

Protecting wetlands impacted by the Mpumalanga coal mining industry: a legal analysis

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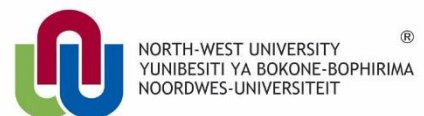
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It all starts here™



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Then God said, "Let us make man in our image, after our likeness. And let them have dominion over the fish of the sea and over the birds of the heavens and over the livestock and over all the earth and over every creeping thing that creeps on the earth." - Genesis 1:26

ABSTRACT

Wetlands are seen as one of the most vulnerable ecosystems globally. The protection of wetlands has received increased focus in the South African environmental legal domain in reaction to the realisation that these ecological systems have a progressively more important function in the maintenance of ecologies. Mining is a "landscape-changing" activity with unique impacts on environments such as wetlands, and requires specific regulation of the impact thereof on these ecosystems.

Within the Mpumalanga Province, coal mining is associated with specific geological features that are inherently linked to the occurrence of wetlands. Current mining in or near wetlands would primarily require authorisation under two acts, namely the *National Water Act* 36 of 1998 and the *National Environmental Management Act* 107 of 1998. The environmental legal framework prior to 1998 was fragmented in that several acts set different objectives under different government departments for the protection of wetlands. Several mines in the Mpumalanga Province commenced prior to the introduction of these acts and the requirement to obtain an authorisation for mining in or near wetlands. Changing legislation over the life of the mine results in uncertainty about the applicability of the legislation to the mining activities.

The current legislation governing the protection of wetlands is centred on the restriction of development in or near wetlands by way of defining the term "wetland" and buffer zones for regulation. The challenge with governing the protection of wetlands is that the definition of "wetland" as contained in the various pieces of legislation is not uniform. The references to buffer zones in the legislation (500 meters, 100 meters and 32 meters) are also inconsistent, with no scientific basis on how these buffer zones should be delineated and whether the defined buffer zones are indeed effective in the protection of wetlands. The vagueness of the interpretation of what is meant by "wetland" and "buffer zone", coupled with changes in the legislation over the life of a mine, results in inconsistencies in wetland delineation and the incorrect application of buffer zones by the regulating authority.

The definition of a "wetland" should therefore be reviewed, based on a scientific understanding of such areas, so that it is uniform in all legislation governing their

protection. The delineation of buffer zones, too, should be revisited, so that it is scientific rather than arbitrary. Legislative requirements should be clear on the authorisations required for mining activities to commence and continue within the buffer zones defined. The implementation of a scientific-based tool to replace the arbitrary buffer included in the South Africa legislative framework would ensure better protection of wetlands.

Key words: environmental legal framework, South Africa, Mpumalanga, protection of wetlands, coal mining industry.

OPSOMMING

Vleilande word as een van die mees kwesbare ekosisteme wêreldwyd geag. Daar word meer fokus op die beskerming van vleilande in die Suid Afrikaanse omgewingsreg geplaas. Die rede hiervoor is dat dié ekologiese stelsels 'n al meer belangriker funksie in die handhawing van ekologiese funksie het. Mynbou is 'n "landskap-veranderende" aktiwiteit met 'n unieke impak op aspekte van die omgewing soos vleilande, wat spesifieke regulering van die impak daarvan op hierdie ekosisteme vereis.

In die provinsie van Mpumalanga word steenkoolmynbou met spesifieke geologiese kenmerke wat inherent gekoppel is aan die voorkoms van vleilande geassosieer. Huidige mynbou in of naby vleilande vereis magtiging onder hoofsaaklik twee wette, naamlik die *Nasionale Water Wet 36* van 1998 en die *Nasionale Wet op Omgewingsbestuur 107* van 1998. Die wetlike omgewingsraamwerk voor 1998 was gefragmenteerd, deurdat verskeie wette verskillende doelstellings onder verskillende staatsdepartemente vir die beskerming van vleilande gestel het. Verskeie myne in Mpumalanga het voor die inwerkingtreding van hierdie wette en die vereiste om 'n magtiging vir mynbou in of naby vleilande te kry, begin. Die wysigings aan wetgewing gedurende die lewenstydperk van die myne het tot onsekerheid oor die toepassing van die wetgewing op die impak van die mynbou aktiwiteite op vleilande gelei.

Die huidige wetgewing ten opsigte van die beskerming van vleilande is toegespits op die beperking van ontwikkeling in of naby vleilande deur die terme "vleiland" en "bufferones" te definieer. Die uitdaging met die beskerming van vleilande is dat die definisie van "vleiland" soos vervat in die verskeie stukke wetgewing nie eenvormig is nie. Die verwysing na bufferones in die wetgewing (500 meter, 100 meter en 32 meter) is ook teenstrydig met mekaar en het geen wetenskaplike basis van hoe hierdie bufferones afgebaken is nie. Die vraag kan gestel word of die gedefinieerde bufferones inderdaad effektief is om die beskerming van vleilande te verseker. Teenstrydighede in vleilandafbakening en die verkeerde toepassing van bufferones deur die staatsdepartemente word veroorsaak deur die verskillende interpretasies van die term "vleiland" en "bufferones" asook die wysigings aan wetgewing gedurende die lewenstydperk van 'n myn.

Die definisie van "vleiland" moet hersien word om 'n eenvormige definisie in al die wetgewing wat handel oor die beskerming van vleilande op te neem. Die hersiening moet op wetenskaplike beginsels gebaseer wees. Buffersones moet ook hersien word om wetenskaplike afbakening in te sluit en daar moet nie op arbitrêre lyne staat gemaak word nie. Wetlike vereistes moet duidelik uiteen sit watter magtigings nodig is vir mynbou aktiwiteite om te begin en voort te gaan binne die buffersones soos gedefinieer. Die implementering van 'n wetenskaplik gebaseerde instrument om die arbitrêre buffers soos in die Suid Afrikaanse wetgewing te vervang, sal verseker dat vleilande beter beskerming geniet.

Sleutelwoorde: omgewingsregsraamwerk, Suid-Afrika, Mpumalanga, beskerming van vleilande, steenkoolmynboubedryf.

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LIST OF ABBREVIATIONS

AMD	Acid mine drainage
CARA	Conservation of Agricultural Resources Act 43 of 1983
CMA	Catchment Management Agency
CSIR	Council for Scientific and Industrial Research
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
ECA	Environmental Conservation Act 73 of 1989
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity (EIS)
ELWU	Existing Lawful Water Use
EMP	Environmental Management Programme
EMPr	Environmental Management Programme Report
FEPA	Freshwater Ecosystem Priority Areas
GG	Government Gazette
GN	General Notice
HGM	Hydromorphic
IUCN	International Union for the Conservation of Nature
JOEL	Journal of Environmental Law
LEAD	Law Environment and Development Journal
MEC	Member of Executive Council
MPRDA	Mineral and Petroleum Resources Development Act 28 of 2002
MPRD	Mineral and Petroleum Resources Development
NFEPA	National Freshwater Ecosystem Priority Areas
NEMA	National Environmental Management Act 107 of 1998

NEMAA	National Environmental Management Act 62 of 2008
NEMICMA	National Environmental Management Integrated Coastal Management Act 24 of 2008.
NEMLAA	National Environmental Management Laws Amendment Act 25 of 2014
NPV	Net Present Value
NWA	National Water Act 36 of 1998
NWCS	National Wetland Classification System
NWM4	National Wetland Map
NWRS	National Water Resource Strategy
OES	One Environmental System
PER	Potchefstroom Electronic Journal
PES	Present Ecological Status
REC	Recommended Ecological Category
RECIEL	Review of European, Comparative and International Environmental Law
RDMs	Resource-Directed Measures
RQOs	Resource Quality Objectives
SAIAB	South African Institute of Aquatic Biodiversity
SABI	South African Business Integrator
SACMA	South African Colliery Managers' Association
SAJHR	South African Journal of Human Rights
SAJELP	South African Journal of Environmental Law and Policy
SANBI	South Africa National Biodiversity Institute
SANParks	South African National Parks
SDCs	Source-Directed Controls
SI	Socio-cultural Importance
SWMM5	Storm Water Management Model

SWSAs	Strategic Water Source Areas
UORC	Upper Olifants River Catchment
WRC	Water Research Commission
WWF	Worldwide Fund for Nature

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CHAPTER 1 INTRODUCTION

1.1 Background

Sensitive ecosystems such as wetlands require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.¹

A "wetland" is defined in the *National Water Act* 36 of 1998 (hereafter NWA) as "the land transitional between terrestrial and aquatic systems."² Recently, increased focus has been placed on the protection of wetlands as these ecological systems have an increasingly important function in the maintenance of the ecosystems.³ The law regulating wetlands can be divided into three broad categories namely (a) restrictions on locality and related facilities, (b) permitting water uses and (c) development in or near wetlands and the protection of wetlands, as elaborated below.

GN R704 of 1999⁴ is the primary regulatory instrument that places a restriction on the location of mining and related activities in or near wetlands. Regulation 4⁵ states that if an activity is located within a 100 meters buffer from the edge of a wetland, an exemption from these regulations is required. Mining in or near wetlands would primarily require authorisation under two acts, namely the NWA and the *National Environmental Management Act* 107 of 1998 (hereafter NEMA). As per Schedule 1 of the NWA, water may be used only if it is a continuation of an existing lawful use, if it is authorised in terms of a General Authorisation, or in terms of a licence. Section 21(c) and (i) of the NWA provides that a water use licence is required for activities that impact negatively on a watercourse through "impeding and diverting the flow of water in a watercourse" or "alteration of the beds, banks, course or characteristic of a watercourse." The definition of "watercourse" is:

(a) a river or spring, (b) a natural channel in which water flows regularly or intermittently, (c) a wetland, lake or dam into which, or from which, water flows

¹ Kidd *Environmental Law* 136 and section 2 of *National Environmental Management Act* 107 of 1998 (hereafter NEMA).

² Section 1 of *National Water Act* 36 of 1998 (hereafter NWA).

³ Government Communication and Information System 2015 <http://www.sanews.gov.za/south-africa/sa-urged-preserve-wetlands>.

⁴ GN R704 in GG 20199 of 4 June 1999 (hereafter GN R704) issued under section 26(1)(b), (g) and (i) of the NWA.

⁵ Reg 4 in GN R704.

and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.⁶

The definitions of an "ecosystem", "watercourse" and "wetland" as included in section 1 of the NWA are all inter-linked and may create confusion when authorisations are to be issued.⁷

A General Authorisation allows for water uses to be undertaken without a licence if the use complies with the terms and conditions of the General Authorisation. In 2009 a General Authorisation (GN R1199⁸) for sections 21(c) and (i) water uses was published. GN R1199, however, excludes activities that occur within 500 meters of the boundary of a wetland. A challenge to the coal mining industry at present is that the General Authorisation is interpreted to mean that no activities impeding and diverting the flow of water in a wetland or altering the characteristics of a wetland may not occur within the 500 meter buffer zone. This interpretation seems to be flawed, as the interpretation of the 2009 General Authorisation implies that if an activity undertaken within the 500 meter buffer, whether such activity impedes, diverts or alters the wetland, a water use licence should be obtained, and that an applicant cannot rely on the General Authorisation. On 26 August 2016 the Department of Water and Sanitation (hereafter the DWS) published an amendment to GN R1199 to address this challenge.⁹

The Environmental Impact Assessment Regulations¹⁰ (read with section 24 of the NEMA) further list activities impacting on wetlands for which an environmental authorisation is required.¹¹ An environmental authorisation is required for a development within a

⁶ Section 1 of the NWA.

⁷ Refer to Chapter 2 section 2.4.

⁸ GN R1199 in GG 32805 of 18 December 2009 (hereafter GN R1199) issued under section 39(1) of the NWA.

⁹ GN R509 in GG 40229 of 26 August 2016 (hereafter GN R509). Subsequent to the finalisation of this dissertation GN R1199 was amended by GN R509. GN R509 includes the same exclusion in 3(b), which states that: "This General Authorisation does not apply to the use of water in terms of section 21(c) and (i) of the Act within the regulated area of a watercourse." The regulated area of a watercourse is defined in regulation 2 as "a 500 meter radius from the delineation boundary (extent) of any wetland or pan." The amended General Authorisation, however, in regulation 3(b) adds "where the Risk Class is medium or high as determined by the Risk Matrix (appendix A)." Thus where GN R1199 excluded all activities within the 500 meter radius of the boundary of a wetland from the General Authorisation, the amended GN R509 excludes only medium to high risk activities. Or, differently stated, low risk activities within the 500 meter radius from the boundary of a wetland do not require a section 21(c) and (i) water use provided that the water use is within the requirements of the General Authorisation.

¹⁰ GN R983-985 in GG 38282 of 4 December 2014 issued under sections 24(5) and 44 of the NEMA.

¹¹ Sandham *et al* 2008 *Water* SA 155.

watercourse as well as a development within 32 meters of a watercourse, where no development setback line exists (such as mining areas).¹² The definition of a "watercourse" includes a "wetland."¹³

In the Mpumalanga Province, coal mining areas are associated with certain geological features that are intrinsically linked to the occurrence of wetlands.¹⁴ Most of the mining areas are therefore located within the above-mentioned buffer zones, leaving few areas that can be mined without obtaining onerous authorisations that do not necessarily result in the protection of the wetlands.¹⁵

Impacts on wetlands were not regulated when the planning of several mines in Mpumalanga commenced and advanced, as this was done prior the introduction of the NWA in 1998 and the *Mineral and Petroleum Resources Development Act 28 of 2002* in 2004 (hereafter MPRDA). At the time the only environmental requirement for mining activities to commence was an approved Environmental Management Programme under the *Minerals Act 50 of 1991* (hereafter *Minerals Act*). The *Minerals Act* did not refer to wetlands. The requirement post-1998 to obtain an authorisation for mining in or near wetlands has therefore impacted on mine and financial planning, as areas that could previously be mined now require an authorisation. The current legislation is still unclear on how the impacts on wetlands should be regulated. It is of great concern that legislation defines buffer zones for regulation, but suggests no scientific basis on how these buffer zones should be delineated and whether the defined buffer zones are indeed effective in the protection of wetlands. This concern is illustrated by the inconsistency in the references to buffer zones found in the various relevant laws (500 meters, 100 meters and 32 meters). Of further concern is the difference in interpretation of the definition of

¹² Item 12 and 19 of GN R983 in GG 38282 of 4 December 2014 (hereafter GN R983).

¹³ Regulation 2 of GN R983 defines a "watercourse" as "a river or spring; a natural channel in which water flows regularly or intermittently; a wetland, pan, lake or dam into which or from which, water flows, and any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the NWA, 1998" (emphasis added); and a reference to a watercourse includes, where relevant, its bed and banks and "wetland" means "land transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil."

¹⁴ Exarro date unknown <http://www.exxaro.com/index.php/sustainability/wetlands-and-coal/>.

¹⁵ See chapter 2.4.1.

a wetland, which results in inconsistencies in wetland delineation and the incorrect application of buffer zones by the different regulating authorities.¹⁶

The aim of this study is therefore to determine whether the current legal framework guarantees the protection of the wetlands situated within the coal mining area in Mpumalanga.

To support the main aim, supportive aims are identified, namely:

1. To determine the legal definition of the term "wetland";
2. To evaluate the South African environmental legal framework governing wetlands;
3. To determine the practical application of the South African environmental legal framework governing wetlands in the context of various scenarios evident in the Mpumalanga coal fields; and
4. To determine, based on the above scenario analysis, if the South African environmental legal framework sufficiently protects wetlands within the Mpumalanga coal fields.

This study is based on a literature study of primary sources such as policies and legislation. The NWA, MPRDA and the NEMA and their regulations and guidelines are analysed as primary sources. The primary sources are supported by a survey of secondary sources such as text books, journals and electronic sources.¹⁷ In order to achieve the aim of the study the analysis of the primary and secondary sources will be applied to hypothetical scenarios encountered in the coal mining industry in Mpumalanga and adapted for this study. The hypothetical scenarios will include both greenfield and brownfield project applications. A greenfield application is "denoting or relating to previously undeveloped sites" for mining development.¹⁸ A brownfield application is

¹⁶ Department of Water and Sanitation 2016 *Section 21(c) and (i) water use training*.

¹⁷ The literature study ended June 2016. Subsequent amendments are referred to but could, due to time constraints not be included in the study.

¹⁸ Oxford University Press 2016 <http://www.oxforddictionaries.com/definition/english/greenfield>.

denoting or relating to sites for potential mining development that have had previous mining development on them.¹⁹

In this study the term "wetland" will firstly be defined (see Chapter 2), where after the South Africa environmental legal framework governing the protection of wetlands will be evaluated (see Chapter 3). In order to be able to come to a conclusion and to make recommendations (see Chapter 5), the environmental legal framework will be applied to practical scenarios evident in the Mpumalanga coal fields (see Chapter 4).

¹⁹ Oxford University Press 2016 <http://www.oxforddictionaries.com/definition/english/brownfield>.

CHAPTER 2 DEFINING WETLANDS

2.1 Introduction

Water is one of South Africa's most limited resources, constraining our future social and economic development. Its wise use is critical to the sustainable development of our emerging economy and the wellbeing of all our citizens, particularly the poorest, who depend directly on the health of natural resources for their livelihoods.²⁰

As with all South African resources, water and specifically wetlands are regulated by particular legislation to ensure the protection, conservation and rehabilitation thereof.²¹ The current environmental governance system is fragmented, as is evident in the numerous acts regulating environmental issues.²² Therefore it is important to analyse the various definitions contained in environmental legislation that directly and indirectly refer to wetlands. This chapter will firstly evaluate the state of global and South African wetlands. A distinction will be made between the scientific and legal definitions of wetlands and the various wetland types. The chapter will conclude with a review of the regulated area (extent or buffer) of a wetland and the manner in which wetlands are delineated to determine the extent thereof.

2.2 Wetlands: the global and local concern

Wetlands are seen as one the most vulnerable ecosystems globally and have been identified in 1980 by the International Union for the Conservation of Nature (hereafter IUCN) as the third most vital life support system.²³ According to scientific estimates 64% of global wetlands have disappeared since 1900, with inland wetlands being more

²⁰ Water Research Commission 2011 *Implementation Manual for Freshwater Ecosystem Priority Areas* 3.

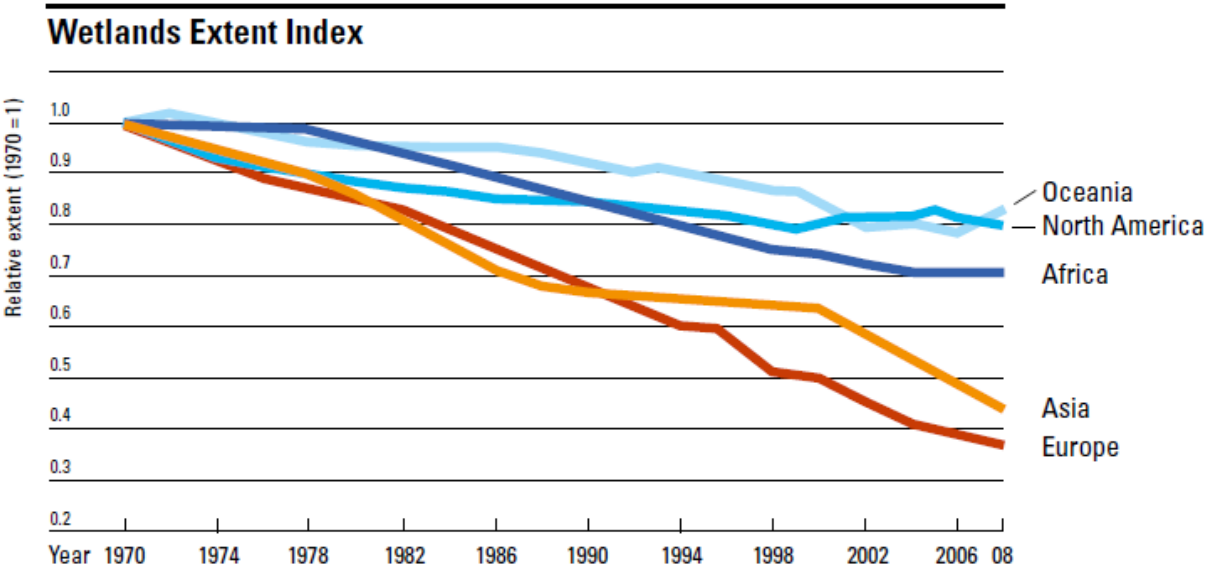
²¹ Govender-Ragubeer *The challenge of protecting urban wetlands from destruction: a case study of the Libradene wetland, Boksburg, Gauteng* 50.

