surveillance can also be implied here.

5.6.1.3 Identification of vectors

This by-law makes a principial statement that the Council must regulate and administer all activities in such a way that it avoids creating favourable conditions for the infestation of pests.[688] The *City of Johannesburg Public Health By-laws* state that a public health nuisance is created if there are conditions on the premises that attract or shelters rodents or other pests.[689] Insufficiently rotted manure or the use of any other organic material[690] may attract flies and cause them to breed on the premises.[691] A public health nuisance may also be created if the environment on the premises facilitate the prevalence of mosquitoes.[692]

5.6.1.4 Collection and analysis of data and information systems

No specific reference is made to information systems or the collection and analysis of data.

5.6.1.5 Routine inspections and investigations at different types of premises

The *City of Johannesburg Public Health By-laws* holds that the Council may enter any premises and do anything that it reasonably considers necessary to ensure compliance with the provisions of these by-laws and any compliance notice issued.[693] The Council may also enter any premises and do anything on the premises to

688 Schedule 1 of the *City of Johannesburg Public Health By-laws* 2004.
689 Schedule 1 of the *City of Johannesburg Public Health By-laws* 2004.
690 Schedule 1 of the *City of Johannesburg Public Health By-laws* 2004.
691 Schedule 1 of the *City of Johannesburg Public Health By-laws* 2004.
692 Schedule 1 of the *City of Johannesburg Public Health By-laws* 2004.
693 Section 17(a) of the *City of Johannesburg Public Health By-laws* 2004.

reduce, remove or minimise any significant public health hazard,[694] or to reduce, remove or minimise any public health nuisance.[695]

5.6.1.6 Environmental health impact assessments

The disaster management plan of the City of Johannesburg does not mention environmental health impact assessments.

5.6.1.7 Training, education, and other measures of support

The City of Johannesburg's disaster management plan does make explicit provision for the training and education of its citizens to control and prevent communicable and vector-borne disease transmission. As part of the City of Johannesburg's response to the coronavirus pandemic, the disaster management centre adopted the National Disaster Management Centre COVID 19 Point Focus Plan to accelerate preparedness and response.[696] As part of this Plan, the disaster management centre initiated outreach campaigns and awareness programmes that seeks to educate citizens on hygiene and sanitation, and protective measures that decreases the risk of transmission or infection.[697] These outreach campaigns and awareness programmes specifically targeted hotspot areas such as taxi ranks, informal settlements, hostels and homes for the aged.[698] A more comprehensive discussion of the City of Johannesburg's response to the coronavirus pandemic is provided below.[699]

5.6.1.8 Updated disaster risk management plan(s)

The City of Johannesburg's disaster management plan was adopted in 2021. It notes that although the City of Johannesburg regularly faces a wide range of disaster risks, the coronavirus pandemic challenged and exceeded the municipality's capacity

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694 Section 17(b) of the *City of Johannesburg Public Health By-laws* 2004.
695 Section 17(c) of the *City of Johannesburg Public Health By-laws* 2004.
696 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 305.
697 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 305.
698 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 305.
699 See section 5.4.1.9 below.

to deal with this communicable disease risk.[700] Like, to the situational analysis mentioned above,[701] the plan acknowledges that this communicable disease outbreak affects all segments of the community but is particularly damaging to members of the most vulnerable social groups.[702]

5.6.1.9 Early warning mechanisms and procedures

The disaster management plan of the City of Johannesburg explicitly mentions early warning mechanisms and procedures in response to the coronavirus pandemic. Due to the magnitude of the state of the national disaster declared in response to the coronavirus disease, the City's disaster management centre works alongside several City departments, NGOs, and entities in the Joint Operations Command Centre.[703] The Joint Operations Centre a multi-disciplinary and structured to help to control and prevent the coronavirus transmission in the City.[704] To fast-track preparedness and response, the City's disaster management centre implemented the National Disaster Management Centre Covid-19 Point Focus Plan which focused on hygiene, education and communication awareness,[705] waste management, cleansing and sanitation,[706] water and sanitation services,[707] shelters for the homeless,[708]

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700 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 301.

701 See section 5.4.1 above.

702 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 301.

703 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 301.

704 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 305.

705 The City of Johannesburg "rolled out outreach campaigns and awareness programmes on hygiene protection from the coronavirus in all regions. The City specifically focused on hotspots such as informal settlements, markets and shopping centres, transport stations, education institutions, and various types of accommodation establishments"; see City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 305, 301.

706 Waste management, cleansing and sanitation includes "the identification, decanting, cleansing and sanitation of high risk or high-density areas such as informal settlements, hostels and homes for the aged."; see City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 305.

707 Water and sanitation services includes "the provision of additional water and sanitation resources to vulnerable communities and critical facilities.'"; City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 305.

708 The City of Johannesburg makes "provision for temporary emergency shelters for the displaced or homeless persons."; City of Johannesburg *Integrated Development Plan* 2021-2026 305.

precautionary measures to mitigate employee health and safety risks,[709] and monitoring lockdown regulations.[710]

5.6.1.10 Local disaster management centre(s)

The City of Johannesburg has a local disaster management centre.[711] A disaster management strategy action plan was created by the City of Johannesburg's disaster management centre.[712] The objective of the strategy action plan is to ensure a safe, secure, and resilient City.[713] An integrated disaster management approach will also be adopted by the City of Johannesburg disaster management to ensure a safe and resilient community, environment and infrastructure.[714] The strategy action plan will do this by focusing on key programmes and engagements with relevant stakeholders and role players to strengthen coping capacity mechanisms.[715]

5.6.1.11 Local framework for disaster management

The City of Johannesburg has a local disaster management framework, however further detail on this framework could not be derived from the disaster management plan.

5.7 City of Tshwane Metropolitan Municipality

5.7.1 City background

The City of Tshwane is located in the northern part of the Gauteng Province.[716] It is the largest metropolitan municipality in Gauteng in terms of size, but it hosts the smallest population of 3.555 741 million people. This City was declared a hotspot for the coronavirus epidemic,[717] and falls prey to other communicable and vector-

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709 The City of Johannesburg "supply of Personal Protective Equipment (PPE) for all departments or entities including Disaster Management Volunteers."; City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 305.
710 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 305.
711 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 300.
712 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 335.
713 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 335.
714 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 335.
715 City of Johannesburg *City of Johannesburg Integrated Development Plan* 2021-2026 336.
716 City of Tshwane *Profile: City of Tshwane* 2020 5-6.
717 City of Tshwane *Profile: City of Tshwane* 2020 5.

borne diseases such as HIV/AIDS, TB, lower respiratory infections, diarrhoeal diseases, and the like.[718] The prevalence of these communicable and vector-borne diseases is an indication that most of the health burden in the City of Tshwane comes from managing the rising levels of these diseases.[719]