²² Kotzé 2006 *PER* 1. Acts include NEMA, NWA, the National Environmental Management Air Quality Act 39 of 2004, National Environmental Management Biodiversity Act 10 of 2004, National Environmental Management Integrated Coastal Management Act 24 of 2008, National Environmental Management Protected Areas Act 57 of 2003 (hereafter NEMPAA) and National Environmental Management Waste Act 59 of 2008.

²³ Linstrom and Emery "Wetlands" 26. The *International Union for the Conservation of Nature* 1980 indicates that "Today, the most important and most threatened life-support systems are agricultural systems, forests, and coastal and freshwater systems" (emphasis added).

affected than coastal wetlands.²⁴ The Wetlands Extent Index provides an indication of the loss of wetlands and measures the decrease in a global sample of more than a thousand wetland sites between 1970 and 2008. As seen in Figure 1, an average decrease of 40% was noted between the periods specified.²⁵ According to the *Ramsar Convention on Wetlands of International Importance* (1971) (hereafter the Ramsar Convention), the major causes of the decrease in global wetlands can be attributed to major changes in land use, water diversion through dams, dikes and canalisation, infrastructure development and air and water pollution.²⁶

Figure 1: Wetland Extent Index²⁷



Wetlands make up 2.4% of South Africa’s surface area but provide an excessively high value of "ecological infrastructure" that provides critical ecosystem services.²⁸ Figure 2

²⁴ Ramsar 2014
http://www.ramsar.org/sites/default/files/documents/library/factsheet3_global_disappearing_act_0.pdf.

²⁵ Ramsar 2014
http://www.ramsar.org/sites/default/files/documents/library/factsheet3_global_disappearing_act_0.pdf.

²⁶ Ramsar 2014
http://www.ramsar.org/sites/default/files/documents/library/factsheet3_global_disappearing_act_0.pdf.

²⁷ Ramsar 2014
http://www.ramsar.org/sites/default/files/documents/library/factsheet3_global_disappearing_act_0.pdf.

²⁸ Department of Environmental Affairs 2016
https://www.environment.gov.za/world_wetlands_day_commemorated_under_theme_wetlands_our_future_sustainable_livelihoods.

illustrates the distribution of wetlands in South Africa. Table 1 lists South Africa's Ramsar-protected wetlands. However, Ramsar wetland sites are not regarded as protected areas in South African law²⁹ and many wetlands are found on privately owned land. Some landowners do not know the benefits of these wetlands, resulting in threats to these systems.³⁰

Table 1: South African Ramsar Wetland Sites³¹

RAMSAR SITE	DATE	PROVINCE	EXTENT
Barberspan	12/03/75	North-West	3118Ha
Blesbokspruit M R	02/10/86	Gauteng	1858Ha
De Hoop Vlei	12/03/75	Western Cape	740Ha
De Mond (Heuningnes Estuary)	02/10/86	Western Cape	918Ha
False Bay Nature Reserve	02/02/15	Western Cape	1542Ha
Kosi Bay	28/06/91	Kwazulu/Natal	10982Ha
Lake Sibaya	28/06/91	Kwazulu/Natal	7750Ha
Langebaan	25/04/88	Western Cape	6000Ha
Makuleke Wetlands	22/05/07	Limpopo	7757Ha
Natal Drakensberg Park	21/01/97	Kwazulu/Natal	242813Ha
Ndumo Game Reserve	21/01/97	Kwazulu/Natal	10117Ha
Ntsikeni Nature Reserve	02/02/10	Kwazulu/Natal	9200Ha
Nylsvley Nature Reserve	07/07/98	Northern Province	3970Ha
Orange River Mouth M R	28/06/91	Northern Cape	2000Ha
Prince Edward Islands	22/05/07	Western Cape	37500Ha
St. Lucia System	02/10/86	Kwazulu/Natal	155500Ha
Seekoeivlei Nature Reserve	21/01/97	Free State	4754Ha
Turtle Beaches/Coral Reefs of Tongaland	02/10/86	Kwazulu/Natal	39500Ha
uMgeni Vlei Nature Reserve	19/03/13	Kwazulu/Natal	958Ha
Verloren Vlei Nature Reserve	16/10/01	Mpumalanga	5891Ha
Verlorenvlei	28/06/91	Western Cape	1500Ha

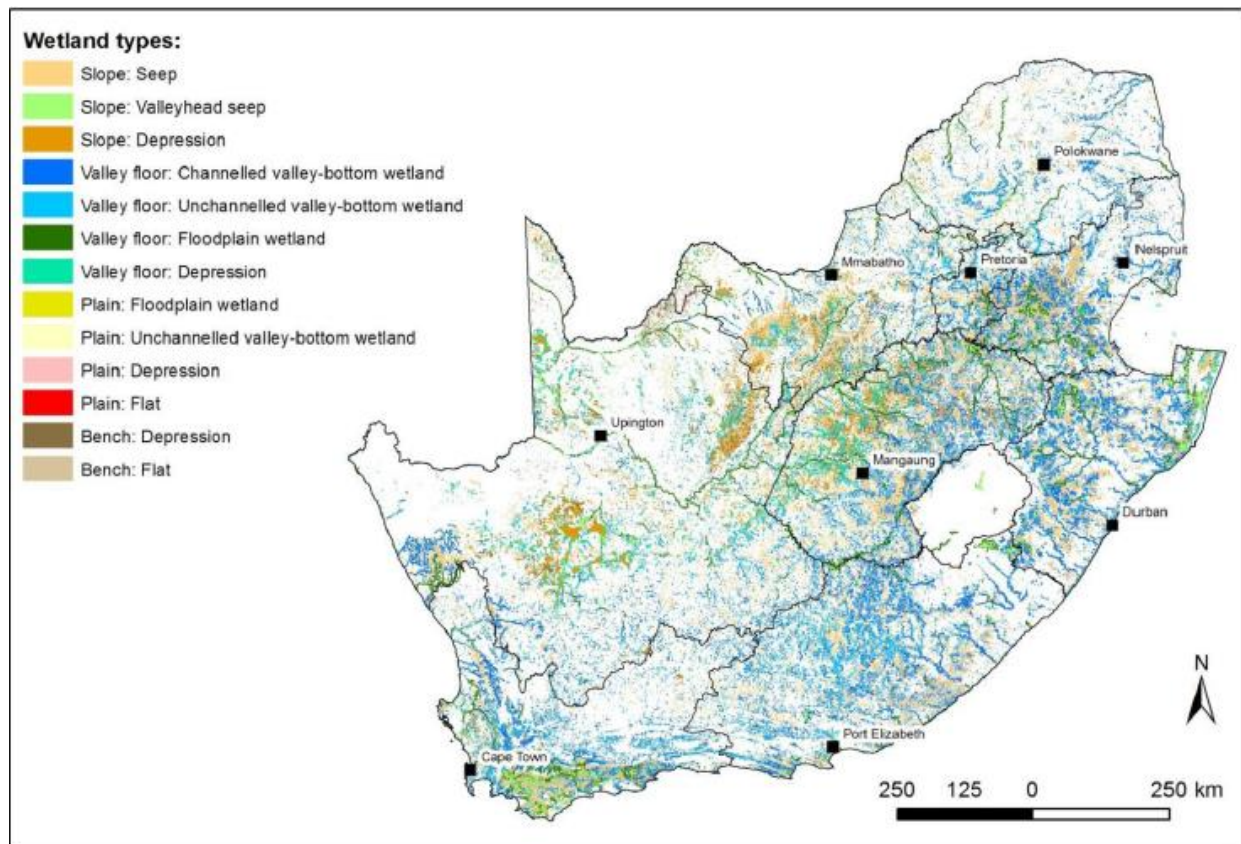
²⁹ NEMPAA and Netshithothole "Integration of Ramsar principles within National Policies and Strategies."

³⁰ Kidd *Environmental law* 136.

³¹ Ramsar 2016 <http://www.ramsar.org/sites/default/files/documents/library/sitelist.pdf>.

Wilderness Lakes	28/06/91	Western Cape	1300Ha
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Figure 2: National wetland map³²



2.2.1 Wetland functions

Wetlands, as a watercourse type, are particularly singled out due to their being among the most diverse and productive ecosystems and because they are vital to human survival. The protection of wetlands is critical as they provide certain important functions.³³ Some wetland functions include: "storage of water, transformation of nutrients, growth of living matter, diversity of wetland plants, and value from the surrounding ecosystems and for people."³⁴ Wetlands reduce and transform the nutrients and metals generated by industrial and agricultural activities and also act as nutrient (nitrogen and phosphorus) traps. "Wetlands can remove 15% to 32% of heavy metals as

³² ArcGIS 2016 <https://www.arcgis.com/home/item.html?id=23ca1f96eb2d458f83f763958f50dbec> acc.
³³ Exarro date unknown <http://www.exxaro.com/index.php/sustainability/wetlands-and-coal/>. Limburg 2002 *et al Ecological Economics* 409.
³⁴ Exarro date unknown <http://www.exxaro.com/index.php/sustainability/wetlands-and-coal/>. Mitsch and Gosselink 2002 *Ecological Economics* 25.

well as dissolve compound of sodium, chloride, calcium, magnesium and potassium."³⁵ In essence they provide a free water purification service.³⁶ Wetlands also provide a cultural function through their recreational uses, educational uses and aesthetic value.³⁷ In South Africa they are of national importance for the role they play in the control of erosion, flood attenuation, biodiversity value, water purification, storage recharge and streamflow regulation, and the benefit they provide in the security of food and water.³⁸

Human activities in catchments affect the sustainability of rivers and wetlands.³⁹ Wetlands of international significant in South Africa are impacted on by human modifications.⁴⁰ Thus, although people depend on the services offered by wetlands, human-induced modifications impact on the health and safety of society and can limit the worth of these systems through altered flow and sediment regimes, a decline in water quality, the fragmentation and destruction of habitat and the loss of biodiversity.⁴¹ "Wetland functionality is the core of any wetland protection initiative," as when the functionality is protected and maintained the integrity of the entire ecosystem and the reserve⁴² will be met.⁴³ Regulation of the human impacts on wetlands is required as society can only benefit from the services provided by them if their key functions are protected.⁴⁴ The economic gains of a proposed development are often used as a motivation for the continuation thereof, without determining the cost impact on the ecosystem services provided by the wetland system.⁴⁵ It is also necessary to do an economic valuation of wetlands in the technical reports accompanying water use and environmental

³⁵ Hammer and Bastian 1989 and Lindley 1998 in Exarro date unknown <http://www.exxaro.com/index.php/sustainability/wetlands-and-coal/>.

³⁶ Exarro date unknown <http://www.exxaro.com/index.php/sustainability/wetlands-and-coal/>.

³⁷ Exarro date unknown <http://www.exxaro.com/index.php/sustainability/wetlands-and-coal/>.

³⁸ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 27.

³⁹ Day "Rivers and Wetlands" 852.

⁴⁰ Godden 2005 *JOEL* 182.

⁴¹ Department of Water Affairs 2012 *Operational policy: regulate development and activities affecting watercourses* 3.

⁴² Reserve is defined in section 1 of the NWA as "the quantity and quality of water required (a) to satisfy basic human needs by securing a basic water supply, as prescribed under the Water Services Act 108 of 1997 for people who are now or who will in the reasonably near future, be relying upon; taking water from; or being supplied from, the relevant water resource and (b) to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource."

⁴³ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 26.

⁴⁴ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 4.

⁴⁵ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 39.

authorisation.⁴⁶ Coal mining in wetlands in Mpumalanga will be used to illustrate the above further.

2.3 Wetlands in the coal mining industry in Mpumalanga

Mining is a "landscape-changing activity" with unique impacts on environmental aspects such as water quality and hydrology, and requires specific environmental regulation to monitor and control its impact on wetlands and the subsequent rehabilitation thereof.⁴⁷ In order to determine the impacts of coal mining on wetlands it is important to understand the various mining methods. Coal mining methods are divided into two broad categories, namely opencast and underground mining. Opencast mining is frequently used when the deposit is horizontal or gently dipping and within 60 meters of the surface.⁴⁸ During opencast mining the overburden⁴⁹ rock and soil above the coal seam are blasted and removed.⁵⁰ The overburden is stripped (by dragline or truck-and-shovel operations) and deposited back into the open or mined-out voids, but some overburden stockpiling occurs.⁵¹ The exposed coal seams are drilled and blasted and hauled out of the pit by trucks.⁵² Once the coal is removed the rehabilitation process commences. This consists of spoiling the overburden into the open void, placing sub- and topsoil onto the overburden, levelling the sub- and topsoil, and revegetating the area.⁵³ Underground coal mining can occur through "bord and pillar" and "total extraction." Bord and pillar mining is done by sinking a shaft to the coal seam and extracting the seam from bords or rooms.⁵⁴ During bord and pillar mining a significant amount of coal is left behind in the

⁴⁶ This is currently not a requirement to be included in water use and environmental authorisations and if included this is on a voluntary basis. This statement is based on the author's experience in the role of an environmental permitting specialist for Anglo American Coal South Africa.

⁴⁷ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 7.

⁴⁸ Wells *et al* "Terrestrial Minerals" 341.

⁴⁹ Defined by Oxford Dictionary as "Rock or soil overlying a mineral deposit." Oxford University Press 2016 <http://www.oxforddictionaries.com/definition/english/overburden>.

⁵⁰ Stoop *A framework methodology for the cumulative impact assessment of wetlands* 53.

⁵¹ Wells *et al* "Terrestrial Minerals" 341.

⁵² Stoop *A framework methodology for the cumulative impact assessment of wetlands* 53.

⁵³ SACMA 2005 *Surface Strip Coal Mining Handbook* 3-9.

⁵⁴ Wells *et al* "Terrestrial Minerals" 346. Bord and pillar mining is a method of working coal seams. "First bords are driven, leaving supporting pillars of coal between. Next, cross drives connect the bords, leaving supporting coal as rectangular pillars. Finally, the pillars are mined (extracted, won, robbed) and the roof is allowed to cave in. The bordroom is the space from which bord coal has been removed" as in Department of Water Affairs and Forestry 2008 *Best Practice Guideline – A6: Water Management for Underground Mines* xiii.

form of pillars to support the overlying strata or roof.⁵⁵ Total extraction mining has been developed to remove the entire coal seam.⁵⁶

Mpumalanga wetlands are classified by the national classification system as palustrine wetlands (seepage and floodplain wetlands), which include vegetated and unvegetated endorheic pans (isolated wetlands).⁵⁷ The most common wetland types in Mpumalanga are "seepage and non-floodplain riparian wetlands," which make up at least 34% of the total wetland coverage of the Upper Olifants River Catchment (hereafter UORC).⁵⁸ Seepage wetlands are located on noticeable slopes, including sloping valley bottoms, and are associated with perched water tables and saturated conditions close to the surface.⁵⁹ Floodplain wetlands are found on a broad, generally flat topography dominated by alluvial processes and can occur next to well-defined river channels.⁶⁰ The floodplain riparian wetlands make up 28% of the total wetland coverage.⁶¹ Endorheic pans occur in topographic depressions with the following characteristics: a closed drainage, flat basin floor, less than two meters when fully flooded, circular to oval shaped.⁶² A total of 4628 endorheic pans occur in the province, of which 2043 are perennial and 2585 are non-perennial.⁶³ Although numerous pans occur in the province, the total area made up by non-perennial and perennial pans is 2.5% and 1.5% of the total wetland coverage of the UORC. A percentage of 0.2% has been classified as artificial wetlands.⁶⁴

Most of South Africa's coal is mined in the Mpumalanga province.⁶⁵ The protection of wetlands within the Mpumalanga coal mining industry is important as the Mpumalanga wetlands and coal are inseparable. Coal is formed by subjecting the residue of

⁵⁵ Wells *et al* "Terrestrial Minerals" 348.

⁵⁶ Wells *et al* "Terrestrial Minerals" 348.

⁵⁷ Linstrom and Emery "Wetlands" 18.

⁵⁸ Coaltech 2007 *Upper Olifants river catchment wetland inventory, Mpumalanga and Gauteng province 5. As per Breedts Understanding subterranean hydrology in the delineation of wetlands 2, despite a number of classification systems worldwide including hillslope seepage wetlands, limited work has been done on this type of wetland. (Breedts references Brinston *et al* 1993; Dini and Cowan 2000; Ewart-Smith *et al* 2006; Kotzé *et al* 2005; Maxwell *et al* 1995; Semenuik and Semenuik 1995 and Ward and Lambie 1999.)*

⁵⁹ Linstrom and Emery "Wetlands" 21.

⁶⁰ Linstrom and Emery "Wetlands" 20.

⁶¹ Coaltech 2007 *Upper Olifants river catchment wetland inventory, Mpumalanga and Gauteng province 5.*

⁶² Linstrom and Emery "Wetlands" 20.

⁶³ Emery, Lotter and Williamson 2002 *Determining the conservation value of land in Mpumalanga ii.*

⁶⁴ Coaltech 2007 *Upper Olifants river catchment wetland inventory, Mpumalanga and Gauteng province 5.*

⁶⁵ Stoop *A framework methodology for the cumulative impact assessment of wetlands* 53.

decomposed vegetation to pressure and temperature over a long period of time.⁶⁶ Coal reserves in South Africa, found in the sediments of the Permian age, occur in fairly thick, shallow lying coal seams.⁶⁷ The coal within the province was created by geological forces from ancient wetlands that remained wet, shallow zones within the coal reserves.⁶⁸ Numerous studies have indicated the relationship between geology and soils and wetland distribution.⁶⁹ The areas where coal mining occur are therefore intrinsically linked to the occurrence of wetlands, which "requires extensive wetland rehabilitation"⁷⁰ both onsite and potentially as part of offsets.⁷¹

Recently a large increase in prospecting and mining rights applications in the province especially impacting on wetlands and upper catchments was noted.⁷² Table 2 indicates the percentage of the area of wetlands and water sources that has in 2013 been allocated to mining (prospecting and mining rights) nationally and in Mpumalanga.⁷³ Areas within South Africa and Mpumalanga that are sensitive to mining are highlighted in Figure 3.

⁶⁶ Stoop *A framework methodology for the cumulative impact assessment of wetlands* 52.

⁶⁷ Stoop *A framework methodology for the cumulative impact assessment of wetlands* 52.

⁶⁸ Exarro date unknown <http://www.exxaro.com/index.php/sustainability/wetlands-and-coal/>.

⁶⁹ Coaltech 2007 *Upper Olifants river catchment wetland inventory, Mpumalanga and Gauteng province* 15.

⁷⁰ Wetland rehabilitation is "the process of assisting recovery of a degraded wetland in terms of the wetland condition, function and associated biodiversity, or to maintain the health of a wetland that is threatened by degradation, through the implementation of remedial interventions or proactive preventative measures" and "involves the physical, chemical or biological characteristics of a degraded wetland system in order to repair or improve wetland integrity and associated ecosystem services" as in Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 10.

⁷¹ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 7.

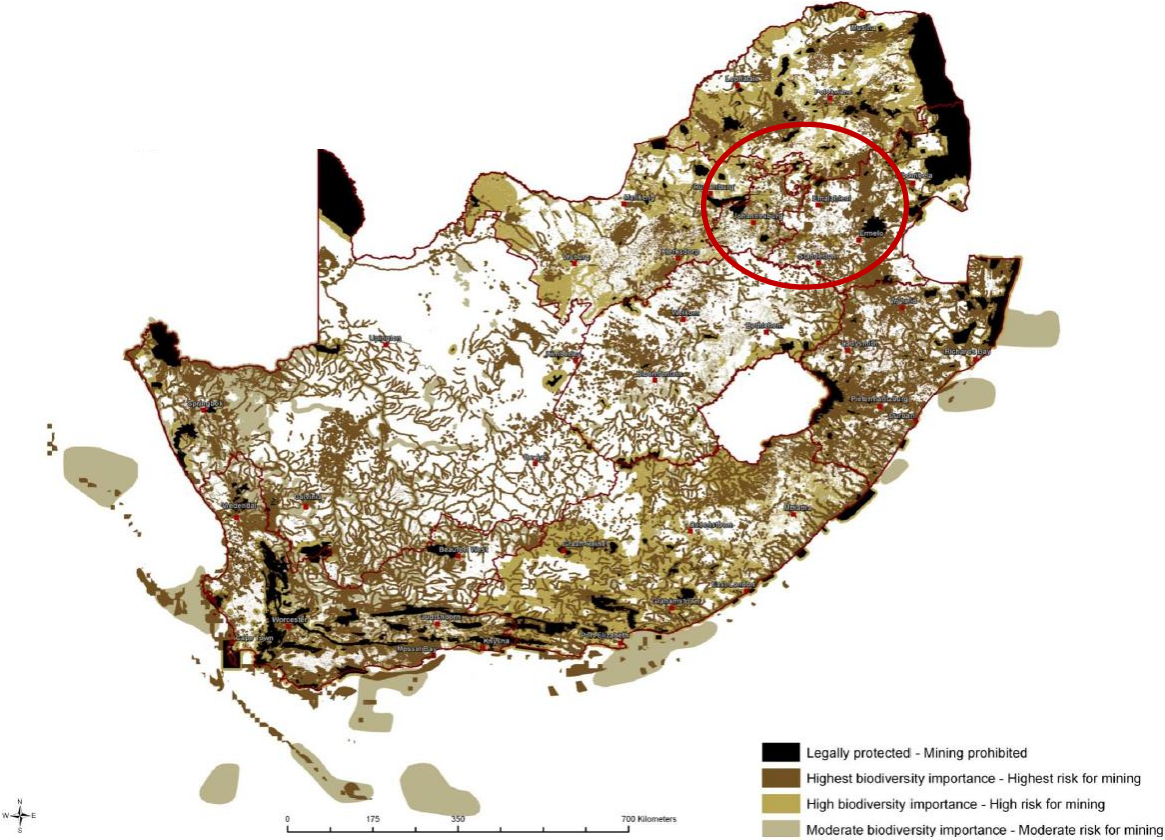
⁷² Department of Environmental Affairs "Current and projected mining impacts on grassland, wetlands and watersheds" 4. Note that not all mining rights application are granted by the DMR. The Centre of Environmental Rights 2016 *Zero Hour Report*²⁷ indicates that in a briefing from the DMR to the Select Committee on Land and Mineral Resources out of 220 mining and prospecting rights applications received by the DMR in Mpumalanga only 12 have been granted. Also refer to Parliamentary Monitoring Group 2014 <http://pmg.org.za/committee-meeting/17920/>. The dataset used was as supplied by the DMR and updated in 2013. Refer to Department of Environmental Affairs "Current and projected mining impacts on grassland, wetlands and watersheds" 13.

⁷³ Department of Environmental Affairs "Current and projected mining impacts on grassland, wetlands and watersheds" 11: "the FEPA maps are most appropriately applied as a proactive planning tool at the water management area or national level" therefore ground truthing is required to determine the extent of the wetland (refer to 2.4.2 for discussion around FEPAs and the extent of wetlands).

Table 2: Key ecological infrastructure allocated to mining nationally and in Mpumalanga⁷⁴

KEY ECOLOGICAL INFRASTRUCTURE	NATIONAL		MPUMALANGA	
	Percentage area with allocated mining rights	Percentage area with allocated prospecting rights	Percentage area with allocated mining rights	Percentage area with allocated prospecting rights
Freshwater Ecosystem Priority Areas (FEPAs)	0.6	14.1	1.7	32.2
Strategic Water Source Areas (SWSAs)	0.2	6.6	0.3	26.4
Wetlands	1.2	12.5	5.2	41.8

Figure 3: Areas sensitive to Mining⁷⁵



⁷⁴ Centre of Environmental Rights 2016 *Zero Hour* 10.

⁷⁵ Holness *et al* "Limiting and mitigating the impact of coal mining on wetlands" 15.

In order to understand the impact of coal mining on wetlands it is necessary to look at the life-cycle of mining as well as the main factors influencing wetlands, which include water level, nutrient status and natural disturbances.⁷⁶ The life-cycle of a mining project generally includes various stages from the reconnaissance stage, the exploration or prospecting stage, the development and operational stage, to the final decommissioning and closure stage.⁷⁷ These stages align with the mining activities that require authorisation as per the MPRDA.⁷⁸ As mining advances through these stages more resources are required, until a decision to continue with mining is made.⁷⁹

Opencast coal mining results in the destruction of wetlands by the removal of vegetation together with the topsoil prior to the removal of the overburden and coal seams.⁸⁰ This is evident in Mpumalanga, where wetlands and coal seams are located in low-lying areas.⁸¹ The clearing of vegetation increases the transportation and deposition of sediment, especially through runoff during high rainfall.⁸² This is especially evident in opencast coal mining where free-draining rehabilitation designs are implemented, resulting in increased run-off to wetlands and lowering the infiltration of water to wetlands.⁸³ Coal fines⁸⁴ deposited in downstream environments such as wetlands can spontaneously combust, resulting in the burning of wetlands.⁸⁵ Mining can also affect the key hydrological processes supporting wetlands both directly and indirectly in various ways, including:⁸⁶

- (a) The interception of the perched groundwater that supports the wetlands by the opencast cut (specifically hillslope seepage wetlands common to Mpumalanga).

⁷⁶ Linstrom and Emery "Wetlands" 26.

⁷⁷ Department of Environmental Affairs *et al* 2013 *Mining and Biodiversity Guideline* 12.

⁷⁸ Department of Environmental Affairs *et al* 2013 *Mining and Biodiversity Guideline* 12.

⁷⁹ Department of Environmental Affairs *et al* 2013 *Mining and Biodiversity Guideline* 12.

⁸⁰ Stoop *A framework methodology for the cumulative impact assessment of wetlands* 58.

⁸¹ Coaltech 2007 *Upper Olifants river catchment wetland inventory, Mpumalanga and Gauteng province* 45.

⁸² Stoop *A framework methodology for the cumulative impact assessment of wetlands* 58.

⁸³ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 7.

⁸⁴ Coal fines are fine-graded coal, a byproduct of coal processing and mining.

⁸⁵ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 7.

⁸⁶ Stoop *A framework methodology for the cumulative impact assessment of wetlands* 58.

- (b) The possible interception of the sandstone aquifer of the weathered Karoo stratigraphy (dominant in Mpumalanga coalfields), that is supposed to underlie the floodplain alluvium.
- (c) In order for opencast and underground coal mining to continue it is necessary to de-water the area to allow safe access to the coal. The drawdown effect from the abstraction of water can impact on the groundwater flow to wetlands and can result in the drying up of wetlands.
- (d) Site clearance, infrastructure construction and opencast mining can cut off or redirect drainage lines, resulting in a change in the surface water flows to wetlands.

The interception of the groundwater flow to wetlands will result in the drying up of the wetland if the system is entirely dependent on groundwater to replenish or recharge it (as is common for hillslope seepage wetlands).⁸⁷ The interception of the groundwater flow is possible in both underground and opencast coal mining, while in the case of opencast mining the surface flow to wetlands will almost certainly be disrupted and completely cut off.⁸⁸

Coal mining not only impacts on water quantity but also on water quality. Water pollution will occur when contaminated or mine-affected (commonly referred to as "dirty") water enters the watercourses. Sources of pollution include:

- (a) Pollution from spilled or leaked hydrocarbons associated with the machinery used for mining. Spillage can occur both from the overflow of water containment facilities during high rainfall events and through human neglect.⁸⁹

⁸⁷ Stoop A framework methodology for the cumulative impact assessment of wetlands 58.

⁸⁸ Stoop A framework methodology for the cumulative impact assessment of wetlands 59.

⁸⁹ Stoop A framework methodology for the cumulative impact assessment of wetlands 59.

(b) Acid mine drainage (hereafter AMD), which can impact on the long-term functionality of wetlands, as well as rehabilitation structures within a watercourse, such as gabions.⁹⁰ AMD is "acidic water" formed by the⁹¹

oxidation of iron sulphide compounds, such as pyrite, in the mines by air, dissolved oxygen in water, and chemoautotrophs, which is bacteria that can use the iron sulphates as an energy source.

The sources of AMD include active mining areas where sufficient de-watering does not occur, leading to the decanting of acidic water from open pits or underground workings, abandoned mines where de-watering has ceased and acid water decants from rehabilitated areas, from mine residue stockpiles and deposits (coal mine waste), and from the overflow of pollution control facilities (pollution control dams) that contain the acidic water. The frequency of AMD is significantly increased by the disturbance of land, such as that caused by mining, where more minerals are exposed to water and air.⁹² Wetlands have the ability to ameliorate AMD to a certain degree through their purification function, but after several years of receiving AMD they display a reduced capability to retain pollutants.⁹³

The impacts from underground mining are less destructive than those from opencast mining⁹⁴ alluded to above. One significant impact from underground mining on wetlands is subsidence or sinkhole formation.⁹⁵ Subsidence can alter the flow regime of a wetland and result in the drying up thereof if the surface water flow is connected to the underground workings.⁹⁶ Subsidence can also lead to the establishment of depressions and artificial wetlands, the vegetation of which differs from natural systems.⁹⁷ Specific

⁹⁰ Coaltech 2007 *Upper Olifants river catchment wetland inventory, Mpumalanga and Gauteng province* 45.

⁹¹ Stoop A framework methodology for the cumulative impact assessment of wetlands 59. Also refer to Feris and Kotzé 2014 *PER* 2108, which states that AMD is "a natural chemical reaction which occurs when iron pyrite is exposed to air and water."

⁹² Feris and Kotzé 2014 *PER* 2108. Jennings, Neuman and Blicher 2008 http://www.pebblescience.org/pdfs/Final_Lit_Review_AMD.pdf state that "mining increased the exposed surface area of sulphur-bearing rocks allowing for excess acid generation beyond natural buffering capabilities found in the host rock and water resources."

⁹³ Linstrom and Emery "Wetlands" 23.

⁹⁴ Coaltech 2007 *Upper Olifants river catchment wetland inventory, Mpumalanga and Gauteng province* 45.

⁹⁵ Stoop A framework methodology for the cumulative impact assessment of wetlands 59.

⁹⁶ Stoop A framework methodology for the cumulative impact assessment of wetlands 59.

⁹⁷ Coaltech 2007 *Upper Olifants river catchment wetland inventory, Mpumalanga and Gauteng province* 45.

measures are therefore required for the management of mining impacts on wetlands and wetland rehabilitation structures, while opportunities exist for effective wetland rehabilitation in the mining landscape to contribute to integrated water resource management and resource quality objectives.

To relate the economic value of wetlands to that of the coal mining industry, the following comparison can be made: wetlands render water treatment for free while the mine water treatment capital expenditure costs in Mpumalanga were R600 million for 15 mega litres of water per day in 2012.⁹⁸ An argument presented is that a coal mine contributes to the income of the area in which it operates as well as the national income and tax base. This is, however, only temporary and after its closure latent and residual environmental impacts and pollution might present themselves, creating a liability that erases all the income generated during operation.⁹⁹ This is illustrated in Figure 4. The wetlands in the area in which the coal mine is situated do not directly contribute to income but indirectly provide services such as clean water, water treatment, storm water control and sedimentation management, to name only a few benefits, for a much longer time period than the operation of the coal mine in the area.¹⁰⁰ In many instances opencast coal mining results in the total loss of wetlands within and surrounding the mining area.¹⁰¹ Wetland creation and re-establishment in post-mining landscapes are aimed at mitigating the total loss of wetlands.¹⁰²

⁹⁸ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 39.

⁹⁹ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 39.

¹⁰⁰ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 39.

¹⁰¹ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 25.

¹⁰² Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 25.

Figure 4: Summary table of potential impacts from mining on water resources¹⁰³

Potential impacts	Exploration, drilling and road construction	Construction phase	Active mining	Post-mining
Altered hydrological regimes	Low impact	Medium impact	High impact	Medium impact
Altered geohydrological regimes	Low impact	Low impact	High impact	High impact
Increased acidity, heavy metals and salts	Low impact	Low impact	Medium impact	High impact
Increased turbidity	Low impact	Medium impact	High impact	Low impact
Risk of surrounding water contamination	Low impact	Low impact	Medium impact	High impact

2.4 The legal definition/s of wetlands

Due to the variability in their location, size, morphology, biodiversity, hydrology, topography, climate and soil conditions, and human influence it is difficult to define wetlands globally,¹⁰⁴ which may partly explain why "different entities define wetlands differently."¹⁰⁵ This complicates the legal protection of wetlands.¹⁰⁶ "Wetlands" are defined in the Ramsar Convention as:¹⁰⁷

Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt.

The Ramsar definition was not included in the NWA. The NWA definition is more practical and appropriate to local conditions.¹⁰⁸ The definition of a "wetland" as contained in the NWA is:¹⁰⁹

¹⁰³ Department of Environmental Affairs "Current and projected mining impacts on grassland, wetlands and watersheds" 8.

¹⁰⁴ Stoop *A framework methodology for the cumulative impact assessment of wetlands* 26.

¹⁰⁵ *State v Stefan Frylink and Mpofu Environmental Solutions cc* case number 14/1740/2010 of 6 April 2011 para 9 (hereafter the *Frylink case*).

¹⁰⁶ Breedt and Dippenaar date unknown http://gwd.org.za/sites/gwd.org.za/files/02%20N%20Breedt_A%20summary%20of%20Wetland%20Legislation.pdf.

¹⁰⁷ Kidd *Environmental Law* 135. This definition was adopted in the National Wetland Classification System and by the South African National Biodiversity Institute. Refer to Ewart-Smith *et al* 2006 in Breedt *Understanding subterranean hydrology in the delineation of wetlands* 3.

¹⁰⁸ Department of Water and Sanitation 2014 *Guideline to regulate activities/developments affecting wetlands* 25.

¹⁰⁹ Section 1 of the NWA.

Wetlands means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.¹¹⁰

The NWA definition was later included in listing notice 1 of the 2014 EIA regulations.¹¹¹ In terms of the definition, wetlands must have three of the following attributes: (a) the land must be supported predominately by hydrophytes¹¹² (at least periodically); (b) the substrate must be predominately undrained soils; and (c) the substrate must not be soil and must be water-logged at some time during the growing season of each year.¹¹³ The three-tiered approach is therefore based on hydrology, the physiochemical environment, and vegetation.¹¹⁴ What is also evident, and important to the coal mining environment, is that the RAMSAR definition explicitly includes artificial wetlands, whereas the NWA definition refers only to natural wetlands.¹¹⁵ Wetlands, despite what the term suggests, are not land that is always wet, as some types of wetlands such as pans can be dry for years.¹¹⁶ However, for a wetland to be regarded as a wetland the soil needs to be wet for a long enough time for it to be anaerobic (depleted of oxygen).¹¹⁷

As will become evident, wetlands may also be referred to as watercourses. Watercourses are vital for maintaining a sufficient supply of surface and groundwater, hydrological stability, flooding and erosion control and safeguarding the survival of many forms of fauna and flora, and the use thereof is therefore regulated.¹¹⁸ The term "wetland" is

¹¹⁰ Similar to the definition by Cowardin *et al* 1979 as per Stoop *A framework methodology for the cumulative impact assessment of wetlands* 26.

¹¹¹ Regulation 2 of Listing Notice 1 GN R983. In the *Frylink* case the defence argued that the NEMA does not contain a definition of wetlands.

¹¹² Hydrophytes are "plants that are physiologically bound to water where at least part of the generative cycle takes place in or on the water surface" in Stoop *A framework methodology for the cumulative impact assessment of wetlands* 32.

¹¹³ Cowardin *et al* 1979 in Stoop *A framework methodology for the cumulative impact assessment of wetlands* 26 – 27 and Mitsch and Gosselink 2000 and Breedts *Understanding subterranean hydrology in the delineation of wetlands* 2. Also refer to the *Frylink* case, which states that "A common thread in wetland definitions is that it is an area of land that is inundated for prolonged periods of time and that has due to prolonged inundation characteristics that show up typically in the form of vegetation adapted to wet conditions, a water table close to or at the land surface, and soils which show distinct signs of saturation, be it permanent or seasonal."

¹¹⁴ Breedts *Understanding subterranean hydrology in the delineation of wetlands* 2.

¹¹⁵ Coaltech 2007 *Upper Olifants river catchment wetland inventory, Mpumalanga and Gauteng province* 12.

¹¹⁶ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 6.

¹¹⁷ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 6.

¹¹⁸ Department of Water Affairs 2012 *Operational policy: regulate development and activities affecting watercourses* 1. The Department of Water Affairs is as from May 2014 called the DWS.

contained within the definition of "watercourse" as defined in the NWA¹¹⁹ and the NEMA¹²⁰ regulations, as follows:

- (a) a river or spring;
- (b) a natural channel in which water flows regularly or intermittently;
- (c) a wetland, lake or dam into which, or from which, water flows; and
- (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse,

and a reference to a watercourse includes, where relevant, its bed and banks.

The inclusion of the term "wetland" in the definition of "watercourse" is relevant as the licensing requirements of water uses as contained in section 21 of the NWA refer to the term watercourse.¹²¹ However, wetlands are not included in the definition of "watercourse" in the *Conservation of Agricultural Resources Act* 43 of 1893 (hereafter CARA). CARA defines a watercourse as "a natural flow path in which run-off water is concentrated and along which it is carried away."¹²² In order to achieve the objective of CARA the Minister may prescribe control measures to which a landowner needs to comply.¹²³ Such control measures may relate to "the utilisation and protection of *vleis*, marshes, water sponges, water courses and water sources."¹²⁴ *Vlei* is the Afrikaans word for wetland and is defined by the Oxford Dictionary as "low-lying, marshy ground, covered with water during the rainy season."¹²⁵ The term "water resource" on the other hand includes "a watercourse, surface water, estuary or aquifer." Therefore "water resource" also indirectly refers to wetlands, as the term "wetland" is included in the definition of a watercourse.¹²⁶ The Water Research Commission stated in 2015 that "wetlands have been prioritised for biodiversity conservation at national and provincial levels" and on national level under the NWA through their description as water resources.¹²⁷

¹¹⁹ Section 1 of the NWA.

¹²⁰ Regulation 2 of GN R983.

¹²¹ Section 21(c) of the NWA refers to "impeding and diverting the flow of water in a watercourse" and section 21(i) refers to "altering the bed, banks, course or characteristics of a watercourse." Refer to 3.4.2.2.

¹²² Section 1 of the CARA.

¹²³ Section 6(1) of CARA.

¹²⁴ Section 6(2) of CARA.

¹²⁵ Oxford Dictionaries 2016 <http://www.oxforddictionaries.com/definition/english/vlei>.

¹²⁶ Section 1 of the NWA.

¹²⁷ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 6.

Wetlands form part of the environment. The core concept of "environment" is not constitutionally defined¹²⁸ but the NEMA as the framework legislation for the protection of the environment includes an encompassing definition of the "environment":

The surroundings within which humans exists and that are made up of the land, water and atmosphere of the earth; micro-organisms, plant and animal life; any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

The definition of the environment implies that all aspects falling within the ambit of this definition underpin Integrated Environmental Management.¹²⁹ The NEMA, by referring to water and the ecosystems, may therefore also hold reference to the regulation wetlands.¹³⁰ For government departments¹³¹ that focus on specific environmental media, the definition of "environment" is challenging.¹³² This will become evident in the discussion on media-specific legislation to follow.¹³³ The *National Environmental Management: Biodiversity Act* 10 of 2004 (hereafter NEMBA) and the *National Environmental Protected Areas Act* 57 of 2003 (hereafter NEMPAA) regulate the protection of ecosystems, including those associated with wetlands, but do not define the term wetland. The *National Environmental Management: Integrated Coastal Management Act* 24 of 2008 (hereafter NEMICMA) relates to the management of coastal wetlands as defined in the Act, and thus does not have reference to the Mpumalanga province.¹³⁴ From the wide array of direct and indirect definitions of wetlands in various environmental laws, it can be concluded that the definitions may cause interpretation problems. The situation is further complicated by the inclusion of a set of different buffer zones for the developmental impacts on wetlands in the legal framework.¹³⁵

¹²⁸ Badenhorst *et al* 2007 *Laws of South Africa* para 34.

¹²⁹ Bosman *et al* 2004 *SA Public Law* 414 and Chapter 5 of NEMA.

¹³⁰ Bosman *et al* 2004 *SA Public Law* 414.

¹³¹ Such as the DWS and the Department of Environmental Affairs and Tourism.

¹³² Bosman *et al* 2004 *SA Public Law* 415.

¹³³ See sections 3.3.3; 3.4.2 and 3.5.2 of this dissertation.

¹³⁴ A "coastal wetland" means any wetland in a coastal region and includes "land adjacent to coastal waters that is regularly or periodically inundated by water, salt marshes, mangrove areas, inter-tidal sand and mud flats, marshes and minor coastal streams regardless of whether they are of a saline, freshwater or brackish nature and the water, the subsoil and substrata beneath, and bed banks of any such wetland." See section 1 of NEMICMA.

¹³⁵ Refer to 3.4.2.2 and 3.5.2.2.