5.7.1.1 The components of municipal health service delivery

The City of Tshwane has several by-laws to regulate health in its municipal area. These by-laws include the *City of Tshwane Metropolitan Municipality: Health By-law for Child Care Services*,[720] *City of Tshwane Metropolitan Municipality: Homes for the Aged*,[721] the *City of Tshwane Metropolitan Municipality: Operation and Management of Initiation Schools*,[722] and the *City of Tshwane Metropolitan Municipality: Substance Abuse By-law*,[723] the *City of Tshwane Metropolitan Municipality By-laws Regulating the Keeping of Animals, Birds and Poultry and to Businesses Involving the Keeping of Animals, Birds and Poultry*.[724] Together these by-laws lay out the requirements and standards for different types of premises which could help to regulate the risk of communicable and vector-borne disease transmission within the City. For example, child-care facilities indoor play areas must have windows which open to provide sufficient natural light and cross-ventilation,[725] and a floor which has a smooth surface that is easy to wash and that prevents the permeation of dampness.[726] Like the by-laws of the other cities, *the City of Tshwane Metropolitan Municipality By-laws Regulating the Keeping of Animals, Birds and Poultry and to Businesses Involving the Keeping of Animals, Birds and Poultry* provides the same

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718 City of Tshwane *Profile: City of Tshwane* 2020 14-15.
719 City of Tshwane *Profile: City of Tshwane* 2020 15.
720 *City of Tshwane Metropolitan Municipality: Health By-Law for Child Care Services* 2019.
721 *City of Tshwane Metropolitan Municipality: Homes for the Aged* 2017.
722 *City of Tshwane Metropolitan Municipality: Operation and Management of Initiation Schools* 2004.
723 *City of Tshwane Metropolitan Municipality: Substance Abuse By-law* 2008.
724 *City of Tshwane Metropolitan Municipality By-laws Regulating the Keeping of Animals, Birds and Poultry and to Businesses Involving the Keeping of Animals, Birds and Poultry* 2017.
725 Section 6(b)(ii) of the *City of Tshwane Metropolitan Municipality: Health By-Law for Child Care Services* 2019.
726 Section 6(c)(iii) of the *City of Tshwane Metropolitan Municipality: Health By-Law for Child Care Services* 2019.

provisions for waste management and vector-control.[727] Together these by-laws provide for three of the nine components relating to municipal health services, namely the health surveillance of premises, vector control and waste management.

5.7.1.2 Surveillance of communicable and vector-borne diseases

The by-laws do not explicitly refer to the surveillance of communicable and vector-borne diseases. However, such surveillance can be implied through the inspections and investigations that environmental health practitioners carry out in the City.

5.7.1.3 Identification of vectors

Like the by-laws mentioned above, the *City of Tshwane Metropolitan Municipality By-laws Regulating the Keeping of Animals, Birds and Poultry* hold that any person keeping animals and poultry must keep the premises in a hygienic condition.[728] The person must take effective measures to destroy or prevent the breeding of flies, cockroaches, and other vermin on the premises.[729] This by-law also sets out specific duties to the keepers of animals and poultry. For example, the duties of the keepers of pigs must provide a rodent-proof storeroom on the premises in which all feed must be stored.[730] The keepers must provide rodent-proof receptacles with close fitting lids for the storeroom,[731] and they must also take effective measures to destroy or prevent the harbouring or breeding of vermin and vectors.[732]

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727 See sections 7(1)(c)(i) and 7(h) of the *City of Tshwane Metropolitan Municipality By-laws Regulating the Keeping of Animals, Birds and Poultry and to Businesses Involving the Keeping of Animals, Birds and Poultry* 2017.

728 Section 7(1)b) of the *City of Tshwane Metropolitan Municipality By-laws Regulating the Keeping of Animals, Birds and Poultry and to Businesses Involving the Keeping of Animals, Birds and Poultry* 2017.

729 Sections 7(1)(h) of the *City of Tshwane Metropolitan Municipality By-laws Regulating the Keeping of Animals, Birds and Poultry and to Businesses Involving the Keeping of Animals, Birds and Poultry* 2017.

730 Section 9(5)(a) of the *City of Tshwane Metropolitan Municipality By-laws Regulating the Keeping of Animals, Birds and Poultry and to Businesses Involving the Keeping of Animals, Birds and Poultry* 2017.

731 Section 9(5)(b) of the *City of Tshwane Metropolitan Municipality By-laws Regulating the Keeping of Animals, Birds and Poultry and to Businesses Involving the Keeping of Animals, Birds and Poultry* 2017.

732 Section 9(6) of the *City of Tshwane Metropolitan Municipality By-laws Regulating the Keeping of Animals, Birds and Poultry and to Businesses Involving the Keeping of Animals, Birds and Poultry* 2017.

5.7.1.4 Collection and analysis of data and information systems

The by-laws do not make explicit reference to information systems or the collection and analysis of data and information systems.

5.7.1.5 Routine inspections and investigations at different types of premises

In each of these by-laws environmental health practitioners have the power to inspect premises and to ensure that they meet the general requirements for compliance monitoring and certification.[733]

5.7.1.6 Environmental health impact assessments

The disaster management plan does not make any reference to environmental health impact assessments.

5.7.1.7 Training, education, and other measures of support

The disaster management plan of the City of Tshwane provides for the education and training of health professionals and citizens to control and prevent the transmission of the coronavirus. In response to the coronavirus and to prevent the mass escalation of coronavirus infections, health professionals such as environmental health practitioners have conducted public education campaigns on the use of masks and social distancing.[734]

5.7.1.8 Updated disaster risk management plan(s)

The City of Tshwane adopted its disaster management plan in 2021. It identified the coronavirus as a disaster risk and noted that the fight against this virus is required to take place at ward level.[735]

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733 Section 1 of the *City of Tshwane Metropolitan Municipality: Health By-Law for Child Care Services* 2019.
734 City of Tshwane *Integrated Development Plan* 2021-2026 193.
735 City of Tshwane *Integrated Development Plan* 2021-2026 189.

5.7.1.9 Early warning mechanisms and procedures

The City of Tshwane's Disaster Management Plan makes provision for early warning mechanisms and procedures relating to communicable disease control and prevention. In its response to the coronavirus pandemic, the City of Tshwane set up a Disaster Operation Centre COVID-19 Strategic Committee which is made up of various municipal departments that are crucial for disaster management and risk reduction.[736] These departments include representors from the office of the city manager, emergency services, group financial services, city regional operations coordination, city strategy and organisational performance among other key departments.[737] The City established ward based war rooms to contain and mitigate the coronavirus disease.[738]

Part of the City's disaster response and recovery actions to the coronavirus pandemic include the development of an anti-COVID-19 or public health strategy that should comprise of a co-developed City disaster preparedness and response action plan, that sets out measures to control and prevent the transmission of the coronavirus through structured multi-sectoral approaches.[739] This includes a comprehensive Covid-19 pandemic preparedness plan which seeks to control or modulate different phases of the pandemic from isolation to complete lockdown at critical phases of infection.[740]

5.7.1.10 Local disaster management centre(s)

The City of Tshwane has an established disaster management centre, that exists as a core municipal function of the City of Tshwane Emergency Services Department.[741]

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736 City of Tshwane *Integrated Development Plan* 2021-2026 189.
737 City of Tshwane *Integrated Development Plan* 2021-2026 188.
738 City of Tshwane *Integrated Development Plan* 2021-2026 193.
739 City of Tshwane *Integrated Development Plan* 2021-2026 193.
740 City of Tshwane *Integrated Development Plan* 2021-2026 193.
741 City of Tshwane *Integrated Development Plan* 2021-2026 189.