2.4.1 *Watercourse and wetland extent and buffers*

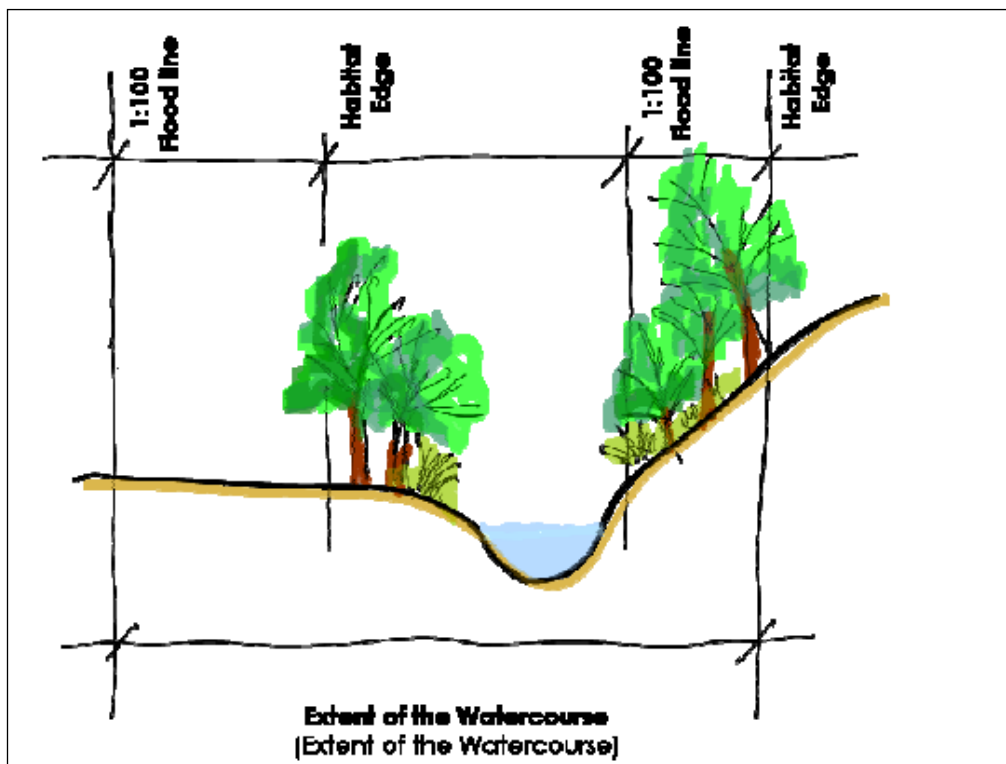
To further complicate the regulation of wetlands, the legislation also makes reference to the "extent" of the watercourse and also to the "buffer," of the terms defined in the preceding section further limiting the physical area in which certain activities such as mining may occur. It is important to understand these boundaries. It is important to keep in mind that the term "wetland" is included in the definition of a watercourse. The extent of a watercourse, as illustrated in Figure 5, is the edge or boundary of the watercourse, while the regulated area is the outer edge of the riparian habitat or the 1:100 year flood line¹³⁶ (whichever is the greatest).¹³⁷ The term "riparian habitat" refers to the "physical structure and associated vegetation of the areas associated with a watercourse" that distinguish these areas from adjacent land areas.¹³⁸

¹³⁶ The term "flood line" is not defined within the NWA or GN R704. Refer to section 3.4.2.2 and 3.5.2.2 for a discussion of the NWA and GN R704.

¹³⁷ Department of Water Affairs 2012 Operational policy: regulating development and activities affecting watercourses 3.

¹³⁸ Section 1 of the NWA. The definition of riparian habitat further extends to indicating areas which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.

Figure 5: Illustration of the regulated area or extent of a watercourse.¹³⁹



Although the environmental legislation refers to wetland boundaries, the extent of a watercourse or wetland is not defined. The first attempt at a legal definition of the "extent of a watercourse" was included in the proposed amendment of the General Authorisation for section 21(c) and (i) water uses.¹⁴⁰ The "extent of a watercourse" was defined as:¹⁴¹

- (a) a river, spring or natural channel in which water flows regularly or intermittently "within the outer edge of the 1 in 100 year flood line or riparian habitat measures from the middle of the watercourse from both banks" and for
- (b) wetlands and pans "within a 500 meter radius from the boundary (temporary zone) of any wetland or pan" (when the temporary zone is not present then the seasonal zone is delineated as the wetland boundary).

¹³⁹ Department of Water Affairs 2012 Operational policy: regulating development and activities affecting watercourses 3.

¹⁴⁰ Refer to 3.4.2.2 and 3.5.2.2 for discussion around the General Authorisation for water uses related to a watercourse i.e. section 21(c) and (i) water uses.

¹⁴¹ GN R1180 as authorised in terms of section 63 of the NWA to amend the general authorisations.

The amended General Authorisation for section 21(c) and (i) water uses was published on the 26 August 2016.¹⁴² The extent of a watercourse in GN R509 differs from that in GN R1180 and is:¹⁴³

- (a) The outer edge of the 1 in 100 year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam and
- (b) Wetlands and pans: the delineated boundary¹⁴⁴ (temporary zone) of any wetland or pan.

With regard to wetlands, the 500 meter radius buffer has been removed from the definition of a regulated area.

Watercourse buffers, as illustrated in Figure 6, are areas adjacent to watercourses, outside of the regulated area, that are interconnected with the watercourse through ecological, hydrological and physical attributes.¹⁴⁵ Watercourse buffers serve to mitigate developmental impacts and for this reason should be as wide as possible, but their size will depend on the characteristics of the watercourse, the land use surrounding the watercourse, and the reason for the protection thereof.¹⁴⁶ Wetland buffers are "areas that surround a wetland and reduce adverse impacts to wetland function and values from adjacent development."¹⁴⁷ Wetland buffers serve the following purposes: kerbing the effect of storm water runoff; preventing erosion; filtering suspended solids, nutrients and toxic substances; regulating water level variations; providing essential habitat for biodiversity, and reducing adverse anthropogenic impacts.¹⁴⁸

Appropriate watercourse buffers must be defined in a consistent manner to safeguard property and human welfare, health and safety (flood damage

¹⁴² GN R509.

¹⁴³ Regulation 2 of GN R509.

¹⁴⁴ "Delineation of a wetland and riparian habitat" is further defined in GN R509 as "delineation of wetlands and riparian habitat according to the methodology and contained in the Department of Water Affairs and Forestry, 2005 publication: A Practical Field Procedure for Delineation of Wetlands and Riparian Areas." Wetland delineation is discussed in section 2.3.4 of this dissertation.

¹⁴⁵ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 8.

¹⁴⁶ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 8.

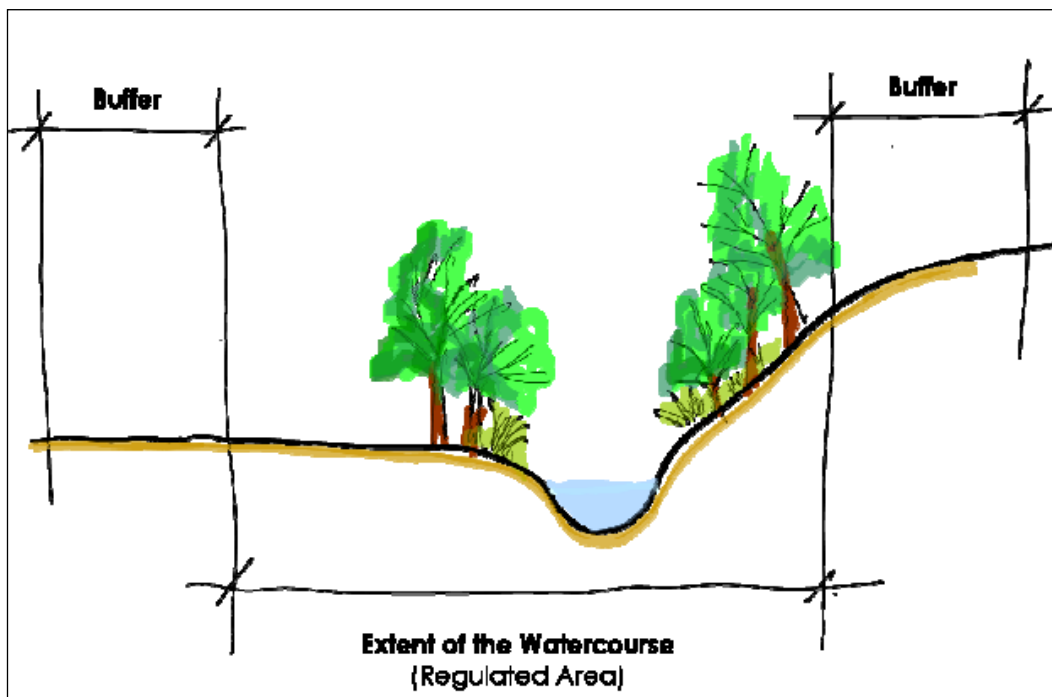
¹⁴⁷ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 40.

¹⁴⁸ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 40.

prevention); protect, restore and maintain biologically diverse aquatic ecosystems; and maintain and improve water quality and water quantity.¹⁴⁹

Scientific studies have indicated that efficient buffer widths range from 3m to 100m, depending on what is to be protected.¹⁵⁰ Factors that influence the effectiveness of buffer zones include slope, soil type and vegetation.¹⁵¹ However, a fixed buffer zone, such as that included in the South African legislative framework, is easier to govern.¹⁵²

Figure 6: Illustration of the extent of a watercourse and its related buffers.¹⁵³



The question arises whether the extent of a wetland as included in the General Authorisation and other legislation, such as the NWA and NEMA was scientifically determined or whether it has been arbitrarily imposed. The review of the legal framework in the next chapter and the application thereof to mining scenarios will attempt to answer the question.¹⁵⁴

¹⁴⁹ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 8.

¹⁵⁰ Hawes and Smith "Riparian Buffer Zones: Functions and Recommended Widths" 4 indicates "10 feet for bank stabilisation and stream shading to over 300 feet for wildlife habitat."

¹⁵¹ Hawes and Smith "Riparian Buffer Zones: Functions and Recommended Widths" 6-7.

¹⁵² Hawes and Smith "Riparian Buffer Zones: Functions and Recommended Widths" 7.

¹⁵³ Department of Water Affairs 2012 *Operational policy: regulating development and activities affecting watercourses* 9.

¹⁵⁴ See Chapter 3 for the legislative framework and chapter 4 for the practical application.

2.4.2 *Wetland types*

It is important to the regulation of wetlands to consider the different types of wetlands.

The following types occur in South Africa:¹⁵⁵

- (c) Channelled valley bottom wetlands;
- (d) Unchannelled valley bottom wetlands;
- (e) Floodplain wetlands;
- (f) Hillslope seep and valleyhead seep wetlands; and
- (g) Pans and depressions, including lakes.

These different types of wetlands require different management regimes due to the difference in their level of vulnerability to impacts and resilience to environmental change,¹⁵⁶ as well as the different functions provided by them.¹⁵⁷ The proposed national wetland classification system (hereafter NWCS) follows the hydromorphic (hereafter HGM) approach to classifying wetlands, using the hydrological and geomorphological characteristics.¹⁵⁸ The NWCS recognises eight HGM types for inland wetland systems¹⁵⁹ (such as in Mpumalanga) namely the (a) channel (river including banks), (b) channelled valley bottom wetland, (c) unchannelled valley bottom wetland, (d) floodplain wetland, (e) depression, (f) flat; (g) hillslope seep, and (h) valleyhead seep.¹⁶⁰ These terms have been used for the HGM types to ensure consistent wetland classification within South Africa and are also used in some of the wetland tools such as the wetland management

¹⁵⁵ Day and Malan 2010 *Tools and metrics for assessment of wetland environmental conditions and socio-economic importance* in Department of Water and Sanitation 2014 *Guideline to regulate activities/developments affecting wetlands* 26. Also refer to Breedts *Understanding subterranean hydrology in the delineation of wetlands* 3.

¹⁵⁶ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 27.

¹⁵⁷ Stoop *A framework methodology for the cumulative impact assessment of wetlands* 26.

¹⁵⁸ SANBI 2009 *Further development of a proposed national wetland classification system for South Africa* 13. According to Ewart-Smith *et al* 2006 in Breedts *Understanding subterranean hydrology in the delineation of wetlands* 5 "landform and hydrology are two fundamental features that determine the existence of all wetlands."

¹⁵⁹ Inland systems are "ecosystems that have no existing connection to the ocean but which are inundated or saturated with water, either permanently or periodically." As in SANBI 2009 *Further development of a proposed national wetland classification system for South Africa* 35.

¹⁶⁰ SANBI 2009 *Further development of a proposed national wetland classification system for South Africa* 35.

series; WET-Health¹⁶¹ and WET-EcoServices.¹⁶² However, only a subset of the HGM units as proposed in the NWCS is applicable to the definition of wetlands as contained in the NWA.¹⁶³ What is important is that the NWA makes a clear distinction between channels (or rivers) (one of the HGM types) and wetlands, both of which are included in the definition of "watercourses", but "channel" is not included in the definition of a "wetland."¹⁶⁴ All the remaining HGM types are included in the definition of a wetland within the NWA.¹⁶⁵

As they are a manifestation of the hydrological regime of a catchment, wetlands cannot be managed in isolation from other water resources.¹⁶⁶ It is important that development takes into account the wider connectivity of wetlands to other wetlands and watercourses, as wetland connectivity is essential in sustaining geohydrological and hydrological flow, which supports biodiversity.¹⁶⁷ Wetland connectivity is essential to the existence and functioning of wetlands and hydrologically connected wetlands are therefore regarded as wetland clusters in the National Freshwater Ecosystem Priority Areas (hereafter NFEPA) map sets.¹⁶⁸ Wetland connectivity is of importance as this impacts on one of the watercourse characteristics, namely the flow regime.¹⁶⁹ The NFEPA map provides strategic spatial priorities for protecting South Africa's freshwater ecosystems and

¹⁶¹ WET-health is a tool to assess the health and integrity of a wetland and has application for the assessment of impacts in Environmental Impact Assessment (hereafter EIA) and to determine the Present Ecological State (hereafter PES) of a wetland. Refer to Macfarlane *et al* 2008 "WET-health a technique for rapidly assessing wetland health" 6.

¹⁶² WET-EcoServices is a tool used to determine the services that wetlands provide as referred to in Macfarlane *et al* 2008 "WET-health a technique for rapidly assessing wetland health" 6. SANBI 2009 *Further development of a proposed national wetland classification system for South Africa* 41.

¹⁶³ SANBI 2009 *Further development of a proposed national wetland classification system for South Africa* 46. Refer to section 1 of NWA for definition.

¹⁶⁴ SANBI 2009 *Further development of a proposed national wetland classification system for South Africa* 46.

¹⁶⁵ SANBI 2009 *Further development of a proposed national wetland classification system for South Africa* 46.

¹⁶⁶ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 28.

¹⁶⁷ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 33.

¹⁶⁸ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 33.

¹⁶⁹ NFEPA was a three-year project between the South African National Biodiversity Institute (hereafter SANBI), the Council for Scientific and Industrial Research (hereafter CSIR), Water Research Commission (hereafter WRC), Department of Environmental Affairs (hereafter DEA), Department of Water Affairs (now the DWS), Worldwide Fund for Nature (hereafter WWF), South African Institute of Aquatic Biodiversity (hereafter SAIAB) and the South African National Parks (hereafter SANParks). Water Research Commission 2011 *Implementation Manual for Freshwater Ecosystem Priority Areas* 1.

assisting the sustainable use of water resources.¹⁷⁰ Although the NFEPA map is not legally enforceable it is used by the regulating authority as the "baseline" for the determination of the extent of a wetland and its buffer. However, the buffer of a wetland is not yet legally defined; a reference to the buffer has only recently (2016) been included in the regulations for General Authorisation of section 21(c) and (i) water uses.¹⁷¹ The 500 meter buffer, however, has been applied to the licensing of impacts to wetlands under section 21(c) and (i) of the NWA for some time already. And while section 21(c) and (i) specifically refers to the "wetland from which water flows" the 500 meter buffer has been applied not only in respect of the flow regime of a wetland but also to the physical and ecological attributes of a wetland, thereby increasing the regulated area.

2.4.3 *Wetland delineation*

According to GN R509, wetlands should be delineated according to the methodology contained in the DWS 2005 publication "A practical Field Procedure for Delineation of Wetlands and Riparian Areas."¹⁷² Due to the fact that water is only periodically present in wetlands (refer to the definition of wetland), key indicators such as vegetation and soil are required to identify and delineate the extent thereof.¹⁷³ The presence and absence of water (the hydrology) in wetlands control the abiotic (soil colour, soil texture and water quality) and the biotic (*fauna* and *flora*) characteristics of a wetland.¹⁷⁴ What is important is that water can be introduced to a wetland through direct rainfall, runoff, channel flow and groundwater discharge.¹⁷⁵ Although the delineation of wetlands should take into account hydrology as well as other indicators, a disturbance in the hydrological characteristics through mining and related activities may have a significant impact on the biological characteristics of the wetland.¹⁷⁶ Historic wetland boundaries, although degraded and transformed, are important to use as criteria in the delineation of wetlands,

¹⁷⁰ Water Research Commission 2011 *Implementation Manual for Freshwater Ecosystem Priority Areas 1*.

¹⁷¹ GN R509.

¹⁷² Prior to GN R509 wetland delineation was conducted according to the this filed procedure, but only in GN R509 direct reference to the procedure is made in legislation.

¹⁷³ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape 6*.

¹⁷⁴ Stoop *A framework methodology for the cumulative impact assessment of wetlands 31*.

¹⁷⁵ Ingram, 1983 and Williams, 1990 in Stoop *A framework methodology for the cumulative impact assessment of wetlands 31*.

¹⁷⁶ Etherington 1983 in Stoop *A framework methodology for the cumulative impact assessment of wetlands 32*.

as degraded wetlands are still important in terms of their interaction with water resources in the surrounding catchment.¹⁷⁷

2.5 Conclusion

This chapter has touched on the extent and impact of wetlands globally and in South Africa with specific reference to Mpumalanga, and has motivated the need for the protection of these ecosystems. What is evident here is that the term "wetland" means different things to different people.¹⁷⁸ The chapter has also reviewed the South African legal definition of the term. As summarised in Table 3, it can be concluded that South African legislation has a wide array of direct and indirect definitions of wetlands. This, combined with the different buffer zones in the legislation, can lead to difficulty in the application of the legislation.

Chapter 3 deals with the relevant legislation.

Table 3: Summary of definitions of wetlands

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	DEFINITION
Pre-1998	<i>Ramsar Convention on Wetlands of International Importance</i> (1971)	Wetland is defined as "Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt." Includes artificial wetlands
	<i>Conservation of Agricultural Resources Act</i> 43 of 1893	Contains no definition of wetland. CARA does refer to the term "vlei" under section 6(2). Watercourses are defined as "a natural flow path in which run-off water is concentrated and along which it is carried away."
Post-1998	<i>National Water Act</i> 36 of 1998	Water resource is defined as a watercourse, surface water, estuary or aquifer.

¹⁷⁷ Department of Water and Sanitation 2014 *Guideline to regulate activities/developments affecting wetlands* 28.

¹⁷⁸ Sandham *et al* 2008 *Water SA* 155 state that "There are different definitions of wetlands depending on the user or interest groups."

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	DEFINITION
until 2014		<p>Watercourse is defined as:</p> <ul style="list-style-type: none"> (a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, <p>and a reference to a watercourse includes, where relevant, its bed and banks.</p> <hr/> <p>Wetlands means "land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil."</p> <p>Excludes artificial wetlands</p>
	<i>National Environmental Management Act 107 of 1998</i>	<p>Environment is defined as "the surroundings within which humans exists and that are made up of the land, water and atmosphere of the earth; micro-organisms, plant and animal life; any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being."</p> <hr/> <p>Watercourse is defined as:</p> <ul style="list-style-type: none"> (a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, <p>and a reference to a watercourse includes, where relevant, its bed and banks.</p>

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	DEFINITION
	<i>National Environmental Management: Biodiversity Act: 10 of 2004</i>	Regulates the protection of ecosystems including those associated with wetlands, but does not define the term "wetland."
	<i>National Environmental: Protected Areas Act 57 of 2003</i>	
	<i>National Environmental Management: Integrated Coastal Management Act 24 of 2008</i>	Relates to the management of coastal wetlands as defined in the Act and thus does not have reference to the Mpumalanga province.
	<i>Mineral and Petroleum Resources Development Act 28 of 2002</i>	Does not define the term "wetland."
Post-2014	<i>National Environmental Management Act 107 of 1998</i>	In the <i>Frylink</i> case the defense argued that the NEMA does not contain a definition of wetland. This definition of wetland is subsequently included in listing notice 1 of the 2014 EIA regulations.
	<i>National Environmental Management Act 107 of 1998: Regulation 2 of Listing Notice 1 GN R983 in GG 38282 of 4 December 2014</i>	Wetland is defined as in the <i>National Water Act 36 of 1998</i> . Watercourse is defined as in the <i>National Water Act 36 of 1998</i> .
	GN R1180 Draft General Authorisation for Section 21(c) and (i) water uses.	"Extent of a watercourse" is defined as "(a) a river, spring or natural channel in which water flows regularly or intermittently "within the outer edge of the 1 in 100 year flood line or riparian habitat measures from the middle of the watercourse from both banks" and for (b) wetlands and pans "within a 500 meter radius from the boundary (temporary zone) of any wetland or pan" (when the temporary zone is not present then the seasonal zone is delineated as the wetland boundary) and for (c) lakes and dams "purchase line plus a buffer of 50m."