5.7.1.11 Local framework for disaster management

This disaster management plan does not mention whether the City of Tshwane has a local framework for disaster management.

5.8 Ekurhuleni Metropolitan Municipality

5.8.1 City background

The City of Ekurhuleni developed over seventeen years ago as a key metropolitan municipality in Gauteng.[742] Unlike other metropolitan municipalities, the City of Ekurhuleni did not develop around a relatively mature colonial city centre.[743] This City charted a new path by rationalising its administration and consolidating its spatial footprint into a single identity.[744] Today, the City of Ekurhuleni provides services to communities in Tembisa, Katlehong, Vosloorus, Duduza, Daveyton and Thokoza.[745] Ninety-nine percent of the City of Ekurhuleni's population resides in formal and informal urban settlements.[746] Communicable diseases are the leading cause of death for children below the age of 4, while females between the ages of 15-24 die because of HIV/AIDS and TB related deaths.[747] The City of Ekurhuleni has also been declared a hotspot for the transmission of the coronavirus.[748]

5.8.1.1 The components of municipal health service delivery

The *City of Ekurhuleni Metropolitan Municipality Public Health By-laws* provides for all nine components related to municipal services. These components include water quality monitoring, environmental pollution control, health surveillance of premises, vector-control, and the surveillance of communicable diseases

In terms of water quality monitoring and environmental pollution control, this by-law sets out similar standards and requirements for the water and sanitation

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742 City of Ekurhuleni *Integrated Development Plan* 2016-2021 18.
743 City of Ekurhuleni *Integrated Development Plan* 2016-2021 18.
744 City of Ekurhuleni *Integrated Development Plan* 2016-2021 18.
745 City of Ekurhuleni *Integrated Development Plan* 2016-2021 18.
746 City of Ekurhuleni *Profile and Analysis District Development Model: City of Ekurhuleni* 2020 6.
747 City of Ekurhuleni *Profile and Analysis District Development Model: City of Ekurhuleni* 2020 12.
748 City of Ekurhuleni *Profile and Analysis District Development Model: City of Ekurhuleni* 2020 1.

services. No person may pollute or contaminate any sources of water or store water in such a way that it creates a public health nuisance or health hazard.[749] Owners or occupiers of premises with water resources such as boreholes or wells must ensure that they are fenced or covered in a way that adequately safeguards them from creating a public health nuisance.[750] The borehole must not be filled in a way or with material that may cause the underground water to become contaminated to the extent that it may create a public health nuisance.[751] Owners or occupiers of premises with water resources such as boreholes being used for domestic consumption must furnish the Council with all particulars of the water resources reasonably available to the owner or occupier.[752] If requested the owner or occupier must furnish the Council with a certificate of chemical analysis and bacterial investigation issued by an analyst.[753] However, if the water from the borehole is being used for domestic consumption, a certificate of analysis must be submitted to the Council annually or at any time on request of an environmental health practitioner.[754]

In terms of the health surveillance of premises, the *Ekurhuleni Metropolitan Municipality Public Health By-laws* provide the same prohibition against the creation of a public health hazard anywhere in the municipal area.[755] It also contains the same general provision on health nuisances.[756] Every owner or occupier of premises must ensure that public health hazards do not occur on their premises. Owners or occupiers of premises create a public health nuisance if the premises are infested with pests,[757] and if the environment on the premises are conducive to the spread of communicable diseases.[758] Public health hazards are also created when there are unsanitary conditions in any part of the premises,[759] or if any water supply for

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749 Section 37 of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
750 Section 38(c) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
751 Section 38(b) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
752 Section 41(1) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
753 Section 41(2) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
754 Section 41(3) *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
755 Section 7(1) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
756 Schedule 1 of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
757 Section 5(3)(a) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
758 Section 5(3)(b) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
759 Section 5(3)(c) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.

domestic consumption is unsafe for human consumption.[760] This by-law also sets out specific standards for various trades and premises.[761] Generally, these premises must be clean to avoid creating public health nuisances, as mentioned in the by-laws of the other cities.

Like the other by-laws, the *City of Ekurhuleni Public Health By-laws*, state that the objective of this by-law is to empower the Council to set standards for environmental health, to prevent disease, prolong life, protect and promote health and well-being.[762] This by-law acknowledges the constitutional environmental right,[763] and eliminating or reducing public health hazards occurring or recurring within the municipal area.[764] In addition the duties of the Council, in terms of this by-law or any other applicable legislation, the Council must enforce all relevant portions of the *By-law*, it must carry out water quality monitoring at all potable, industrial and commercial water sources, and perform food control inspection, enquiries, monitoring and observations.[765] The Council must manage waste, undertake the surveillance and prevention of communicable diseases, undertake effective vector-control measures, prevent environmental pollution, monitor activities related to the disposal of the dead, and ensure chemical safety.[766]

5.8.1.2 Surveillance of communicable and vector-borne diseases

This by-law does not refer to the surveillance of communicable and vector-borne diseases. However, like to the other by-laws mentioned above, the surveillance of communicable and vector-borne diseases is implied through the inspection and investigation of premises by environmental health practitioners.[767]

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760 Section 5(3)(d) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.

761 These premises and trades include "hairdressing, beauty and cosmetology services, second-hand goods, accommodation establishments, and dry-cleaning and laundry establishments. Other trades and premises include swimming pools and spa-baths, nursing homes, child-care services, keeping of animals, and children's homes." See sections 54, 59,63,66,71,80,97 and 127 of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.

762 Section 2 of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.

763 Section 3(1) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.

764 Section 3(2) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.

765 Section 171(a)-(c) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.

766 Section 171(d)-(j) of the *Ekurhuleni Metropolitan Municipality Public Health By*-laws8 2009.

767 See section 5.6.1.5 below.

5.8.1.3 Identification of vectors

The *Ekurhuleni Metropolitan Municipality Public Health By-laws* contains the same provisions on pest control or the identification of vectors. It states that a public health nuisance is created when the environmental conditions on premises are favourable to rodents and other pests. A health nuisance may also occur when the premises are kept in such a way that it provides for rodents and other pests.[768] This also applies when flies and mosquitoes can breed on premises in significant numbers.[769] The Council must also regulate all activities in a manner that avoids creating favourable conditions for infestation by pests.[770]

5.8.1.4 Collection and analysis of data and information systems

No explicit reference is made to information systems and data.

5.8.1.5 Routine inspections and investigations at different types of premises

This by-law gives environmental health practitioners employed by the Council the same powers to enter and inspect premises in its municipal area to ensure compliance with the provisions of the by-law.[771] .

5.8.1.6 Environmental health impact assessments

The City of Ekurhuleni's disaster management plan does not make an explicit reference to environmental health impact assessments. However, the plan does allude to the integration of risk reduction activities into developmental planning.[772] It also indicates that the City, will develop and implement risk assessment and environmental impact assessment tools as part of its municipal disaster reduction strategies.[773]

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768 Schedule 1 of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009; also see section 5(3)(b) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
769 Schedule 1 of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
770 Section 3(5)(e) of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
771 Sections 169(1)(a) and 171 of the *Ekurhuleni Metropolitan Municipality Public Health By-laws* 2009.
772 City of Ekurhuleni *Integrated Development Plan* 2016-2021 343.
773 City of Ekurhuleni *Integrated Development Plan* 2016-2021 344.