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	DEFINITION
	GN R509 General Authorisation for Section 21(c) and (i) water uses.	<p>"Extent of a watercourse" is defined as</p> <p>(a) The outer edge of the 1 in 100 year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam and</p> <p>(b) Wetlands and pans: the delineated boundary (temporary zone) of any wetland or pan.</p>
	DWS 2014 <i>Guideline to regulate activities/developments affecting wetlands</i>	<p>"Wetland buffers" are defined as:</p> <p>"areas that surround a wetland and reduce adverse impacts to wetland function and values from adjacent development."</p>

CHAPTER 3 LEGISLATIVE FRAMEWORK GOVERNING WETLANDS

3.1 Introduction

As indicated in the preceding chapter "mining activities by their very nature impact upon natural resources including water resources."¹⁷⁹ Legislation may govern a specific sector such as mining (sector-specific legislation) or a specific medium such as water, air or land (media-specific legislation).¹⁸⁰ Environmental legislation in South Africa is developed as media-specific legislation, with specific environmental acts for the protection of specific environmental media.¹⁸¹ Similarly, numerous policies have been developed that have influenced sector-specific legislation such as that of the mining industry.¹⁸² The challenge is that the development of the sector-specific and media-specific legislation in most instances was not coordinated.¹⁸³

Historically the government was in support of the growth of the mining sector, as it contributed enormously to the economy of South Africa.¹⁸⁴ Safeguards were built into the legislation to ensure that mining would not be impacted by conflicting interests.¹⁸⁵ The environmental regulation of the mining industry has been a long-running battle between the Department of Environmental Affairs (hereafter DEA) and the Department of Mineral Resources (hereafter DMR).¹⁸⁶ The DMR has the mandate to act under the MPRDA, NEMA and NEMWA, while the DEA has the mandate to act under the NEMA and specific

¹⁷⁹ Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 144. See section 2.3.

¹⁸⁰ Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 139.

¹⁸¹ Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 139.

¹⁸² Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 139. Policies have been drafted in the form of White Papers such as the *White Paper on Mineral and Mining Policy of 1998* which formed the base for the MPRDA.

¹⁸³ Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 139.

¹⁸⁴ Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 139.

¹⁸⁵ Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 139. Also see Mabiletsa and Du Plessis 2001 *SAJELP* 187 and *Maccsand (Pty) Ltd v City of Cape Town* 2012 (4) SA 181 (CC) (hereafter the *Maccsand* case), which dealt with the relationship between different pieces of legislation requiring various authorisations (see Olivier *et al* 2012 *PER* 538). The series of *Maccsand* cases commenced with an application to the High Court for an interdict to stop *Maccsand* (Pty) Ltd from mining until such time as authorisation in terms of the (*Western Cape*) *Land Use Planning Ordinance* 15 of 1985 had been granted (see Olivier *et al* 2012 *PER* 538). Also see Murombo 2013 *Law Environment and Development Journal* 39, which states that the Constitutional Court ruled that "mining companies cannot just commence with mining in a municipal area without complying with the applicable municipal planning and zoning regulations."

¹⁸⁶ Naidoo and Truter 2014 <http://www.werksmans.com/legal-briefs-view/struggle-achieve-cooperative-governance-continues/> and Du Plessis 2015 *PER* 1446.

environmental acts.¹⁸⁷ The DMR has historically adopted the view that obtaining a mining right or permit trumped the need for any other environmental authorisation required by any other law.¹⁸⁸ This is evident in a case where the DMR approved mining operations six km from a World Heritage Site¹⁸⁹ in Limpopo.¹⁹⁰ The Minister of Mineral Resources addressed the Chamber of Mines and stated that "there is increasing tension globally between growth and socio-economic development on the one hand and the environment on the other"¹⁹¹ and South Africa struggles to maintain this balance. Recent years have seen a change, in that the mining sector now needs to compete on an equal legal footing with other demands such as those pertaining to the use of water or the protection of natural resources.¹⁹² One such demand specific to the Mpumalanga coal mining industry is the protection of wetlands, as indicated in Chapter 2. The challenge is to maintain and restore South Africa's wetlands to ensure that the ecosystem services they provide keep up with the growing demands on the resource base.¹⁹³ Response to this demand is being expressed through a range of media-specific legislative frameworks for the environmental and water sectors.¹⁹⁴

This chapter now turns to a discussion of the *Constitution of the Republic of South Africa, 1996* (hereafter the Constitution) and the legal framework regulating the protection of wetlands in the Mpumalanga coal mining industry, which discussion deals with three distinct timeframes namely a) pre-1998,¹⁹⁵ b) between 1998 and 2014,¹⁹⁶ and c) post-2014. No wetland-specific legislation exists, but the statutes that provide generally for the protection and conservation of wetlands will be discussed.¹⁹⁷

¹⁸⁷ Du Plessis 2015 *PER* 1445-1446.

¹⁸⁸ Naidoo and Truter 2014 <http://www.werksmans.com/legal-briefs-view/struggle-achieve-cooperative-governance-continues/>.

¹⁸⁹ Mapungubwe Cultural Landscape and National Park.

¹⁹⁰ Du Plessis and Du Plessis "Striking the sustainability balance in South Africa" 419.

¹⁹¹ Address by the Minister of Mineral Resources, Ms Susan Shabangu, MP, at the Annual General Meeting of the Chamber of Mines, delivered on her behalf by Acting Deputy Director-General David Msiza, Johannesburg, South Africa in Du Plessis and Du Plessis "Striking the sustainability balance in South Africa" 420.

¹⁹² Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 140.

¹⁹³ Department of Environmental Affairs 2013 *State of wetlands in South Africa* 4.

¹⁹⁴ Department of Environmental Affairs 2013 *State of wetlands in South Africa* 4.

¹⁹⁵ 1998 saw the promulgation of the NWA and the NEMA.

¹⁹⁶ As of December 2014 the "One Environmental System" has been implemented.

¹⁹⁷ Kidd *Environmental Law* 136. Focus will be placed on the primary sources for the regulations of mining through the MPRDA, the environment through the NEMA and water through the NWA.

During the years spanning the above timeframes, the restructuring of national departments has resulted various name changes. The current names will be used in this dissertation, as follows. The DMR refers to the Department of Mining, Environmental Planning and Energy prior to 1980, the Department of Minerals and Energy prior to 1997 and the Department of Mineral Resources from 10 May 2009 onwards.¹⁹⁸ As for the Department of Environmental Affairs, in 1973 the Department of Planning became the Department of Planning and Environmental Affairs and it was reorganised in 1979 to become the Department of Environmental Planning and Energy.¹⁹⁹ The Department of Water Affairs, Forestry and Environmental Conservation was formed in 1980 with a subsequent name change to the Department of Environmental Affairs in 1981.²⁰⁰ The Department of Environmental Affairs and Tourism governed environmental matters between 1994 and 2009. In May 2009 the Department was divided into two departments namely the Department of Water and Environmental Affairs (in fact a Department of Environmental Affairs and a Department of Water Affairs) and the Department of Tourism. In May 2014 the ministries were again restructured into the now Ministry of Water Affairs and Sanitation and the Ministry of Environmental Affairs, with departments under each.²⁰¹ Prior to 2014 the DWS was known as the Department of Water Affairs, the Department of Water and Environmental Affairs, and prior to that the Department of Water Affairs and Forestry.²⁰²

3.2 Constitution of the Republic of South Africa, 1996

The Constitution contains the Bill of Rights,²⁰³ which is the "cornerstone of the democracy of South Africa."²⁰⁴ The environmental right is contained in section 24 of the Constitution and reads:²⁰⁵

Everyone has the right –

¹⁹⁸ Department of Mineral Resources 2011 <http://www.dmr.gov.za/about-us.html>.

¹⁹⁹ Schwella and Muller "Environmental administration" 73.

²⁰⁰ Schwella and Muller "Environmental administration" 73-74.

²⁰¹ Glazewski *Environmental Law in South Africa* 6.6.

²⁰² Breedt *Understanding subterranean hydrology in the delineation of wetlands* 16.

²⁰³ Chapter 2 of the Constitution.

²⁰⁴ Section 7(1) of the Constitution.

²⁰⁵ For the interpretation of section 24 of the Constitution see Kidd *Environmental Law* 21-26, and Kotzé 2007 *RECIEL* and Feris 2008 *SAHJR*. It is not the purpose of this dissertation to provide an analysis of the Constitution, but to indicate that it forms the cornerstone for all environmental regulation and also for the governance of wetlands in South Africa.

- a) To an environment that is not harmful to their health or well-being; and
- b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
 - i. Prevent pollution and ecological degradation;
 - ii. Promote conservation; and
 - iii. Secure ecologically sustainable development and use of the natural resources while promoting justifiable economic and social development.

Section 36 of the Constitution indicates that the rights as contained in the Bill of Rights may be limited in terms of law of general application.²⁰⁶ The Constitution recognises three spheres of government: national, provincial and local. Section 24 of the Constitution places a duty on all spheres of government to protect the environment through reasonable measures including legislation. Section 24(b) is pertinent to this discussion on the protection of wetlands. Government must protect the environment through reasonable legislative measures to prevent pollution and ecological degradation.²⁰⁷ Mining results in the degradation and pollution of wetlands and therefore there is an obligation on government to act when these systems are impacted. This can be done either through legislation such as will be discussed in the following sections or through other measures. Such other measures for the protection of wetlands may include the publication of guidelines such as those published by the DWS and the South African National Biodiversity Institute (hereafter SANBI).²⁰⁸ The functional competencies for the three spheres are set out in Schedule 4 and 5 of the Constitution.

While the term "environment"²⁰⁹ is not defined in the Constitution,²¹⁰ the protection of the environment is listed in Schedule 4 of the Constitution (though water is not listed).²¹¹ A schedule 4 matter is a functional area of concurrent national and provincial competence. The national legislative authority confers on the National Assembly and the National Council of Provinces the power to pass legislation with regard to Schedule 4 matters.²¹²

²⁰⁶ The limitation needs to be "reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom, taking into account all relevant factors" as listed in section 36.

²⁰⁷ Section 24(b) of the Constitution.

²⁰⁸ Refer to the bibliography for all the guidelines referenced in chapter 3 and 4 of this dissertation.

²⁰⁹ Refer to section 2.4 of this dissertation for a discussion of the definition of the term "environment."

²¹⁰ Bosman *et al* 2004 *SA Public Law* 418.

²¹¹ Bosman *et al* 2004 *SA Public Law* 418.

²¹² Section 44(1)(a) and (b) of the Constitution.

Water is regarded as a national matter as water is a component of the definition of "environment" as contained in the NEMA²¹³ which now also falls within the jurisdiction of the Minister of Mineral Resources.²¹⁴ However, an interpretation of these functions may also create turf wars between the different departments.²¹⁵ The protection of wetlands occurs predominately through national legislation implemented by the national and provincial government departments, as will be discussed in this chapter.

Mineral regulation is not listed in either Schedule 4 or Schedule 5, and the Constitution does not assign to any of the spheres of government the mandate of managing the exploitation of minerals.²¹⁶ It may be inferred from this that the regulation of minerals falls within the national sphere.²¹⁷ Rapoo²¹⁸ states that "any function not expressly allocated to any sphere of government by the Constitution becomes a central government responsibility by default." It is a "residual competence that vests in the national government."²¹⁹ This was confirmed by the court in the judgement in *Maccsand v City of Cape Town*,²²⁰ where Cameron AJ stated the following:

Applying this approach, it is clear that the regulation of mining is an exclusive national legislative competence and that the administration of the MPRDA is vested in the national executive. Mining is not mentioned in either Schedule 4 or 5 and so, by "converse inference" it is a legislative competence that falls within the scope of the term "any matter" as contemplated by s 44(1)(a)(ii) of the Constitution; and the MPRDA itself vests its administration in the Minister of Mineral Resources and her officials within the national executive sphere of government.

3.3 Pre-1998

Since the introduction of the Constitution in 1994 a plethora of new environmental legislation has been promulgated.²²¹ For example, the MPRDA has been hailed as a

²¹³ Refer to section 2.3.

²¹⁴ Refer to section 3.5.

²¹⁵ Kotzé 2006 *PER* 79. Also refer to Kotzé "Environmental Governance" 110 for the fragmentation in South African environmental governance. According to Glasweski "*Environmental Law in South Africa*" environmental governance includes three "distinct but inter-related areas of general concern" namely; land use planning and development; resource protection and consumption (such as mineral and water resources) and waste management and pollution control.

²¹⁶ Green The regulation of sand mining in South Africa 21.

²¹⁷ Green The regulation of sand mining in South Africa 22.

²¹⁸ Green The regulation of sand mining in South Africa 22.

²¹⁹ Rapoo 'Reflections on provincial government in South Africa since 1994' 91.

²²⁰ *Maccsand* case para 14, in Green The regulation of sand mining in South Africa 24.

²²¹ Kidd *Environmental Law* 14.

"revolutionary piece of law promoting sustainable mining."²²² The two most significant pieces of environmental legislation, the NEMA and the NWA, were introduced in 1998. This section will discuss the regulation of the protection of wetlands prior to this introduction, also with reference to international law.

3.3.1 *International law*

The first regulation of wetlands is to be found in the Ramsar Convention, which was signed in Ramsar, in Iran, in 1971. The Ramsar Convention provides a framework for national action and international co-operation for the protection of wetlands,²²³ as stated in the mission:²²⁴

the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world.

International agreements do not become part of the law of South Africa without legislative transformation,²²⁵ which is done in one of three ways:²²⁶

- (a) The entire treaty can be included in an Act of parliament,
- (b) The entire treaty can be included as a schedule to the Act; and
- (c) A statute may give the executive the power to bring a treaty into effect in law through proclamation in the *Government Gazette*.

South Africa is a signatory to the Ramsar Convention as of 21 December 1975²²⁷ but the treaty has not yet been directly incorporated into South African legislation.²²⁸ As a signatory of the Ramsar Convention, South Africa is required to designate at least one

²²² Murombo 2013 *Law Environment and Development Journal* 39.

²²³ Stoop *A framework methodology for the cumulative impact assessment of wetlands* 49.

²²⁴ Ramsar 2014 <http://www.ramsar.org/about/the-ramsar-convention-and-its-mission>.

²²⁵ Section 231(4) of the Constitution states that "Any international agreement becomes law in the Republic when it is enacted into law by national legislation, but a self-executing provision of an agreement that has been approved by Parliament is law in the Republic unless it is inconsistent with the Constitution of an Act of Parliament."

²²⁶ Kidd *Environmental Law* 48.

²²⁷ Ramsar 2014 <http://www.ramsar.org/wetlandsouth-africa>.

²²⁸ Kidd *Environmental Law* 49. Refer to the discussion in section 3.3.3.2 of this dissertation with respect to the *Wetland Conservation Bill* that was aimed at incorporating the Ramsar Convention into the South African legislation.

wetland of international importance.²²⁹ To date²³⁰ South Africa has 22 Ramsar wetlands (see Table 1). South Africa has been party to the Ramsar Convention since 1975, but the Convention is not provided for in South African legislation, raising the question as to what measures are in place to protect South African wetlands.

3.3.2 Sector-specific legislation

Prior to May 2004,²³¹ the *Minerals Act* governed mining operations.²³² The *Mines Works Act* 12 of 1911 and the *Mines and Works Act* 27 of 1956, in which safety was the dominant theme, preceded the *Minerals Act*.²³³ The *Mines and Works Act* 27 of 1956 involved limited environmental protection measures, viz. the infilling of subsided areas, prohibiting water release containing "injurious matter," and the soil cladding of mine residue stockpiles and deposits to prevent pollution.²³⁴ The *Minerals Act* regulated prospecting and mining for minerals and the rehabilitation of the surface of the land during such operations, and required the submission of an environmental management programme to the then Department of Minerals and Energy.²³⁵ The provisions for the rehabilitation of the surface as required by the *Minerals Act*²³⁶ were supplemented by regulations in terms of the *Mines and Works Act* 27 of 1956 that remained intact until being replaced by more stringent regulations in 1993.²³⁷ Chapter 5 of the *Minerals Act* included extensive provisions for surface rehabilitation and the approval of a rehabilitation plan (an environmental management plan) by the Regional Manager before any prospecting and mining could commence. A right could be cancelled or suspended if the holder of the right did not comply with the provisions related to surface rehabilitation.²³⁸ The Minister could also order rectification steps to be taken if a failure of compliance with surface rehabilitation occurred, and a right would be issued only if it could be proved that the

²²⁹ Kidd *Environmental Law* 136.

²³⁰ 2 February 2016.

²³¹ The commencement of the MPRDA. GN R1273 in GN 23922 dated 10 October 2002.

²³² Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 144.

²³³ Ayres "Legal requirements – the Environmental Management Programme (EMP) – A critique" 3.

²³⁴ Section 12 of the *Mines and Works Act* 27 of 1956 and McCourt 1999 *Mine, Water and Environment* 744.

²³⁵ Section 38 and 39 of the *Minerals Act* 50 of 1991 (hereafter *Minerals Act*) and Lloyd "Coal and the environment" 4. Also refer to section 3.4.1.

²³⁶ S9(3) of the *Minerals Act*.

²³⁷ GN R992 in GG 2741 dated 26 June 1970 issued under section 12 of the *Mines and Works Act* 27 of 1956; Mostert *Mineral Law* 65.

²³⁸ Sections 11 and 14 of the *Minerals Act*.

applicant could provide sufficiently for the rehabilitation required.²³⁹ The *Minerals Act* and its regulations did not make provision for the protection of wetlands specifically. The *White Paper on Mining and Minerals Policy* was published in October 1998.²⁴⁰ Chapter 4 of the policy had to give effect to section 24 of the Constitution within the mining context.²⁴¹ The policy focused on the need to uphold rehabilitation measures post closure and recognised that it is critical to utilize the country's mineral resources within the framework of responsible environmental management.²⁴²

In as early as 1992 the DMR²⁴³ published the *Aide-Memoire* "for the preparation of environmental management programme reports for prospecting and mining."²⁴⁴ The *Aide-Memoire* focused strongly on the format and content of an environmental management programme and did not provide technical guidance.²⁴⁵ The environmental management programme document aimed to meet the environmental requirements under the *Minerals Act* and its regulations; provided for a single document to all authorities concerned with the regulation of environmental impacts in the mining sector; provided reasons for the need and benefits of the mining project; described the baseline environment of the proposed mining site; described the method of prospecting and mining and associated activities; described the environmental impacts from such activities and the management criteria to obtain a stated and agreed upon land capability and closure objective.²⁴⁶ The *Aide-Memoire* specified that the pre-mining land capability²⁴⁷ should be classified and mapped into four classes, namely arable land, grazing land, wetland and wilderness land.²⁴⁸ The requirements of the *Aide-Memoire* under surface water included the presence

²³⁹ Mostert *Mineral Law* 65 and McCourt 1999 *Mine, Water and Environment* 744. Section 53A of the *Minerals Act*.

²⁴⁰ McCourt 1999 *Mine, Water and Environment* 744. See also White Paper on Mining and Minerals Policy 1998 as available on South African Government 2015 http://www.gov.za/sites/www.gov.za/files/white_paper_mining_minerals_policy_2.pdf.

²⁴¹ McCourt 1999 *Mine, Water and Environment* 744.

²⁴² McCourt 1999 *Mine, Water and Environment* 744.

²⁴³ The then Department of Mineral and Energy Affairs.

²⁴⁴ The South African mining industry has developed its own environmental guidelines in the form of an "Aide-Memoire" that includes all environmental aspects and mining phases. Department of Mineral and Energy Affairs 1992 *Aide-Mémoire for the Preparation of Environmental Management Programme Reports for Prospecting and Mining* see also in Glazewski and Posnik 2000 *The Journal of The South African Institute of Mining and Metallurgy* 211. Refer to section 3.3.2 of this dissertation.

²⁴⁵ Ayres "Legal requirements – the Environmental Management Programme (EMP) – A critique" 7.

²⁴⁶ Department of Mineral and Energy Affairs 1992 *Aide-Memoire for the preparation of environmental management programme reports for prospecting and mining* 1-2.

²⁴⁷ "The land to be disturbed."

²⁴⁸ Department of Mineral and Energy Affairs 1992 *Aide-Memoire for the preparation of environmental management programme reports for prospecting and mining* 12.

of wetlands on the property, the extent, the significance and biological diversity thereof.²⁴⁹ A further requirement was the description of sensitive landscapes under statutory protection that occurred on site.²⁵⁰ The *Aide-Memoire* stated that²⁵¹

A permit in terms of section 20 of the *Water Act* 54 of 1956, to alter the course of a public stream may be required before the environmental management programme is approved.

3.3.3 Media-specific legislation

Media-specific legislation that will be discussed includes environmental and water legislation.