5.8.1.7 Training, education, and other measures of support

Amongst the City's disaster risk reduction strategies, it instituted disaster reduction training, education and awareness in the community, in schools and other institutions.[774] This could arguably contribute to the City of Ekurhuleni municipal regulation of communicable and vector-borne diseases control if the training and education relates to disease control measures such as hand hygiene, quarantine, isolation and the like.

5.8.1.8 Updated disaster risk management plan(s)

The City of Ekurhuleni's most recent disaster management plan was developed in 2016, and outlines the City's top sixteen disasters risks.[775] These risks include air pollution, ground water pollution, sewage and drainage, stormwater flood, illegal or uncontrolled waste disposal and pest infestations which could facilitate the risk of communicable and vector-borne disease transmission.[776]

5.8.1.9 Early warning mechanisms and procedures

The City's disaster management plan does not make explicit provision for disaster risk reduction actions related to the municipal regulation of communicable and vector-borne disease control.[777]

5.8.1.10 Local disaster management centre(s)

The disaster management plan does not explicitly mention whether there is an established local disaster management centre. However, one of the City of Ekurhuleni's key strategic focus areas is the ensure the establishment, maintenance and strengthening of municipal disaster management capacity in terms of the

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774 City of Ekurhuleni *Integrated Development Plan* 2016-2021 343.

775 City of Ekurhuleni *Integrated Development Plan* 2016-2021 341-342.

776 City of Ekurhuleni *Integrated Development Plan* 2016-2021 342.

777 Instead, the City of Ekurhuleni's Disaster Risk Reduction Actions seeks foster sustainable development when "municipal departments integrate and implement disaster reduction strategies into development planning and keep accurate information on disaster risks and vulnerabilities. A Municipal Disaster Management Advisory Forum must also be maintained."; see City of Ekurhuleni *Integrated Development Plan* 2016-2021 343.

DMA.[778] This objective could be achieved by maintaining existing disaster management structures and institutional arrangements.[779]

5.8.1.11 Local framework for disaster management

No information on the local framework for disaster management was provided in the Ekurhuleni disaster management plan.

5.9 Mangaung Metropolitan Municipality

5.9.1 City background

The Mangaung Metropolitan Municipality is centrally located in the Free State Province and shares a border with Lesotho.[780] Currently, the Mangaung Metropolitan Municipality is the judicial capital of South Africa.[781] Mangaung has three urban areas and a surrounding rural area with small towns.[782] The three urban areas are Bloemfontein, Bothshabelo and Thaba Nchu.[783] The small towns are Dewetsdorp, Wepener, Van Stadenrus and Southpan/Ikgomotseng.[784] The Mangaung Metropolitan Municipal area is largely rural,[785] and the economy is characterised by commercial agriculture and subsistence agriculture.[786] This metropolitan municipality has a population of 861 651 people.[787] More than half (63 per cent) of this population is concentrated in Bloemfontein.[788] Bloemfontein is an easily

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778 City of Ekurhuleni *Integrated Development Plan* 2016-2021 344.
779 City of Ekurhuleni *Integrated Development Plan* 2016-2021 344.
780 Mangaung Metropolitan Municipality *Profile and Analysis District Development Model: Mangaung Metropolitan Free State* 2020 7.
781 Mangaung Metropolitan Municipality *Profile and Analysis District Development Model: Mangaung Metropolitan Free State* 2020 7.
782 Mangaung Metropolitan Municipality *Profile and Analysis District Development Model: Mangaung Metropolitan Free State* 2020 9.
783 Mangaung Metropolitan Municipality *Profile and Analysis District Development Model: Mangaung Metropolitan Free State* 2020 9.
784 Mangaung Metropolitan Municipality *Profile and Analysis District Development Model: Mangaung Metropolitan Free State* 2020 9.
785 Mangaung Metropolitan Municipality *Profile and Analysis District Development Model: Mangaung Metropolitan Free State* 2020 9.
786 Mangaung Metropolitan Municipality *Profile and Analysis District Development Model: Mangaung Metropolitan Free State* 2020 20.
787 Mangaung Metropolitan Municipality *Profile and Analysis District Development Model: Mangaung Metropolitan Free State* 10.
788 Mangaung Metropolitan Municipality *Profile and Analysis District Development Model: Mangaung Metropolitan Free State* 10.

accessible urban area with sophisticated infrastructure and transport networks.[789] In the Manguang Metropolitan Municipality lower respiratory infections feature among the top ten causes of death for all age categories. HIV/AIDS is the leading cause of death for the 5-14 years, 15-24 years, and 25-64 years age categories.[790]

5.9.1.1 The components of municipal health services

The Mangaung Metropolitan Municipality provides for five of the nine components of municipal health services. These components include environmental pollution control, water quality monitoring, the health surveillance of premises, vector control, and the surveillance of communicable diseases.

In relation monitoring water quality and environmental pollution control, this by-law provides standards provisions for water and sanitation services. For example, no person may pollute or contaminate any water supply sources such as rivers, canals, wells, or catchment areas.[791] Water may also not be stored in a way that causes a public health nuisance or a public health hazard.[792] Owners or occupiers of premises who use water from a borehole for domestic consumption must annually submit a certificate of chemical analysis and bacteriological investigation issued by an analyst.[793] Every owner of premises must ensure that all waste water drainage pipes are connected to the municipal sewer.[794] This applies to owners of premises with access to a municipal sewage service.[795]

As for the health surveillance of premises, the *Mangaung Metropolitan Municipality Environmental Health Services By-law,* holds that no person may create a public

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789 Mangaung Metropolitan Municipality *Profile and Analysis District Development Model: Mangaung Metropolitan Free State* 8.

790 Mangaung Metropolitan Municipality *Profile and Analysis District Development Model: Mangaung Metropolitan Free State* 13.

791 Section 37 of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

792 Section 38(a) of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

793 Section 41(2) and (3) of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

794 Section 20 of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

795 Section 20 of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

health hazard anywhere in the municipal area.[796] All owners or occupiers of premises must ensure that public health hazards does not occur on their premises.[797] Public health hazards are created in the same way as stated in the by-laws above.[798] This by-law also places a duty on owners or occupiers of premises to eliminate public health risks within twenty-four hours of becoming aware of its existence.[799] If the owner or occupier is unable to eliminate the health risk,[800] the owner or occupier must take reasonable steps to reduce the public health risk and report the risk to the Environmental Health Department in writing.[801] The by-law also stipulates the municipal health requirements of various premises within its municipal area, including accommodation establishments, swimming pools and spa-baths, laundries, and the like.[802]

Like the other by-laws mentioned above, the *Mangaung Metropolitan Municipality Environmental Health Services By-law*, acknowledges the environmental right and local government's duty to promote a safe and healthy environment.[803] It also recognises that many inhabitants in South Africa live in an environment that is harmful to their health and well-being.[804] This by-law acknowledges that the Mangaung Municipality has the duty to respect, protect, promote and fulfil the social, economic and environmental rights of everyone.[805]

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796 Section 5(1) of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

797 Section 5(2) of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

798 See section 5(3)(a)-(d) of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

799 Section 7 of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

800 Section 7(a) of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

801 Section 7(b) of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

802 See sections 63, 66 and 111 of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

803 Preamble of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

804 Preamble of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

805 Preamble of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

5.9.1.2 Surveillance of communicable and vector-borne diseases

This by-law does not explicitly mention the surveillance of communicable and vector-borne diseases but surveillance can be implied through the general provisions relating to the inspection and investigation of premises and the components relating to municipal health services.