3.3.3.1 Environmental legislation

The CARA was the first legislation that specifically made provision for the protection of wetlands, although it was aimed mainly at agricultural activities.²⁵² Although not specific to the mining industry, agricultural practices undertaken on rehabilitated mine land are regulated under CARA. CARA specifies a 10 meter buffer zone to protect the riparian zone and stream banks from erosion, head cuts and overgrazing.²⁵³ Regulation 7 of GN R1048 under CARA deals with the utilisation and protection of wetlands and water courses.²⁵⁴ Regulation 7 adds an additional buffer zone of 10 meters from the outside of a flood area²⁵⁵ of a watercourse in which no vegetation may be utilised that can impact or damage natural agricultural resources.²⁵⁶ The regulations further require that grazing is allowed within 10 meters of a wetland if such grazing does not result in degradation.²⁵⁷

²⁴⁹ Department of Mineral and Energy Affairs 1992 *Aide-Memoire for the preparation of environmental management programme reports for prospecting and mining* 14.

²⁵⁰ Department of Mineral and Energy Affairs 1992 *Aide-Memoire for the preparation of environmental management programme reports for prospecting and mining* 16.

²⁵¹ Department of Mineral and Energy Affairs 1992 *Aide-Memoire for the preparation of environmental management programme reports for prospecting and mining* 22. The *Water Act* 54 of 1956 will be discussed in section 3.3.3.2 of this dissertation.

²⁵² Section 6 of CARA for control measures in relation to wetlands or "vleis." Also see section 2.4 and Table 3.

²⁵³ Regulation 7 of GN R1048 in GG 9328 dated 30 March 2001 (hereafter GN R1048) issued under section 29 of the *Conservation of Agricultural Resources Act* 43 of 1983 and Department of Water and Sanitation 2014 *Guideline to regulate activities/developments affecting wetlands* 24.

²⁵⁴ GN R1048.

²⁵⁵ "Flood area" is defined as follows: "in relation to a water course, [flood area] means the area which in the opinion of the executive officer is flooded by the flood water of that water course during a 1 in 10 years flood" in section 1 of CARA.

²⁵⁶ "Natural agricultural resources" is defined in section 1 of CARA as "the soil, the water sources and the vegetation, excluding weeds and invader plants."

²⁵⁷ Regulation 7 of GN R1048 in GG 9328 of 30 March 2001.

Proposed cultivation within the 10 meter buffer zone is subject to authorisation and existing cultivation can continue if the area under cultivation is sufficiently protected from erosion.²⁵⁸

The predecessor of the NEMA, namely the *Environmental Conservation Act 73* of 1989 (hereafter the ECA), regulated only a few environmental facets.²⁵⁹ The ECA provided regulations for environmental impact assessment, but none related to mining activities, leaving the environmental impact of mining to be regulated by the mining legislation.²⁶⁰ Listed activity 7 of the ECA regulations related to "The reclamation of land below the high-water mark of the sea and in inland water including wetlands."²⁶¹ The then Minister of Environmental Affairs and Tourism issued a policy under section 2 of the ECA stating that:

All responsible government institutions must apply appropriate measures based on sound scientific knowledge, to ensure the protection of designated ecologically sensitive and unique areas for example ... wetlands ...

The policy was not enforced and it is not possible to determine its effect on the protection of wetlands at the time.²⁶²

3.3.3.2 Water legislation

The *Water Act 54* of 1956 "codified existing law with a consolidation of earlier legislation and common law precepts."²⁶³ It shifted the regulation of water supply from agriculture to the mining and industrial sectors by replacing the *Irrigation and Conservation of Waters*

²⁵⁸ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 25. Regulation 7(3) of GN R1048 in GG9328 of 30 March 2001.

²⁵⁹ See Kidd *Environmental Law* 3 and Rabie "Environmental Conservation Act" 99-119. Glazewski *Environmental Law in South Africa* 7.1 states "It (the Environment Conservation Act) was not particularly effective, it's stated purpose being to co-ordinate environmental matters within government, and did not include any substantive provisions regarding environmental management."

²⁶⁰ Ridl and Couzens 2010 *PER* 106 indicate that "historically, the mining industry in South Africa was not subject to EIA requirements – being specifically exempted under the old regulations." The old regulations refers to GN R1182 in GG 18261 of 5 September 1997 issued under sections 26 and 28 of the *Environmental Conservation Act 72* of 1989 (hereafter ECA). Refer to section 3.2.1 of this dissertation.

²⁶¹ GN R1182 and GN R1183 in GG 18261 of 5 September 1997 1997 issued under sections 26 and 28 of the *Environmental Conservation Act 72* of 1989 (hereafter ECA)..

²⁶² Rabie "Environmental Conservation Act" 99-119 and Glazewski *Environmental Law in South Africa* 7.1.

²⁶³ Godden 2005 *JOEL* 197.

Act 8 of 1912.²⁶⁴ In the *Water Act 54* of 1956 the right to use water was based on riparian principles, where preferential rights to use water were conferred by the location of the water resource in relation to land.²⁶⁵ The *Water Act 54* of 1956 made a distinction between public and private water, resulting in different provisions governing the source of water and the lawful entitlement to use such water.²⁶⁶ Private and public water, respectively were defined as:²⁶⁷

Private water: all water which rises or falls naturally on any land or naturally drains or is led onto one or more pieces of land which are the subject of separate original grants, but is not capable of common use for irrigation purposes.

Public water: any water flowing or found in or derived from the bed of a public stream whether visible or not.

The *Water Act 54* of 1956 did not make provision for the management or protection of wetlands.²⁶⁸ This may perhaps be attributed to a lack of knowledge about the protection of wetlands at the time, as well as the fact that wetlands were often regarded as being privately owned and treated as private water with the right of use exclusive to the land owner.²⁶⁹ The exclusive right to use water was limited by certain other sections of the *Water Act 54* of 1956, such as sections 12 (the use of water for industrial purposes), 21 (the purification and disposal of water used for industrial purposes and effluent), 22 (the prevention of water pollution), 23 (the pollution of water to be an offence) and 24 (directions by the director-general in connection with water pollution).²⁷⁰ Under the *Water Act 54* of 1956 permits were required for the use of public water.²⁷¹ These restrictions

²⁶⁴ Tewari 2009 *Water SA* 701; Van der Schyff and Pienaar 2007 *LEAD* 182. Also see Breedt and Dippenaar 2013 http://gwd.org.za/sites/gwd.org.za/files/02%20N%20Breedt_A%20summary%20of%20Wetland%20Legislation.pdf.

²⁶⁵ Preamble of the *Water Act 54* of 1956 and CPH Water "Trade in Water Rights" 12.

²⁶⁶ Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 140.

²⁶⁷ Section 5 of the *Water Act 54* of 1956. Also see Breedt and Dippenaar 2013 http://gwd.org.za/sites/gwd.org.za/files/02%20N%20Breedt_A%20summary%20of%20Wetland%20Legislation.pdf.

²⁶⁸ Breedt *Understanding subterranean hydrology in the delineation of wetlands* 45.

²⁶⁹ O'Keeffe *et al* "Freshwater Systems" 295 and Kidd *Environmental Law* 368 in Breedt *Understanding subterranean hydrology in the delineation of wetlands* 11 and Breedt and Dippenaar 2013 http://gwd.org.za/sites/gwd.org.za/files/02%20N%20Breedt_A%20summary%20of%20Wetland%20Legislation.pdf.

²⁷⁰ Sections 12, 21–24 of the *Water Act 54* of 1956. O'Keeffe *et al* "Freshwater Systems" 295 indicate that the only restriction to the landowner was that he could not pollute wetlands.

²⁷¹ O'Keeffe *et al* "Freshwater Systems" 295.

were applicable only to public streams²⁷² and not to wetlands on privately owned land. Wetlands were thus not sufficiently protected, a fact which posed a major threat to these ecosystems.²⁷³ Historic mining legislation gave water rights to certain people as a right ancillary to or attached to an existing mining right²⁷⁴ without consideration to wetlands.

During the 1970s and 1980s a number of Acts protected wetlands in a fragmentary manner.²⁷⁵ These Acts had varied objectives and did not include the protection of all types of wetlands.²⁷⁶ The *Mountain Catchment Areas Act* 63 of 1970 provided the protection of wetlands situated within mountain catchments, while the *Lakes Areas Development Act* 39 of 1975 provided the protection of wetlands included in declared lake areas.

In 1990 a *Wetland Conservation Bill* was tabled in Parliament with the intent to give effect to the *Ramsar Convention*.²⁷⁷ The Bill was discarded, however²⁷⁸ the reasons for discarding the Bill are unknown. The long title of the Bill provided for:²⁷⁹

The incorporation of the Ramsar Convention into South Africa's domestic legislation, the prohibition of prospecting or mining in listed wetlands, the prohibition of detrimental activities in wetlands and listed wetlands and the prohibition of detrimental activities to catchment areas.

The *Wetland Conservation Bill* provided for the Minister²⁸⁰ to prohibit by notice in a *Government Gazette*²⁸¹ "any activity in any wetland or listed wetland which in his or her opinion is likely to affect adversely the ecological character of such wetland." The Minister would have been able under the *Wetland Conservation Bill* to grant conditional permission to continue with planned mining within a wetland, but could have excluded activities from

²⁷² It can be concluded that only wetlands associated with public streams such as valley bottom wetlands would have required a section 20 permit under the *Water Act* 54 of 1956.

²⁷³ O'Keeffe *et al* "Freshwater Systems" 295.

²⁷⁴ Mabiletsa and Du Plessis 2001 *SAJELP* 202.

²⁷⁵ Only water-related Acts are discussed here. Refer to the preceding section on environment-related Acts.

²⁷⁶ Breedt *Understanding subterranean hydrology in the delineation of wetlands* 45.

²⁷⁷ Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 143.

²⁷⁸ Booy's *An assessment of the adequacy of the present legal regime for the conservation of wetlands and estuaries in South Africa* 6.

²⁷⁹ Booy's *An assessment of the adequacy of the present legal regime for the conservation of wetlands and estuaries in South Africa* 105.

²⁸⁰ In this case the Minister was the then Minister of Environmental Affairs and Tourism.

²⁸¹ Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 143.

being undertaken, except with his or her written permission, if such activities impacted negatively on a catchment area and wetlands.²⁸²

3.4 Between 1998 and 2014

The following section will discuss sector-specific (mining) legislation and media-specific (environmental and water) legislation as applicable from the promulgation of the NWA and NEMA in 1998 to the implementation of the so called "One Environmental System" (hereafter OES) in 2014.

3.4.1 Sector-specific legislation

Since 1 May 2004 the MPRDA has been the major sector legislation stipulating how to conduct mining operations lawfully.²⁸³ This, prior to 7 December 2014, included the regulation of environmental management within the mining industry.²⁸⁴ In the preamble of the MPRDA the state's responsibility to protect the environment for current and future generation is affirmed.²⁸⁵ In 2004 the sections relevant to environmental matters were promulgated with a new set of regulations²⁸⁶ that provided guidelines on the environmental impact assessment process in the mining sector.²⁸⁷ The 2004 regulations replaced the *Aide Memoire* (see section 3.3.3.1), which became obsolete.²⁸⁸ Chapter 4 of the MPRDA covered the process for the application and approval of reconnaissance, prospecting and mining rights. A prerequisite for the granting of a prospecting and mining right was that the activities would not result in the unacceptable pollution and ecological degradation of the environment.²⁸⁹ The application for a prospecting and mining right should have been accompanied by an environmental management programme²⁹⁰

²⁸² Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 143.

²⁸³ Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 144.

²⁸⁴ Section 14(2) of the *National Environmental Management Amendment Act* 62 of 2008; also see De Ryhove (eds) 2014 <http://www.polity.org.za/article/a-new-era-for-environmental-management-of-mining-projects-2014-09-05>.

²⁸⁵ Kidd *Environmental Law* 221.

²⁸⁶ GN R527 in GG 26275 dated 23 April 2004 hereafter GN R527 issued under section 107(1) of the MPRDA read with the provisions of section 14 of the *Interpretation Act* 33 of 1957.

²⁸⁷ Regulation 48 of GN R527. Also see Van Heerden *A comparative analysis of EIA report quality before and after 2006 in South Africa* 15.

²⁸⁸ Van Heerden *A comparative analysis of EIA report quality before and after 2006 in South Africa* 15. For a discussion on the *Aide Memoire*, refer to section 3.3.2.

²⁸⁹ Section 23(1)(d) of MPRDA.

²⁹⁰ Section 38 of the MPRDA.

(hereafter EMPr) and such a right was granted only upon approval of the EMPr.²⁹¹ The MPRDA made no reference to the regulation of wetlands. The only requirements for protection thereof would have been included in the EMPr at the discretion of the environmental assessment practitioner or applicant who drafted the EMPr. The MPRDA regulations specified the format in which an EMPr had to be drafted and the information to be supplied.²⁹² Specific reference to wetlands and the location of mining activities in relation thereto is found within the MPRDA regulations:²⁹³

No sand dump or slimes dam shall be established on the bank of any stream, river, dam, pan, wetland or lake without written permission of the Minister in consultation with the relevant Government department and upon such conditions as he or she may determine and as approved in the environmental management programme or environmental management plan, as the case may be.

The NEMA principles applied to all rights granted under the MPRDA.²⁹⁴ The NEMA principles required that impacts on biodiversity and ecological integrity were avoided and if they cannot be avoided be minimised or mitigated,²⁹⁵ implying that wetlands or the impact of mining on wetlands should have been considered.

3.4.2 *Media-specific legislation*

This section will discuss the two most significant pieces of environmental (and water) legislation, namely the NEMA and NWA as introduced in 1998.

3.4.2.1 Environmental legislation

The NEMA commenced on 29 January 1999. The purpose of the NEMA²⁹⁶ is to provide for co-operative governance through establishing decision-making principles on matters affecting the environment;²⁹⁷ institutions that will encourage co-operative governance; and procedures for coordinating environmental functions implemented by organs of state. This is important for the discussion on the regulation of wetlands, as the regulating

²⁹¹ Section 23(5) of MPRDA.

²⁹² Regulations 50 and 52 of GN R527.

²⁹³ Regulation 69(5) of GN R527.

²⁹⁴ Section 37 of the MPRDA.

²⁹⁵ Section 2 of NEMA and Department of Environmental Affairs *et al* 2013 *Mining and Biodiversity Guideline* 9.

²⁹⁶ NEMA.

²⁹⁷ Refer to section 2.4 on the inclusion of wetlands within the definition of the "environment."

departments²⁹⁸ are divided according to the different environmental media.²⁹⁹ This fragmentation leads to the fragmented application of environmental legislation.³⁰⁰ The NEMA regulates environmental authorisations³⁰¹ and allows the minister or a Member of an Executive Council (hereafter MEC)³⁰² to publish listed activities³⁰³ in terms of which an environmental assessment has to be undertaken. The principles of NEMA as set out in Chapter 1 of the Act apply through the country to organs of state that may significantly affect the environment.³⁰⁴ One such principle highlights the need for specific attention in the management and planning procedures for sensitive, vulnerable, highly dynamic and stressed ecosystems such as wetlands.³⁰⁵ This is especially important where wetlands are subject to significant human resource usage (such as mining).³⁰⁶

The ECA listed activities as published on 5 September 1997³⁰⁷ remained in force till 2 June 2006, when the NEMA environmental impact assessment regulations (2006 EIA regulations)³⁰⁸ commenced.³⁰⁹ "In terms of both sets of regulations, wetlands were a listed activity requiring an EIA for projects likely to affect wetlands."³¹⁰ As already noted³¹¹ the ECA listed activities did not include any specific reference to wetlands. Wetlands were referred to for the first time in a listed activity in GN R386 of 2006 namely.

The dredging, excavation, infilling, removal or moving of soil, sand or rock exceeding 5 cubic meters from a river, tidal lagoon, tidal river, lake, in-stream dam, floodplain or wetland.

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- ²⁹⁸ A turf war on the regulation of environmental matters in the mining industry has been ongoing between the DMR and DEA. Refer to Du Plessis 2008 *South African Public Law* 87.
- ²⁹⁹ Du Plessis 2008 *South African Public Law* 87 and Du Plessis and Alberts 2014 *South African Public Law* 452.
- ³⁰⁰ Du Plessis 2008 *South African Public Law* 87.
- ³⁰¹ Section 24(1) of NEMA. Environmental authorisation as defined in section 1 of NEMA "means the authorisation by a competent authority of a listed activity or specified activity in terms of this Act, and includes a similar authorisation contemplated in a specific environmental management Act." The definition of "environmental authorisation" was inserted in section 1 of Act 8 of 2004 and replaced by section 1(f) of Act 62 of 2008.
- ³⁰² Section 1 of NEMA defines "MEC" to mean "the Member of the Executive Council to whom the Premier has assigned responsibility for environmental affairs."
- ³⁰³ Section 24(2) of NEMA. "Listed activity", when used in Chapter 5 of NEMA, means an activity identified in terms of section 24(2)(a) and (d).
- ³⁰⁴ Section 2 of NEMA.
- ³⁰⁵ Section 2(4)(r) of NEMA.
- ³⁰⁶ Section 2(4)(r) of NEMA.
- ³⁰⁷ GN R1182.
- ³⁰⁸ GN R385, 386 and 387 in GG 28753 of 2 June 2006.
- ³⁰⁹ Cross 2016 Mervyn Taback Incorporated (confidential source, on file with author).
- ³¹⁰ Sandham *et al* 2008 *Water SA* 156.
- ³¹¹ In section 3.3.3.1.

The 2006 EIA regulations came into force for mining operations only on 1 April 2007.³¹² The 2006 EIA regulations applied from 3 June 2006 to 1 August 2010, when the regulations were repealed by the 2010 EIA regulations.³¹³ The 2010 EIA regulations were effective from the 2 August 2010 until 7 December 2014.³¹⁴ The listed activities in the 2006 and 2010 EIA regulations that specifically referred to mining only commenced on 8 of December 2014.³¹⁵ While, certain activities as listed form part of mining operations, such as the construction of infrastructure that includes roads, electricity transmission and distribution, dams, diesel and petrol storage tanks, and storm water management infrastructure,³¹⁶ and required authorisation. Wetlands were included in the definition of watercourses in the 2010 EIA regulations³¹⁷ and several listed activities referred to developmental activities within watercourses.³¹⁸ The competent authority for the implementation and decision-making of the above was the DEA, while the competent authority for the granting of mining rights and the implementation of environmental requirements under the MPRDA was the DMR.

3.4.2.2 Water legislation

As indicated before,³¹⁹ mining has the potential to threaten the availability of water as well as water quality, if water use and prevention of pollution are not regulated.³²⁰ The protection of the use and quality of water, which is such a scarce resource, has been placed squarely on the shoulders of the DWS.³²¹ The DWS is mandated to regulate water use and activities affecting wetlands by protecting wetlands through pollution prevention measures, determining resource quality management objectives, determining the

³¹² Ridl and Couzens 2010 *PER* 80.

³¹³ GN R543, 544, 545 and 546 in GG 33306 of 1 August 2010 issued under sections 24(2), 24(5), 24D and 24M read with section 47A(1)(b) of NEMA.

³¹⁴ Cross 2016 Mervyn Taback Incorporated (confidential source, on file with the author). GN R982-GN R985 in GG 38282 of 4 December 2014.

³¹⁵ "The listed activities relating to activities that required a prospecting right, mining permit, exploration right, production right or reconnaissance permit or renewal thereof in terms of the MRPDA (in terms of GN R544 and R545 above) was never put into operation. The 2014 listed activities, listing these same mining activities commenced on 8 December 2014.

³¹⁶ GN R385-387 in GG 28753 of 2 June 2006 and GN R543-545 and 546 in GG 33306 of 1 August 2010.

³¹⁷ GN R546 in GG 33306 of 1 August 2010.

³¹⁸ Activities 9; 11, 18, 37, 29 and 40 in GN R544 in GG 33306 of 1 August 2010 and activity 5 in GN R545 in GG 33306 of 1 August 2010. Refer to section 2.4 for the definition of watercourse as contained in the NEMA.

³¹⁹ In section 2.3.

³²⁰ Mabiletsa and Du Plessis 2001 *SAJELP* 202.

³²¹ Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 140. Previously the Department of Water Affairs and Forestry.

reserve, and ensuring integrated environmental management principles and practices are implemented.³²² In order to achieve this mandate the NWA was promulgated and commenced on 1 October 1998. The NWA gives the Minister of the Water and Sanitation the mandate to equitably allocate the use of water and to protect water resources.³²³ It should be noted that although the NWA is discussed in this dissertation in the period 1998 to 2014, the Act is currently still applicable, and only changes to the regulations and guidelines relevant post-2014 will be discussed in section 3.5.2.