5.9.1.3 Identification of vectors

This *Mangaung Metropolitan Environmental Health By-law* holds that an owner or occupier of premises creates a health nuisance if the environmental conditions on premises are conducive to the prevalence and occurrence of pests.[806] In terms of the keeping of animals and poultry, this by-law states that all feed must be stored in a rodentproof storeroom and all loose feed in rodentproof receptacles with close fitting lids.[807]

5.9.1.4 Collection and analysis of data and information systems

The *Mangaung Metropolitan Environmental Health By-law* does not make explicit mention of information systems and the collection of data.

5.9.1.5 Routine inspections and investigations at different types of premises

The *Mangaung Metropolitan Municipality Environmental Health Services By-law* indicates that the Council is given the power to enter and inspect any premises in its municipal area to ensure compliance with the provisions of the *By-law*.[808]

5.9.1.6 Environmental health impact assessments

The disaster management plan of the Mangaung Metropolitan Municipality does not make any reference to environmental health impact assessments.

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806 Section 5(3)(a) of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

807 Section 75(i) of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

808 Section 148 of the *Mangaung Metropolitan Municipality Environmental Health Services By-law* 2019.

5.9.1.7 Training, education, and other measures of support

The Mangaung Metropolitan Municpality's disaster management plan does not provide any details on the training, education, and other measures of support.

5.9.1.8 Updated disaster risk management plan(s)

The Mangaung Metropolitan Municipality's disaster management plan was developed in 2021. It does not provide any details on the disaster risks within the Mangaung Metropolitan Municipality.

5.9.1.9 Early warning mechanisms and procedures

The Manguang Metropolitan Municipality's disaster management plan does not provide information relating to the municipal regulation of communicable and vector-borne disease control and prevention.

5.9.1.10 Local disaster management centre(s)

No details could be located concerning a local disaster management centre in the Municipality.

5.9.1.11 Local framework for disaster management

No details could be found on a local framework for disaster management in the City's disaster management plan.

5.10 Nelson Mandela Bay Metropolitan Municipality

5.10.1 City background

Nelson Mandela Bay Metropolitan Municipality is the largest of two Category A metropolitan municipalities situated on the southern coast of the Eastern Cape Province.[809] This municipality has two ports namely Port Elizabeth and the Port of Ngqura.[810] The Nelson Mandela Bay Metropolitan Municipality's population accounts

[809] Nelson Mandela Bay Municipality *Integrated Development Plan* 2021-2026 15.
[810] Nelson Mandela Bay Municipality *Integrated Development Plan* 2021-2026 15.

for almost 19 per cent of the population in the Eastern Cape Province.[811] This municipality has the lowest proportion of informal households among South Africa's metropolitan municipalities.[812] The Municipality is subject to the HIV/AIDS epidemic.[813] The health of the residents is further affected by inadequate housing and sanitation, and food insecurity.[814]

5.10.1.1 The components for municipal health services

The *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* provides for four of the nine components relating to municipal health services. These components include environmental pollution control, health surveillance of premises, vector-control and waste management.

Generally, in terms of the health surveillance of premises, this by-law holds that no person may create,[815] perform,[816] organise,[817] or permit an activity, event or function on land or premises for purposes that is likely to create a municipal health nuisance.[818] A municipal health nuisance exists or occurs if the conditions on land or premises facilitate the spread of an infectious disease,[819] if waste attracts vermin or pests,[820] and if unsanitary conditions exist on any part of the land or premises,[821] amongst others.[822] Where a municipal health nuisance exists on premises, the

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811 Nelson Mandela Bay Municipality *Integrated Development Plan* 2021-2026 15.
812 Nelson Mandela Bay Municipality *Integrated Development Plan* 2021-2026 15.
813 Nelson Mandela Bay Municipality *Integrated Development Plan* 2021-2026 158.
814 Nelson Mandela Bay Municipality *Integrated Development Plan* 2021-2026 158.
815 Section 4(1)(a) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.
816 Section 4(1)(b) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.
817 Section 4(1)(c) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.
818 Section 4(1)(c) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.
819 Section 3(1)(f) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.
820 These pests can include but is not limited to "rats, mice, flies and mosquitoes."; see section 3(1)(g) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.
821 Section 3(1)(h) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.
822 See section 3(1)(a)-(o) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010; Other health nuisances can also be created "when a dwelling or building is occupied without proper water supply, toilet facilities, or is not properly ventilated"; see

owners or occupiers of such premises must eradicate the health nuisance within twenty-four hours.[823] However, if the owner or occupier of premises cannot to eradicate the health nuisance they must report its existence to the municipality.[824] Owners or occupiers of premises must take measures to reduce the risk of the municipal health nuisance to the satisfaction of the municipality.[825]

The *Nelson Mandela Bay Metropolitan Municipality Municipal Health By-law*, also sets out standards and requirements for different trades and their premises, such as animal establishments,[826] accommodation establishments,[827] child-care facilities,[828] swimming pools and recreational facilities,[829] and the establishments of barbers, hairdressers, beauticians, body piercers or tattooists.[830] Each of these premises must be kept in a clean and hygienic condition. For instance, the eating utensils, linen, bedding, and household facilities must be clean and hygienic.[831]

In terms of waste management, section 23 of the by-law holds that waste must be recovered and disposed of without endangering human health,[832] creating a

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sections 3(1)(k)-(m) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010; However these "provisions do not apply to dwellings, buildings or premises contemplated by the *Less Formal Township Establishment Act* 113 of 1991".

823 Section 5(1)(a)(ii) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

824 Section 5(1)(a)(ii)(bb) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

825 Section 5(1)(a)(ii)(aa) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

826 These animal establishments include "dog kennels and catteries, pet shops and parlours" see sections 10 and 11 of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

827 See section 14 of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

828 Section 16 of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

829 Section 17 of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

830 Section 22 of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

831 Section 14(1) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

832 Section 23(1)(a) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

municipal health nuisance,[833] or harming the environment.[834] In terms of water and sanitation, this by-law places the onus on the owners and occupiers of land or premises to prevent the creation of health nuisances by keeping water passage ways open and free of obstruction,[835] by constructing bund walls around tanks,[836] by cleaning industrial surfaces to prevent the pollution of storm water,[837] and by covering or sealing conservancy lagoons or taking the prescribed steps to prevent the fly breeding,[838] amongst other such matters.

5.10.1.2 Surveillance of communicable and vector-borne diseases

This by-law does not make any reference to the surveillance of communicable and vector-borne diseases. However, like the by-laws mentioned above, the surveillance of communicable diseases can be implied through the provisions on municipal health services and the inspection of various premises.

5.10.1.3 Identification of vectors

The *Nelson Mandela Bay Metropolitan Municipality Health By-law* provides similar provisions regarding the identification of vectors. It holds that a municipal health nuisance exists or occurs if organic matter or animal waste is being kept or used in a manner that attracts vermin or pests.[839] If unhygienic conditions exist on the premises,[840] and if a building or structure is demolished without first eradicating all

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833 Section 23(1)(c) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

834 Section 23(1)(b) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010; also see section 25, 27 and 28 of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010 for more details on the storage and disposal of hazardous and health care waste, respectively.

835 Section 32(1)(a) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

836 Section 32(1)(b) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

837 Section 32(1)(c) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

838 Section 32(1)(e) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

839 Section 3(1)(g) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

840 Section 3(1)(h) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

vermin.[841] As mentioned above, this by-law places a duty on owners or occupiers of land or premises to eliminate or reduce a municipal health nuisance once the owner or occupier becomes aware of its existence.[842] In order to eliminate or reduce the existence of vermin and vectors, this by-law stipulates that owners or occupiers of premises must for instance use fly-traps or any other approved method to eliminate or reduce flies.[843] It also states that in order to eliminate or reduce mosquitoes, owners or occupiers of premises must drain accumulated water at least once every seven days,[844] cover accumulated water with oil,[845] and provide a mosquito-proof cover in the case of wells or pumps, amongst other things.[846]

5.10.1.4 Collection and analysis of data and information systems

This by-law does not make specific references to data or information systems.

5.10.1.5 Routine inspections and investigations at different types of premises

The *Nelson Mandela Bay Metropolitan Municipality Municipal Health By-law* empowers environmental health practitioners to inspect any premises in its municipal area to ensure compliance with the provisions of the by-law.[847] If an environmental health practitioner has reasonable grounds to believe that a person has failed to comply with the provisions of this by-law the environmental health practitioner may serve the owner or occupier of the premises with a notice of compliance.[848] Environmental health practitioners may also prohibit premises from

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841 Section 3(1)(j) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

842 Section 5(1)(a)(i) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

843 Section 5(1)(b)(i) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

844 Section 5(1)(b)(iii)(aa) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

845 Section 5(1)(b)(iii)(bb) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

846 Section 5(1)(b)(iii)(cc) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

847 Section 39 of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

848 Section 40 of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

being used for specified purposes if they reasonably believe that the premises are being used in a manner that is causing a health nuisance.[849]

5.10.1.6 Environmental health impact assessments

The disaster management plan does not provide for environmental health impact assessments.

5.10.1.7 Training, education, and other measures of support

The disaster management plan of the Nelson Mandela Bay Metropolitan Municipality does not mention training, education and other measures of support during a disaster risk.

5.10.1.8 Updated disaster risk management plan(s)

Nelson Mandela Bay's disaster management plan was adopted in 2010.[850] It will be updated to be compliant with the legislative requirements discussed in Chapter 4.[851] No recent information on the City's municipal regulation of communicable and vector-borne disease control and prevention could be gathered from the disaster management plan.

5.10.1.9 Early warning mechanisms and procedures

The disaster management plan does not provide any details on early warning mechanisms and procedures.

5.10.1.10 Local disaster management centre(s)

The disaster management plan states that a fully functioning municipal disaster management centre is essential for the City.[852] The City has established disaster

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849 To do this, "environmental health practitioners may serve a prohibition notice on the owner or occupier of premises"; see section 41(1)(a)-(c) of the *Nelson Mandela Bay Metropolitan Municipality Municipal Health Services By-law* 2010.

850 Nelson Mandela Bay Municipality *Integrated Development Plan* 2021-2026 150.

851 Nelson Mandela Bay Municipality *Integrated Development Plan* 2021-2026 150.

852 Nelson Mandela Bay Municipality *Integrated Development Plan* 2021-2026 150.

management centre that works in close proximity with the Eastern Cape Provincial Disaster Management Centre.[853]

5.10.1.11 Local framework for disaster management

The Nelson Mandela Bay Metropolitan Municipality has a local disaster management framework which ensures an integrated and uniform approach to disaster management in the City.[854] The City's disaster management centre also established a disaster operation centre as the facility to be activated for coordination during disaster response.[855]

5.11 Concluding remarks

The objective of this chapter was to review the by-law and municipal policy framework of the eight metropolitan municipalities in South Africa as applicable to communicable and vector-borne disease control and prevention. As the discussions have shown, all eight of these municipalities adopted environmental health by-laws that could be useful for the municipal regulation of communicable and vector-borne disease control and prevention. The discussion also revealed that whilst five of the municipalities have updated disaster management plans adopted in 2021,[856] the City of Cape Town, the City of Ekurhuleni and Nelson Mandela Bay Metropolitan Municipality adopted their plans between 2010 and 2016.[857]

The results derived from the analysis indicate that only the Ekurhuleni Metropolitan Municipality provides for all the components of municipal health services.[858] Buffalo City Metropolitan Municipality provides for seven of the components of municipal health services.[859] The City of Johannesburg is placed third by providing for six of the components.[860] The City of Cape Town,[861] the eThekwini Metropolitan

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853 Nelson Mandela Bay Municipality *Integrated Development Plan* 2021-2026 150.
854 Nelson Mandela Bay Municipality *Integrated Development Plan* 2021-2026 149.
855 Nelson Mandela Bay Municipality *Integrated Development Plan* 2021-2026 150.
856 See sections 5.3.1.8, 5.5.1.8, 5.6.1.8, 5.7.1.8, and 5.9.1.8 above.
857 See section 5.4.1.8, 5.8.1.8, and 5.10.1.8 above.
858 See section 5.8.1.1 above.
859 See section 5.3.1.1 above.
860 See section 5.6.1.1 above.
861 See section 5.4.1.1 above.

Municipality,[862] the City of Tshwane,[863] Mangaung Metropolitan Municipality,[864] and the Nelson Mandela Bay Metropolitan Municipality's[865] environmental health by-laws provide for only three to five of the components of municipal health services.