The NWA ensures that nothing may adversely impact on water resources (including wetlands - refer to Chapter 2, where the inclusion of the term "wetland" in the definition of water resource and watercourse is dealt with³²⁴) without an authorisation under the Act.³²⁵ A person requires a licence in terms of section 40 of the NWA to use water, if no other entitlement applies.³²⁶ Section 22 of the NWA states that a person may use water without a water use licence only if: (a) the use is for purposes including reasonable domestic use, gardening, animal watering, firefighting and recreational use as set out in Schedule 1 of the NWA; (b) the use is the continuance of an existing lawful water use (hereafter ELWU) as per section 34 of the NWA; (c) the use is in terms of a General Authorisation or licence under the NWA; or (d) the authority has dispensed with the licensing requirements under section 22(3).

Section 21 of the NWA identifies eleven water uses.³²⁷ Mining is not explicitly listed as a use under section 21 of the NWA, but most of the section 21 water uses occur during the mining process.³²⁸ The dependencies on and interest of society in wetlands are materialised through section 21(c) and (i) water uses.³²⁹ Section 21(c) refers to "impeding and diverting the flow of water in a watercourse" and section 21(i) to "altering the bed,

³²² Department of Water and Sanitation 2014 *Guideline to regulate activities/developments affecting wetlands* 16. Schedule 4 of the Constitution. Also see section 1 of the NWA for the definition of "Department".

³²³ Preamble of NWA.

³²⁴ See the definition in Chapter 2.

³²⁵ Section 2 of the NWA and Kidd *Environmental law* 136.

³²⁶ Department of Water Affairs 2007 *External guideline generic water use authorisation application process* 4.

³²⁷ Section 21(a) to (k) of the NWA.

³²⁸ Mabiletsa and Du Plessis 2001 *SAJELP* 203.

³²⁹ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 3.

banks, courses or characteristics of a watercourse."³³⁰ The definition of a section 21(c) water use is "causing an obstruction to the flow of water in a watercourse, or diverting some or all of the flow in or from a watercourse."³³¹ A section 21(c) water use does not cause the loss of water but impacts on the flow regime of the watercourse and can be temporary or permanent in nature.³³² The definition of a section 21(i) water use includes any changes affecting the following:³³³

- The energy of the watercourse;³³⁴
- The channelisation of streams;³³⁵
- The morphology such as the bed and banks of a watercourse including changes affecting the riparian and instream characteristics;
- The physical characteristics of the watercourse such as the removal of vegetation and changes to the geohydrology and geology that affect the feed of water to systems such as wetlands;
- The chemical characteristics of the watercourse such as temperature, pH or other variables;
- The flood dynamics;
- The biological characteristics of the watercourse such as changes in habitat that impact on the composition of fauna.

Although an activity that requires a section 21(i) water use may not directly affect the flow of water as contemplated in section 21(c), any activity in the vicinity of a watercourse

³³⁰ Section 21(c) and (i) of the NWA. Refer to section 2.4 of this dissertation on the inclusion of the term "wetlands" in the definition of "watercourse."

³³¹ Department of Water Affairs 2007 *External Guideline: section 21(c) and (i) water use authorisation application process* 1.

³³² Department of Water Affairs 2007 *External Guideline: section 21(c) and (i) water use authorisation application process* 1.

³³³ Department of Water Affairs 2007 *External Guideline: section 21(c) and (i) water use authorisation application process* 1.

³³⁴ Such as the straightening of a river, which leads to increased energy and increased erosion as a new equilibrium is adapted to.

³³⁵ Department of Water and Sanitation 2016 *Section 21(c) and (i) water use training*.

may affect runoff and lead to changes in the flow regime of the watercourse.³³⁶ The regulation of section 21(c) and (i) water uses is complex as it has to address technical aspects associated with the prominence and characteristics of watercourses, and engineering solutions for activities impacting on watercourses while taking into consideration socio-economic aspects.³³⁷ The complexity is compounded by the fact that it is unclear what exactly is meant by the "characteristics" of a watercourse, and the interpretation of the term is very open and broad. The NWA does not define the concept of "characteristics of a watercourse," but terms such as "resource quality", "riparian habitat"³³⁸ and "instream habitat"³³⁹ are defined and encompass what is intended.³⁴⁰ Resource quality, for example, is defined as:³⁴¹

The quality of all the aspects of a water resource including – the quantity, pattern, timing, water level and assurance of instream flow; the water quality, including the physical, chemical and biological characteristics of the water; the character and condition of the instream and riparian habitat; and the characteristics, condition and distribution of the aquatic biota.

In the light of the above the DWS in 2005 published a manual "describing the indicators and methods for determining whether an area is a wetland or riparian area" as well as the methods to delineate such an area.³⁴² This manual provides the Regulator with a "standardised, affordable and auditable method" to define wetlands spatially.³⁴³ If mining activities impede, divert or alter a wetland, a water use licences application should be lodged with the DWS. The risk the water use poses to the wetland needs to be highlighted in the information submitted to the DWS during the water use authorisation process and the application should indicate the water use activities in relation to the regulated area and buffers of the wetland such as the riparian areas, the 1:100 year flood line, and the

³³⁶ Department of Water Affairs 2007 *External Guideline: section 21(c) and (i) water use authorisation application process* 2.

³³⁷ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 7.

³³⁸ "Riparian habitat" is defined by section 1 of the NWA as "the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas."

³³⁹ "Instream habitat" is defined by section 1 of the NWA as "the physical structure of a watercourse and the associated vegetation in relation to the bed of the watercourse."

³⁴⁰ Section 1 of the NWA and Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 2.

³⁴¹ Section 1 of the NWA.

³⁴² Breedts *Understanding subterranean hydrology in the delineation of wetlands* 16-17.

³⁴³ Breedts *Understanding subterranean hydrology in the delineation of wetlands* 17.

500 meter radius from the boundary of the wetland.³⁴⁴ The DWS Guideline stipulates that an application should be accompanied by an environmental management plan and an environmental impact assessment, a wetland delineation and assessment report, and a rehabilitation plan. However, these requirements are not specified in the NWA.³⁴⁵

Historic water rights ancillary to mining rights are recognised in terms of section 4(2) of the NWA as constituting a lawful water use and continue to exist until reviewed by the DWS.³⁴⁶ An ELWU means a water use which has taken place during a period of two years immediately before the commencement of the NWA (1 October 1998) and which was undertaken lawfully under any law which was in force immediately before the commencement of the NWA.³⁴⁷ ELWUs include stream flow reduction activities,³⁴⁸ a controlled activity³⁴⁹ or activities that have been declared ELWUs.³⁵⁰ A person may continue with an ELWU subject to the conditions under which it was exercised,³⁵¹ its replacement by a water use licence or any other limitation in terms of the NWA.³⁵² The responsible authority may, in order to verify if a water use is a continuation of an ELWU, by notice require a water user claiming an entitlement to the water use to apply for verification of the water use.³⁵³ As alluded to before,³⁵⁴ a section 21(c) and (i) water use is an ELWU based on whether the wetland was altered, impeded or diverted at the time of the use and whether the watercourse was regarded as private or public water.

Section 39 of the NWA stipulates that the DWS may, subject to Schedule 1, by notice in a *Gazette* "(a) generally; (b) in relation to a specific water resource or (c) within an area specified in the notice" authorise a water use. General Authorisations published in terms

³⁴⁴ Department of Water and Sanitation 2014 *Guideline to regulate activities/developments affecting wetlands* 17.

³⁴⁵ Section 28 of the NWA and Department of Water and Sanitation 2014 *Guideline to regulate activities/developments affecting wetlands* 17.

³⁴⁶ Mabiletsa and Du Plessis 2001 *SAJELP* 203.

³⁴⁷ Section 32 of the NWA. Such as those discussed in section 3.3.3.2.

³⁴⁸ Section 32(1) of the NWA.

³⁴⁹ Section 37(1) of the NWA stipulates that "the following are controlled activities: (a) irrigation of any land with waste or water containing waste generated through any industrial activity or by a waterwork; (b) an activity aimed at the modification of atmospheric precipitation; (c) a power generation activity which alters the flow regime of a water resource; (d) intentional recharging of an aquifer with any waste or water containing waste; and (e) an activity which has been declared as such under section 38."

³⁵⁰ Section 33 of the NWA.

³⁵¹ Department of Water Affairs 2007 *External guideline generic water use authorisation application process* 4.

³⁵² Section 34 of the NWA.

³⁵³ Section 35 of the NWA.

³⁵⁴ In section 3.3.3.2.

of section 39 relieve a water user from the need to obtain a water use licence.³⁵⁵ If a mine uses water as defined in section 21 of the NWA and the water use falls within the ambit of a General Authorisation the mine does not have to apply for a water use licence for that specific use.³⁵⁶ The Department published two General Authorisations for section 21(c) and (i) water uses; namely, GN R398 of 26 March 2004 and repealed by GN R1199 in 2009 and GN R1198 of 18 December 2009.³⁵⁷ Only GN R1199 is applicable to this dissertation.³⁵⁸

GN R1199 defines section 21(c) and (i) water uses as follows:³⁵⁹

"Altering the bed, banks, course and characteristics of a watercourse" means any change affecting the resource quality within the riparian habitat or the 1:100 year flood line, whichever is the greater distance.

"Diverting the flow" means a temporary or permanent structure causing the flow of water to be rerouted in a watercourse for any purpose.

"Impeding the flow" means the temporary or permanent obstruction or hindrance to the flow of water in a watercourse by a structure built either fully or partially in or across a watercourse.³⁶⁰

GN R1198 stipulates that if a water user rehabilitates a wetland for conservation purposes the water user does not need to apply for a water use licence under section 21 of the NWA for "impeding or diverting the flow of water in a watercourse", or "altering the bed, banks, course or characteristics of a watercourse."³⁶¹

GN R1199 relieves a water user who wishes to perform the water use as described in sections 21(c) and (i) of the NWA, as defined above, of the requirement to obtain a water use licence.³⁶² Wetlands, however, are regarded as extremely sensitive environments and

³⁵⁵ Cross 2016 Mervyn Taback Incorporated (confidential source, on file with author).

³⁵⁶ Section 22 of the NWA.

³⁵⁷ GN R1199 was repealed by GN R509 on the 26 August 2016. Refer to section 3.5 for a discussion of GN R509.

³⁵⁸ GN R1198 does not directly apply to the impact of mining activities on wetlands, but only the rehabilitation thereof for conservation purposes, and will not be discussed further.

³⁵⁹ Regulation 2 of GN R1199.

³⁶⁰ The definition of impeding has been changed in the draft amendments to the General Authorisation published in GN R1180 by the removal of the reference to structures. Also refer to GN R509.

³⁶¹ Regulation 1 of GN R1198. The water user responsible for the rehabilitation of the wetland needs to comply with the conditions as set out in GN R1198.

³⁶² Cross 2016 Mervyn Taback Incorporated (confidential source, on file with author).

are therefore excluded from the section 21(c) and (i) water use General Authorisation.³⁶³ The exclusion in regulation 6 of GN R1199 includes the rehabilitation of a wetland and activities within a 500 meter radius of the boundary of a wetland. In practical terms this exclusion creates a 500 meter buffer zone around wetlands where the General Authorisation will not apply and activities within this buffer zone require a water use licence.³⁶⁴ Further, the regulations do not apply if a water user applied for any other section 21 water use, nor do they apply to sewerage, pipelines and water and wastewater treatment works.³⁶⁵ GN R1199 further sets out the conditions that section 21(c) and (i) water users need to comply with.³⁶⁶

In terms of section 22 of the NWA a lawful water use is subject to limitation or restriction in terms of legislation such as the regulations drafted by the DWS in relation to the protection of water resources in the mining industry.³⁶⁷ One such regulation is GN R704, which pertains to the use of water by the mining industry. GN R704 clearly sets out the requirements for mining within or nearby any watercourse, including wetlands.³⁶⁸ These requirements include a restriction on locality and material use and the requirements for applying for exemption to mine in areas in close proximity to watercourses and wetlands.³⁶⁹ Regulation 4 provides for a restriction on the locality of mining activities and the associated infrastructure. In order for mining and related activities to be undertaken within the restricted locations indicated in regulation 4, the Minister may in writing authorise an exemption from the requirement of regulation 4 upon application from the mine.³⁷⁰

The *DWS Water Use Authorisation Application Process External Guideline*³⁷¹ states that:

³⁶³ Regulation 6 of GN R1199 and Department of Water Affairs 2007 *External Guideline: section 21(c) and (i) water use authorisation application process 2*.

³⁶⁴ Cross 2016 Mervyn Taback Incorporated (confidential source, on file with author).

³⁶⁵ Regulation 6(c) and (d) of GN R1199.

³⁶⁶ Regulation 7 of GN R1199.

³⁶⁷ Mabiletsa and Du Plessis 2001 *SAJELP* 203.

³⁶⁸ Regulation 4 of GN R704 and Stoop *A framework methodology for the cumulative impact assessment of wetlands* 49.

³⁶⁹ Regulations 3, 4 and 5 of GN R704 and Stoop *A framework methodology for the cumulative impact assessment of wetlands* 49.

³⁷⁰ Regulation 3 of GN R704.

³⁷¹ Department of Water Affairs 2007 *External Guideline: generic water use authorisation application process* 9.

Any activity closer than 500 meters upstream or downstream from the boundary of any wetland or estuary is a section 21(i) water use (own emphasis added).

This is in contradiction to the definition of a section 21(i) water use that indicates that the mere undertaking of an activity within the 500 meter buffer zone of a wetland is not regarded as a water use if a change in the resource quality has not occurred.³⁷² The *DWS Water Use Authorisation Application Process Internal Guideline* in Appendix A "the proposed new format for integrated licences" indicates the following proposed license condition:³⁷³

Construction activities must not take place within the 1:100 year flood-line or within a horizontal distance of 100 meters from any watercourse, estuary, borehole or well, whichever is the greatest, unless authorised by this licence.

This is contradictory to the 500 meter buffer indicated in the GN R1198 exclusion, but aligns with the 100 meter buffer contained in GN R704. The question remains, therefore, whether a water user needs to obtain a water use licence for activities within the 500 meter buffer exclusion as indicated in GN R1198 or the 100 meter buffer as indicated in the Guideline.

To support the regulation and protection of watercourses the DWS has developed an operational policy to "regulate development and activities affecting watercourses."³⁷⁴ The vision of this policy is:³⁷⁵

That the ecological integrity of watercourses of this country are protected, sustained, and enhanced, through integrated management, regulatory and control measures in order to promote sustainable optimal socio-economic development and use – where human needs are thus met in balance with the needs of the aquatic environment.

This vision is reiterated in the Departmental Guideline to regulate activities affecting wetlands.³⁷⁶ The guiding principles of the operational policy include, amongst others, the protection and regulation of watercourses at catchment and local level of government

³⁷² Cross 2016 Mervyn Taback Incorporated (confidential source, on file with author).

³⁷³ Department of Water Affairs 2007 *Internal Guideline: generic water use authorisation application process* 40.

³⁷⁴ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 4.

³⁷⁵ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 4.

³⁷⁶ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 18.

through integrated approaches, and indicate that the management of watercourses is not the sole mandate of the DWS.³⁷⁷ The operational policy is aimed at the DWS officials, other relevant government authorities, and the water users.³⁷⁸ Activities taking place within the regulated area of a watercourse are therefore regulated by section 21(c) and (i) of the NWA, but activities that fall outside the regulated area may also pose a risk to the watercourse and require regulation.³⁷⁹ The 2014 Guideline to regulate activities/developments affecting wetlands is based on the following principles:³⁸⁰

- (a) Wetlands provide valuable social, economic and environmental functions;
- (b) The degradation of wetlands is a reality and concerted efforts are required to protect wetlands in order to ensure sustained functions for water and food security;
- (c) Wetlands are interlinked to other water resources and their surrounding environments, therefore regulation should be focused on catchment and local level through integrated processes; and
- (d) The protection of wetlands is not only the mandate of the DWS and requires societal and governmental support.

Wetland delineation needs to be conducted as per the 2005 DWS Guideline.³⁸¹ This was confirmed in the *State v Stefan Frylink and Mpofo Environmental Solutions CC* (hereafter the *Frylink* case) that stated "these guidelines are the means to apply to determine if it is a wetland."³⁸² The *Frylink* case further confirmed that the 2005 Guideline does not require all the requirements³⁸³ highlighted in the Guideline to be present, and that in

³⁷⁷ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 5. The guiding principles are founded on the principles of the NWA, also recognise that watercourses provide a valuable social, economic and environmental function, and that the degradation of watercourses requires concerted efforts to ensure that these functions are maintained and protected.

³⁷⁸ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 5.

³⁷⁹ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 18.

³⁸⁰ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* 18. This is a summary of the function and importance of wetlands and the degradation thereof by human activity as discussed in chapter 2.

³⁸¹ Department of Water and Sanitation 2005. A practical field procedure for identification and delineation of wetlands and riparian areas and Department of Water and Sanitation 2009 *Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas*.

³⁸² The *Frylink* case para 36.

³⁸³ Refer to Chapter 2, section 3.

order for a wetland to be delineated only one of the three requirements needs to be met.³⁸⁴ The legal consequence of the case is that the Guidelines must therefore be followed.³⁸⁵ These Guidelines, although authored by the DWS, should be used in all authorisations of other government departments such as the DEA and DMR.³⁸⁶ What is evident from the Guidelines is that an assessment needs to be undertaken in a scientific manner prescribed by the Guidelines as part of the wetland assessment to support all authorisation applications.³⁸⁷

A number of court cases, specifically dealing with the mining activities within wetlands, under the NEMA EIA regulations and the NWA highlight the requirements discussed in the preceding paragraphs.³⁸⁸ In the 2009 case of *S v Golfview Mining (Pty) Ltd* (hereafter the *Golfview* case)³⁸⁹ Golfview Mining (Pty) Ltd pleaded guilty under section 28(14)(a)³⁹⁰ of the NEMA to wrongfully and negligently committing an act that is likely to have a significant detrimental effect on the environment by mining within a wetland. The accused further pleaded guilty to wrongful and negligent water use under the NWA by "impeding and diverting the flow of water in a watercourse"³⁹¹ and "altering the bed, banks, course or characteristics of a watercourse."³⁹² Golfview Mining (Pty) Ltd was sentenced to a fine of R1 000 000, payment of which was suspended for 5 years on condition that the mining company did not contravene section 28(14)(a) and 24F(1)(a) of NEMA and section 151(1) read with section 21(c) and (i) of the NWA.³⁹³ The court further ordered that a rehabilitation plan as prepared by specialists in consultation with the DWS be implemented and a payment of R1 000 000 be made to the Water Research Council and R1 000 000 to the Mpumalanga Tourism and Parks Agency.³⁹⁴ In the *Frylink* case³⁹⁵ the defence argued that the NEMA does not contain a definition of the term "wetland" and

³⁸⁴ The *Frylink* case para 36.

³⁸⁵ The *Frylink* case para 36.

³⁸⁶ The *Frylink* case para 36.

³⁸⁷ The *Frylink* case para 41.

³⁸⁸ Section 3.4.2.

³⁸⁹ *State v Golfview Mining (Pty) Ltd* case number ESH82/11 of 2009 para 8.1 (the *Golfview* case).

³⁹⁰ Read with sections 1, 28(15), 32, 34, 34B, 34C and 34H of the NEMA.

³⁹¹ Section 21(c) of the NWA.

³⁹² Section 21(i) of the NWA. Para 8.2 of the *Golfview* case.

³⁹³ Para 10.3 of the *Golfview* case.

³⁹⁴ Para 10.4 of the *Golfview* case.

³⁹⁵ The *Frylink* case.

that the accused could not be found guilty in terms of the NEMA.³⁹⁶ The definition of "wetland" was subsequently included in listing notice 1 of the EIA regulations.³⁹⁷

In 2012 Anker Coal prospected within a wetland in contravention of the NEMA and the NWA.³⁹⁸ Subsequently the directors were convicted and sentenced for failing to comply with the environmental and mining legislation. This was the first matter in which the company and directors³⁹⁹ were held criminally liable following a plea and sentence agreement. Three fines in total of R180 000 were suspended by the court for five years on certain conditions. A further R80 000 was paid to the Mpumalanga Tourism and Parks Agency and R144 000 to the affected landowner of the Steenkoolspruit farm in compensation.⁴⁰⁰

In 2013 in *S v Nkomati Anthracite (Pty) Ltd* (hereafter the *Nkomati* case) Nkomati Anthracite (Pty) Ltd pleaded guilty to the contravention of NEMA⁴⁰¹ for the:⁴⁰²

dredging, excavation, infilling, removal or moving of soil, sand or rock exceeding five cubic meters from a river, tidal lagoon, tidal river, lake in stream dam, floodplain or wetland.

Further, Nkomati Anthracite (Pty) Ltd pleaded guilty to the contravention of section 151(1)(a) of the NWA for "impeding and diverting the flow of water in a watercourse" and "altering the bed, banks, course or characteristics of a watercourse."⁴⁰³ The accused was sentenced to a fine of R1 000 000 that was suspended for 5 years and was ordered to pay a remedial amount of R4 000 000 to the Environmental Management Inspectorate of the Department of Environmental Affairs.⁴⁰⁴ In 2014 the managing director of a mining company known as Blue Platinum Ventures was convicted of a criminal offence under the

³⁹⁶ Para 39 of the *Frylink* case.