In this thesis, surveillance is considered one of the most important tools to combating public health challenges,[866] including the risk of communicable and vector-borne diseases. Despite its importance, the surveillance of communicable diseases was only generally implied through the inspections and investigations carried out by Councils or environmental health practitioners.[867] It should also be noted that the interpretation and analysis of data and information systems are closely related to surveillance. None of the municipalities explicitly provided for data collection and interpretation as part of their municipal actions to control and prevent communicable and vector-borne disease transmission.[868]

All eight of the metropolitan municipalities set out provisions for the identification, control, and prevention of vectors within their areas.[869] Generally, no persons property or land may be so overgrown that it attracts or harbours vermin and vectors.[870] The City of Cape Town Metropolitan Municipality and the eThekwini Metropolitan Municipality explicitly state that the Council may service a notice on owners of property or land to eradicate or reduce the prevalence of vectors.[871]

The environmental by-laws of all the municipalities empowered councils or environmental health practitioners to investigate and inspect any premises in their municipal area. The councils or environmental health practitioners were also empowered to serve notices of non-compliance in cases where the provisions of the

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862 See section 5.5.1.1 above.
863 See section 5.7.1.1 above.
864 See sections 5.9.1.1 above.
865 See sections 5.10.1.1 above.
866 See sections 4.3.1.1 above.
867 See sections 5.3.1.2, 5.4.1.2, 5.5.1.2, 5.6.1.2, 5.7.1.2, 5.8.1.2, 5.9.1.2, and 5.10.1.2 above.
868 See sections 5.3.1.4, 5.4.1.4, 5.5.1.4, 5.6.1.4, 5.7.1.4, 5.8.1.4, 5.9.1.4 and 5.10.1.4 above.
869 See sections 5.3.1.3, 5.4.1.3, 5.5.1.3, 5.6.1.3, 5.7.1.3, 5.8.1.3, 5.9.1.3 and 5.10.1.3 above.
870 See sections 5.3.1.3, 5.4.1.3, 5.5.1.3, 5.6.1.3, 5.7.1.3, 5.8.1.3, 5.9.1.3 and 5.10.1.3 above.
871 See section 5.4.1.3 and 5.6.1.3 above.

by-laws are not being adhered to. This is arguably an essential part of the municipal regulation of communicable and vector-borne disease control.

None of the disaster management plans made explicit mention of environmental health impact assessments.[872] However, the disaster management plan of the City of Ekurhuleni Metropolitan Municipality alludes to the integration of risk reduction activities into developmental planning.[873] Although this does not directly relate to environmental health impact assessments, the use of environmental impact assessment tools in development planning could help to identify communicable and vector-borne disease risks in cities.

The analysis of the disaster management plans either revealed or implied that most of the cities have an established disaster management centre that should specialise in issues of disaster risk.[874] It could however, not be determined whether the Mangaung Metropolitan Municipality has an established disaster management centre.[875]

The City of Johannesburg, the eThekwini Metropolitan Municipality and the City of Tshwane Metropolitan Municipality provide training, education and other measures of support relating to the control and prevention of the coronavirus.[876] From the analysis of the Buffalo City Metropolitan Municipality, the City of Cape Town Metropolitan Municipality and the Ekurhuleni Metropolitan Municipality's disaster management plans the training and education provided could possibly relate to communicable disease control and prevention.[877] No details on training and education relating to communicable and vector-borne disease control could be gleaned from the Mangaung Metropolitan Municipality's and the Nelson Mandela Bay Metropolitan Municipality's disaster management plans.[878]

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872 See sections 5.3.1.6, 5.4.1.6, 5.5.1.6, 5.6.1.6, 5.7.1.6, 5.8.1.6, 5.9.1.6 and 5.10.1.6 above.
873 See sections 5.8.1.6 above.
874 See sections 5.3.1.10, 5.4.1.10, 5.5.1.10, 5.6.1.10, 5.7.1.10, 5.8.1.10, and 5.10.1.10 above.
875 See section 5.9.1.10 above.
876 See sections 5.5.1.7, 5.6.1.7 and 5.7.1.7 above.
877 See sections 5.3.1.7, 5.5.1.7 and 5.8.1.7 above.
878 See sections 5.9.1.7 and 5.10.1.7 above.

Early warning mechanisms and procedures relating to the control and prevention of the coronavirus are provided for in the disaster management plans of the City of Johannesburg Metropolitan Municipality, the eThekwini Metropolitan Municipality and the City of Tshwane Metropolitan Municipality.[879] No details relating to early warning mechanisms and procedures relating to the control and prevention of communicable and vector-borne disease could be gathered from the disaster management plan of the Buffalo City Metropolitan Municipality, the Ekurhuleni Metropolitan Municipality, the Mangaung Metropolitan Municipality, and the Nelson Mandela Bay Metropolitan Municipality.[880] The analysis also revealed that only Buffalo City Metropolitan Municipality, and the City of eThekwini Metropolitan Municipality have established disaster management frameworks.[881] The disaster management plan of the City of Cape Town implies that there might be a disaster management framework,[882] while no information on local disaster management frameworks could be gathered from the remaining municipalities.[883]

879 See sections 5.5.1.9, 5.6.1.9, and 5.7.1.9 above.
880 See sections 5.3.1.9, 5.4.1.9, 5.8.1.9, and 5.10.1.9 above.
881 See sections 5.3.1.11 and 5.8.1.11 above.
882 See section 5.4.1.11 above.
883 See sections 5.5.1.11, 5.6.1.11, 5.7.1.11, 5.8.1.11, and 5.10.1.11 above

CHAPTER 6 CONCLUSION

6.1 Overview

Communicable and vector-borne diseases have epidemic and pandemic potential that could result in public health disasters.[884] Recent disease outbreaks[885] have indicated that city environments often act as epicentres for communicable and vector-borne disease transmission.[886] South African cities also pose several risks for communicable and vector-borne disease transmission and remain confronted with a double burden of health challenges.[887] These health challenges include diseases such as HIV and Aids, TB, influenza and pneumonia, and chronic lower respiratory tract infections.[888] Local government has an integral role to play in communicable disease surveillance and vector-control.[889] However, rapid urbanisation and other developmental pressures often cause several challenges for municipalities with regard to mitigating and reducing the risk of communicable and vector-borne diseases in cities.[890] Consequently, the primary objective of this study was to determine if and how South African national and city-level law provide for the 3municipal regulation of communicable and vector-borne disease control.[891]

Research exists concerning surveillance systems[892] and the tracking of specific communicable diseases generally.[893] Research has also been done on pest infestation in urban areas,[894] the surveillance and diagnostics for zoonotic diseases

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884 See section 1.1 above.
885 , Such as the coronavirus and monkeypox.
886 Section 1.1 above.
887 See section 1.1 above.
888 See section 1.1 above.
889 See section 1.1 above.
890 See section 1.1 above.
891 See section 1.2 above.
892 Weber *Evaluation of the notifiable disease surveillance system in Gauteng Province, South Africa* 27; Lebelo and van Wyk "Communicable disease Surveillance in the City of Ekurhuleni: Environmental Health Practitioners' Perceptions" 371-375.
893 Chasi *Tracing the Progression of Measles Outbreak Risk: An Exploratory and Descriptive Study of the City of Cape Town, South Africa* 16-30.
Mbonane and Naicker 2020 *Health SA Gesondheid* 1-8.
894 Mngadi *Factors facilitating pest infestation in two low-income urban areas of Cape Town, South Africa: an urban health observation study*

in rural clinics, and parasites.[895] There is also a significant amount of literature focused on the interface between local government and environmental health, specifically the opportunities, gains and losses.[896] However, thus far no study has focused on the municipal regulation of communicable and vector-borne disease control from a legal perspective. The existing literature has also not explored the linkage and application of disaster risk management as a possible measure to reduce the risk of communicable and vector-borne disease transmission in cities.

6.2 Limits of this study

As explained in Chapter 1, this study has primarily taken the form of a literature review that has critically analysed and evaluated primary and secondary sources to determine to what extent South African national and city-level law provides for the municipal regulation of communicable and vector-borne disease control. The literature revealed that the law makes adequate provision for municipal action to help control and prevent the risk of communicable and vector-borne disease transmission in cities. However, since the study is desktop based and no empirical research was done, it could not holistically be determined if legislative duties are consistently being executed, enforced and monitored, for example. It was accordingly not possible via the desktop method of study to determine the *de facto* effectiveness of municipal surveillance indicators, public education and other municipal control and prevention measures.

The case studies of the eight municipalities were limited to a desk-based analysis of environmental health by-laws and disaster management plans. This means that beyond the letter of their local laws and plans, there could be more to the *de facto* actions of local government

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895 Archer *et al* 2017 *Southern African Journal of Infectious Diseases*

896 Matthee *et al* 2018 *Development Southern Africa* 283-293; Matthee 2011 *Journal of Public Health Policy* 37-42; Balfour *Municipal health services in South Africa, opportunities and challenges* 1-12.

Further, the scope of this study pertains to communicable and vector-borne disease risks in urban areas. Consequently, rural areas, towns and secondary cities have not been discussed or evaluated.

6.3 Main research findings

The main findings of this thesis are that:

6.3.1 Law is crucial for responding to communicable and vector-borne disease risks at city-level

Law influences the framework in which people live, work, and face disease and injury.[897] South Africa has several national laws and policies dedicated to protecting environmental and public health.[898] This law can help local government to mitigate and reduce communicable and vector-borne disease transmission in cites by structuring, preserving, and mediating the risk factors and underlying conditions known to facilitate disease transmission.[899] The analysis of South Africa's national and national legislative and policy framework revealed that there are eleven benchmarks or required actions for the municipal regulation of communicable and vector-borne disease control and prevention.[900] These benchmarks deal with municipal actions related to municipal health services, the surveillance of communicable diseases and preparedness and response.[901]

6.3.2 City-level law is silent on the surveillance of communicable and vector-borne diseases at municipal level

As mentioned above, surveillance is considered as one of the most important steps to address public health challenges.[902] Despite its importance, city-level law (and national law) make no explicit mention of surveillance and what it entails for the

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897 See section 2.4 above.
898 See section 4.3 above.
899 See section 2.4 above.
900 See section 4.4 above.
901 See section 4.4 above.
902 See section 4.3.1 above.

protection of citizens' environmental and public health.[903] This silence on what surveillance entails could be contributing to the lack of clarity around the duties that environmental health practitioners (and other role-players) must fulfil. Additionally, the by-laws make very limited reference to information systems and the analysis and interpretation of data. This could possibly contribute to a general uncertainty around the collection and inclusion of information into the health information systems.[904]

6.3.3 The delivery of basic health services has a bearing on the municipal regulation of communicable and vector-borne disease control

An analysis of national law and policy has revealed that local government has several duties that speak to the protection of public health and the creation of a safe and healthy environment.[905] However, it seems that in practice there are often shortcomings that hinder the delivery of basic services. These include the shortage of environmental health practitioners,[906] the a lack of financial allocation for municipal health service delivery,[907] inadequate service delivery,[908] and a lack of clarity regarding the role of different stakeholders in communicable disease surveillance.[909] These services are essential for the municipal regulation of communicable and vector-borne disease control.

6.3.4 Disaster management is essential for pandemic preparedness and response at city-level

This study has determined that communicable and vector-borne diseases have epidemic and pandemic potential that requires remedies outside of the existing health sector.[910] The *National Guidelines on Epidemic Preparedness and Response*

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903 See sections 4.3.1, 5.3.1.2, 5.4.1.2, 5.5.1.2, 5.6.1.2, 5.7.1.2, 5.8.1.2, 5.9.1.2 and 5.10.1.2 above.
904 See section 4.3.1 above.
905 See section 4.2 above.
906 See section 4.2.2 above.
907 See section 4.2.2 above.
908 See section 1.1 and 4.2.1 above.
909 See section 4.3.1.1 above.
910 See section 1.1 above.

specifically aims to assist health care workers with improving epidemic preparedness and response strategies.[911] It does this by assisting with the strengthening of Outbreak Response Teams, developing a list of priority diseases, and strengthening capacity at all levels.[912] These measures formed an integral part of local governments' response to the coronavirus outbreak in South Africa's eight metropolitan municipalities. Other preparedness and response measures include the identification of disaster risks, the development of disaster risk management plans, setting up disaster management frameworks and assisting communities with implementing measures aimed at containing the outbreak.[913] Municipal training and education relating to communicable disease preparedness and response should also extend beyond the parameters of disaster management, i.e. informing and educating civilians on how to mitigate the risk of communicable disease transmission.

6.3.5 Civilians play an essential role in the control and prevention of communicable and vector-borne disease risks

Overall, the environmental health by-laws of South Africa's eight metropolitan municipalities contain a general prohibition against the creation of health nuisances. It was established that health nuisances or health hazards are created when occupiers or owners of premises allow premises to be in such a state that it is injurious to health, or attracts or harbours vermin and vectors, or if any activities or processes on the premises give rise to pollution. Owners or occupiers of premises may also be held accountable for causing a health nuisance and may be ordered to reduce health nuisances. However, despite these provisions, communities, especially those residing in informal urban settlements, continue to find themselves residing in unhygienic and unsanitary conditions. Perhaps this may be an indication that non-compliance with by-laws are not enforced and monitored effectively whilst

911 See section 4.3.2.1 above.
912 See section 4.3.2.1 above.
913 See section 4.3.2.1 and 4.3.2.2 above.

also perpetuating conditions that are conducive to communicable and vector-borne disease transmission.

6.4 Recommendations

Upon completion of this study, it is recommended that:

- National and provincial government should engage with local government to develop clear and comprehensive standards for the municipal regulation of communicable disease surveillance. Since municipalities comprise the level of government closest to the people, they are well-situated to identify hotspot areas for disease transmission and to suggest possible measures for disease control and prevention.

- National government should revise the current framework for communicable disease surveillance to include the reporting of events that may constitute a public health threat at the local level.

- Municipal Councils should update and revise their disaster management plans to ensure that they are aligned with the directives of the *DMA* and the *NDMF*.

- Researchers should investigate the active and passive surveillance of communicable diseases in cities and the implications surveillance has on disease control and prevention.

- Municipal Councils should develop clear and comprehensive guidelines around the collection, analysis and interpretation of data relating to the inspection and investigation of various premises.

- Environmental health practitioners should play a more proactive role in the identification and surveillance of communicable diseases in the city environment.

- Environmental health practitioners must enforce the measures for non-compliance with municipal health by-laws in their municipal areas to help combat the creation of health nuisances by owners or occupiers of premises.

6.5 Areas for future research

The scope of this study was limited to specific areas in the field of environmental health, local government, and disaster risk management. Through the course of this research some areas were identified that may benefit from further research. Some of the questions that remain to be answered include:

- What are the effects of climate change on public health (systems) and how can it be regulated by national and local law and policy?
- What role does spatial development planning law play in helping manage public health risks in Africa's rural and informal urban settlements?
- To what extent is provision made for the inclusion of non-health sectors and expertise in communicable and vector-borne disease control and prevention?

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