³⁹⁷ Regulation 2 of GN R983.

³⁹⁸ Para 6.1 of *The State v Anker Coal and Mineral Holdings (Pty) Ltd* case number ESH8/11 of 17 April 2012 (hereafter the *Anker Coal* case).

³⁹⁹ Para 7.1.2.1 of the *Anker Coal* case.

⁴⁰⁰ Paras 8, 9 and 10 of the *Anker Coal* case as in Cross 2016 Mervyn Taback Incorporated (confidential source, on file with author).

⁴⁰¹ Section 24F(1)(a) of NEMA read with section 24F(2)(a) and sections 1, 24(2), 24D, 24F(4) and 34 read together with GN R386 in GG 28753 of 21 April 2006 and section 332(1) of the *Criminal Procedures Act* 51 of 1997.

⁴⁰² Para 1 in *S v Nkomati Anthracite (Pty) Ltd* Case number 5H412/3 of 25 August 2013 (hereafter the *Nkomati* case).

⁴⁰³ Paras 5 and 7 of the *Nkomati* case.

⁴⁰⁴ Paras 1 and 2 of the *Nkomati* case.

NEMA.⁴⁰⁵ The managing director was sentenced to 5 years imprisonment, suspended on condition that the managing director did not again commit the same or a similar offence, and that the area be rehabilitated.⁴⁰⁶

3.5 Post-2014

The so-called OES was implemented on 7 December 2014.⁴⁰⁷ The outcome of the OES is that the environmental aspects related to the mining industry are now governed by the NEMA. That includes the streamlining of the licensing process for mining, environmental authorisations and water use licensing within an agreed fixed period.⁴⁰⁸ The Minister of Mineral Resources is the competent authority for the issuing of mining right authorisations under the MPRDA and any environmental authorisation for the mining industry under the NEMA, while the Minister of Water and Sanitation is the competent authority for the issuing of water use licences under the NWA.⁴⁰⁹

3.5.1 Sector-specific legislation

Section 5 of the MPRDA deals with the legal rights and obligations of a holder of a prospecting or mining right. Section 5(1) indicates that mining and prospecting is a "limited real right in respect of the mineral and the land to which such right relates." Section 5(3)(d) states that subject to the MPRDA a holder of a mining or prospecting right may, subject to the NWA:

Use water from any natural spring, lake, river or stream, situated on, or flowing through, such land or from any excavation previously made and used for prospecting, mining, exploration or production purposes, or sink a well or borehole required for use relating to prospecting, mining, exploration or production on such land.

⁴⁰⁵ As brought about by the amendments to the environmental legislation through the *National Environmental Management Laws Amendment Act 25 of 2014* (hereafter NEMLAA), the *National Water Amendment Act 27 of 2014* as well as the mineral legislation through the *Mineral and Petroleum Resources Development Amendment Act 49 of 2008*. Centre of Environmental Rights 2015 *Promotion transparency, accountability and environmental compliance: holding company directors accountable for environmental crimes*.

⁴⁰⁶ *S v Blue Platinum Ventures (Pty) Ltd and Another* Case number RN126/13 of 9 January 2014.

⁴⁰⁷ Chapter 5 of NEMA and Water Research Commission 2015 *Wetland rehabilitation in a mining landscape 12*.

⁴⁰⁸ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape 12*.

⁴⁰⁹ Section 3 of the MPRDA, section 24C of NEMA and section 22 of the NWA. Also see Water Research Commission 2015 *Wetland rehabilitation in a mining landscape 12*.

In addition to the requirements in section 5 of the MPRDA, section 25(2)(c) requires of the holder of a mining right to actively conduct mining in accordance with the mining works programme.⁴¹⁰ On 7 December 2014 section 5A(a) of the MPRDA commenced, indicating that no person may conduct mining for or produce any mineral or commence with any work incidental thereto without an environmental authorisation.⁴¹¹ The definition of "environmental authorisation" given in the MPRDA reads that the term has "the meaning assigned to it in the NEMA."⁴¹² The NEMA definition reads "the authorisation by a competent authority of a listed activity or specific activity in terms of this Act."⁴¹³ It is important for mines operating within an EMPr approved under the MPRDA to take note of the transitional arrangements contained in the NEMA. The transitional arrangements as contained in the *National Environmental Management Laws Amendment Act 25 of 2014* (hereafter NEMLA) have been marked with legal uncertainty and a failure to provide guidance to the mining industry.⁴¹⁴ The intention appears to have been that an EMPr approved in terms of the MPRDA would have to be deemed an environmental authorisation in terms of the NEMA.⁴¹⁵ This inference can be drawn from section 38B(1) of the *Mineral and Petroleum Resources Development Amendment Act 49 of 2008* which states:⁴¹⁶

An environmental management plan or environmental management programme approved in terms of this Act before and at the time of the coming into effect of the National Environmental Management Act, 1998, shall be deemed to have been approved and an environmental authorisation been issued in terms of the National Environmental Management Act.

The *Mineral and Petroleum Resources Development Amendment Act 49 of 2008* is not yet enacted, as the *Mineral and Petroleum Resources Development Bill* [B15B-2013] was referred back to the National Assembly for reconsideration by the President in January

⁴¹⁰ The impact on this requirement due to changing environmental legislation on wetland protection will be discussed in section 4.8 of this dissertation.

⁴¹¹ Mining and prospecting rights are limited in the sense that mining may commence only with an environmental authorisation.

⁴¹² Section 1 of the MPRDA. The definition of environmental authorisation was inserted by section 1(g) of the *MPRD Amendment Act 49 of 2008* with effect from 7 June 2013, to be in line with the "One Environmental System."

⁴¹³ Section 1 of the NEMA. The definition also refers to authorisations in terms of specific environmental management acts.

⁴¹⁴ Cross 2016 Mervyn Taback Incorporated (confidential source, on file with author).

⁴¹⁵ Cross 2016 Mervyn Taback Incorporated (confidential source, on file with author).

⁴¹⁶ Section 38B(1) of *Mineral and Petroleum Resources Development Amendment Act 49 of 2008*.

2015, due to the fact that the bill would not "pass constitutional muster."⁴¹⁷ However with the commencement of the OES, section 38B of the MPRDA did not commence.⁴¹⁸ The transitional arrangements as in the *National Environmental Management Amendment Act* 62 of 2008 (hereafter NEMAA) that commenced on 1 May 2009 indicated that an EMPr approved in terms of the MPRDA immediately before the commencement date of the provision of the NEMAA must be regarded as having been approved in terms of the amended NEMA.⁴¹⁹ This transitional arrangement does not specify that the said EMPr approved under MPRDA is seen as an environmental authorisation under the NEMA.⁴²⁰ The NEMLA Bill 2015 in its current form seeks to address this transitional gap by including the following subsection to the NEMAA:

Section 12(4): An environmental management plan or programme approved in terms of the Mineral and Petroleum Resources Development Act 28 of 2002 [immediately before the date on which this Act come into operation] on or before 2 September 2014 shall be deemed to have been approved in terms of the [principal Act] National Environmental Management Act 107 of 1998 and an environmental authorisation issued [by this Act].

3.5.2 *Media-specific legislation*

3.5.2.1 Environmental legislation

The NEMA is the framework legislation for the protection of the environment.⁴²¹ Framework legislation "aims to define overarching and generic principles."⁴²² Chapter 1 of the NEMA sets out the national environmental management principles. One such principle requires that wetlands require specific attention in management and planning, particularly in cases of significant human resource usage and development pressure.⁴²³ This is due to the fact that wetlands are seen as "sensitive, vulnerable, highly dynamic

⁴¹⁷ South African Government 2015 <http://www.gov.za/presidency-referral-mineral-and-petroleum-resources-development-amendment-bill-national-assembly>. The *Mineral and Petroleum Resources Development Bill* [B15B-2015] is currently under consideration by the National Assembly. The Bill was referred to the National House of Traditional Leaders for comment in March 2016.

⁴¹⁸ Proc 17 in GN 36541 dated 6 June 2013 and Cross 2016 Mervyn Taback Incorporated (confidential source, on file with author).

⁴¹⁹ Section 12(4) of the NEMAA.

⁴²⁰ Cross 2016 Mervyn Taback Incorporated (confidential source, on file with author).

⁴²⁰ Section 12(4) of the NEMAA.

⁴²¹ Kidd *Environmental Law* 35.

⁴²² Du Plessis and Nel 2001 *SAJELP* 1.

⁴²³ Section 2(4)(r) on NEMA.

or stressed ecosystems."⁴²⁴ Section 37 of the MPRDA indicates that the principles contained in section 2 of the NEMA apply to all prospecting and mining operations and related activities.⁴²⁵ These principles provide the guideline for the interpretation, administration and implementation of the environmental requirements of the MPRDA.⁴²⁶

As previously stated, since December 2014⁴²⁷ the NEMA has governed environmental aspects related to mining, where prior to December 2014 they were governed by the MPRDA. The mining terms "holder", "holder of an old order right", "mine", "mining area" and "prospecting area" in the NEMA are still defined as per the definitions contained in the MPRDA.⁴²⁸ Section 24 of the NEMA titled "environmental authorisations" sets out the principles⁴²⁹ for integrated environmental management.⁴³⁰ Activities that impact on the environment or defined as "listed or specified activities"⁴³¹ must be considered, examined, evaluated and reported to the competent authority to obtain an environmental authorisation to undertake such activities.⁴³² Geographical areas identified on the grounds of their environmental attributes can be defined, in which certain activities may not commence without an environmental authorisation from the competent authority.⁴³³ The 2014 EIA regulations effective from 7 December 2014 comprise of three listing notices.⁴³⁴ GN R982⁴³⁵ regulates the procedures and criteria for the submission, processing, consideration and decision of environmental authorisation for listed activities.⁴³⁶ The listed activities in relation to wetlands as contained in the listing notices are:⁴³⁷

- Activity 12; 19, 48 and 49 of listing notice 1,⁴³⁸

⁴²⁴ Section 2(4)(r) on NEMA.

⁴²⁵ Section 37(a) of the MPRDA.

⁴²⁶ Section 37(b) of the MPRDA.

⁴²⁷ See section 3.5.

⁴²⁸ Section 1 of NEMA.

⁴²⁹ Also see section 3.4.1 and 3.4.2.1 for a discussion of the NEMA principles.

⁴³⁰ Section 24(1) of NEMA.

⁴³¹ Activities in terms of section 24(2)(a) and (d) of the NEMA.

⁴³² Section 24 of the NEMA.

⁴³³ Section 24(2)(b) of the NEMA.

⁴³⁴ GN R983: Listing notice 1 for activities that require a basic assessment. GN R984 in GG 38282 dated 4 December 2014 (hereafter GN R984): Listing notice 2 for activities that require a full environmental impact assessment. GN R985 in GG 38282 dated 4 December 2014 (hereafter GN R985): Listing notice 3.

⁴³⁵ GN R982 in GG 38282 dated 4 December 2014 (hereafter GN R982).

⁴³⁶ Cross 2016 Mervyn Taback Incorporated (confidential source, on file with author).

⁴³⁷ GN R983, GN R984 and GN R985 as per section 24D of the NEMA.

⁴³⁸ GN R983. Activities within Listing Notice 1 are subject to a Basic Assessment process as detailed in regulation 19 and 20 of GN R982. Activity 12 relates to the development of structures exceeding 100m²

- Activity 24 of listing notice 2,⁴³⁹
- Activity 2, 4, 10, 12, 14, 16, 18, 22 and 23 of listing notice 3.⁴⁴⁰

The listed activities in relation to mining activities in general as contained in the listing notices are:

- Activity 21 of listing notice 1,⁴⁴¹
- Activity 17 and 19 of listing notice 2.⁴⁴²

A mine may not commence with a listed activity without the approval of an environmental authorisation for the specific activity by the competent authority.⁴⁴³

In terms of section 31L of the NEMA, a mineral resource inspector (hereafter MRI) appointed in terms of section 31BB of the NEMA may issue a compliance notice if there is reasonable ground to believe that a person has not complied with the provisions of the law for which the MRI has been designated in terms of section 31D of the NEMA, or the provisions of any authorisation issued. A compliance notice can also be issued in terms of section 28(4) of the NEMA for failure to comply with the statutory duty of care⁴⁴⁴ provided for in section 28(1) of the NEMA. If a mine has commenced with such a listed activity without an environmental authorisation, the Minister⁴⁴⁵ may direct the mine to (i) cease the activity pending a decision on a section 24G application,⁴⁴⁶ (ii) examine, calculate and evaluate the impacts the activity has caused; (iii) remedy the negative impacts the activity has caused the environment (iv) terminate, change or control any

within or within 32m of a watercourse; activity 19 relates to the infilling or excavation of more than 5m² from a watercourse while activities 48 and 49 refer to the expansion of structures within or within 32m of a watercourse.

⁴³⁹ GN R984. Activities within listing notice 2 require a full Environmental Impact Assessment as detailed in regulations 21 to 24 of GN R982. Activity 24 refers to the removal of peat soils.

⁴⁴⁰ Only the activities relevant to the Mpumalanga Province and relevant to mining are listed.

⁴⁴¹ GN R983, activity 21 relates to activities requiring a mining permit.

⁴⁴² GN R984, activity 17 relates to activities requiring a mining right and activity 19 to the activities associated with the removal and disposal of a mineral.

⁴⁴³ Section 24F(1) of NEMA. Note the Department of Mineral Resources is the competent authority for the mining industry.

⁴⁴⁴ The duty of care provision in section 28(1) of the NEMA states: "every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring or, in so far as such harm to the environment is authorized by law or cannot reasonably be avoid or stopped, to minimize and rectify such pollution or degradation of the environment."

⁴⁴⁵ Of Mineral Resources.

⁴⁴⁶ Rectification application as per section 24G of the NEMA.

activity or omission resulting in pollution and degradation of the environment; (v) contain or avoid the movement of pollution; (vi) eradicate the pollution. Further, the commencement can be seen as a "criminal offence under NEMA and is punishable upon conviction by an R10m fine or 10 years imprisonment or both."⁴⁴⁷ The mine will have to apply for a section 24G rectification in terms of the NEMA to obtain an *ex post facto* environmental authorisation, which will require the payment of an administrative fine of up to R5 million.⁴⁴⁸ In an instance where a water use licence application is in progress and the section 24G process is underway in terms of the NEMA it is recommended that in the interest of cooperative governance the water use licence application should not be finalised until the section 24G application has been approved or declined.⁴⁴⁹

3.5.2.2 Water legislation

Section 21(c) and (i) water uses⁴⁵⁰ are contradictory to some other water uses, non-consumptive and the impacts of the water uses on the water resource are not as easily identified and managed.⁴⁵¹ Specific guideline values that quantify the impacts and the associated risk are not easy to compile for section 21(c) and (i) water uses, as the impacts are non-definite, extensive and site specific.⁴⁵² The DWS assesses these water use licence applications based on the risk the use will pose to resource quality characteristics such as the flow regime, water quality, habitat and biota.⁴⁵³ The DWS reviewed the General Authorisation related to section 21(c) and (i) water uses (GN R1199)⁴⁵⁴ to incorporate a risk assessment guideline document and an associated risk matrix tool.⁴⁵⁵ The amended General Authorisation for section 21(c) and (i) water uses was published on the 26 August 2016 as GN R509.⁴⁵⁶ Risk-based management, which is a widely used adaptive

⁴⁴⁷ Section 49B of NEMA and Kilner and Hugo 2015 *Without prejudice* 24.

⁴⁴⁸ Section 24G of NEMA and Kilner and Hugo 2015 *Without prejudice* 24.

⁴⁴⁹ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 19.

⁴⁵⁰ Refer to section 3.4.2.2.

⁴⁵¹ Roets 2016 *Request for Approval of the Risk Assessment Guideline Document and Associated Risk Matrix Tool*.

⁴⁵² Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 13.

⁴⁵³ Roets 2016 *Request for Approval of the Risk Assessment Guideline Document and Associated Risk Matrix Tool*.

⁴⁵⁴ Refer to section 3.4.2.2.

⁴⁵⁵ Appendix A of GN R509 and Roets 2016 *Request for Approval of the Risk Assessment Guideline Document and Associated Risk Matrix Tool*.

⁴⁵⁶ Refer to sections 2.4.1 and 2.4.3.

management approach, now forms part of the Guideline appended to the section 21(c) and (i) General Authorisation.⁴⁵⁷ The risk-based approach ensures each water use is assessed on a site-specific basis to determine the specific impacts and the appropriate mitigation measures for these impacts.⁴⁵⁸ The main purpose of the risk-based tool is to ensure that a standardised scientific method is applied to determine the risk of section 21(c) and (i) water uses to the water resources characteristics to inform the water use authorisation process.⁴⁵⁹ Currently, the obligation to undertake such assessments rests on the applicant, while the DWS evaluates and decides on the appropriate control through its authorisation process.⁴⁶⁰ In GN R509 the exclusion of a water use within the 500 meter buffer of a wetland is replaced by the exclusion of a water use within the "extent of a watercourse,"⁴⁶¹ "where the Risk Class is Medium or High as determined by the Risk Matrix."⁴⁶² The 500 meter buffer from a delineated wetland has been added into the definition of the "extent of a watercourse" in GN R509.⁴⁶³ The 500 meter buffer was not included in this definition as per the draft amendments.⁴⁶⁴ Further, the amendments specifically stipulate that where a water use falls within the exclusion, a water use licence will be required.⁴⁶⁵ This General Authorisation will apply to mines using water or intending to use water within the extent of a watercourse and indicates that if the use of water under section 21(c) and (i) is determined to have a low risk as per the risk matrix attached, proof should be submitted to the relevant catchment management agency supported by technical documentation.⁴⁶⁶ A risk outcome of "low" will result in a General Authorisation, whereas a risk outcome of "medium to high" will require a water use licence under section 21(c) and (i) of the NWA.⁴⁶⁷

⁴⁵⁷ Roets 2016 *Request for Approval of the Risk Assessment Guideline Document and Associated Risk Matrix Tool*.

⁴⁵⁸ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 13.

⁴⁵⁹ Roets 2016 *Request for Approval of the Risk Assessment Guideline Document and Associated Risk Matrix Tool*.

⁴⁶⁰ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 13.

⁴⁶¹ Refer to section 2.4.1 of chapter 2.

⁴⁶² Regulation 3(1)(b)-(e) of GN R1180.

⁴⁶³ Refer to section 2.4.1 of chapter 2.

⁴⁶⁴ GN R1180.

⁴⁶⁵ Regulation 3 of GN R1180. This is not included in the final amendment.

⁴⁶⁶ Regulation 7(a) and (c) of GN R1180.

⁴⁶⁷ Risk Matrix in GN R1180. GN R509 excludes from the General Authorisation "the use of water in terms of section 21(c) and (i) of the Act within the regulated area of a watercourse where the Risk Class is Medium or High as determined by the risk matrix."

Section 151(1)(a) of the NWA further states that no person may use water otherwise than as permitted under the Act and a person may not fail to comply with the conditions attached to a permitted water use under the Act. If a person does contravene the provisions of subsection 1 such a person is guilty of an offence and liable, on the first conviction, to a fine or imprisonment for a period not exceeding 5 years, or to both a fine and imprisonment and in the case of a second conviction, to a fine or imprisonment for a period not exceeding ten years or both a fine and imprisonment.⁴⁶⁸ Where a person has commenced with a water use without obtaining a water use licence and has impacted adversely on a wetland, section 155 of the NWA affords the High Court the opportunity to grant an interdict for the rehabilitation of the adverse effects on the wetland.⁴⁶⁹

3.6 Conclusion

From the discussion in this chapter and the application of the legislation in the scenarios given in the next chapter it will become evident that the regulation of the impact of mining on wetlands is a complex combination falling within the water use licensing requirements of section 21, ELWUs, as well as General Authorisation, depending on the time of commencement of the activity and the location in relation to the buffer of the wetlands. Pre-1998 the focus of the *Water Act* 54 of 1956 was to provide water for the agricultural, mining and industrial sectors while prohibiting pollution.⁴⁷⁰ Prior to 1980 a number of laws⁴⁷¹ protected specific aspects of wetlands, but there was no primary protection of these ecosystems.⁴⁷² From 1998 onwards the Constitution containing the environmental right provided a proper foundation for the promulgation of media-specific environmental legislation such as the NEMA and the NWA.⁴⁷³ The NEMA provided a framework for the protection of wetlands within the country through the inclusion of listed activities within

⁴⁶⁸ Section 151(2) of the NWA.

⁴⁶⁹ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 9.

⁴⁷⁰ Breedt and Dippenaar 2013
http://gwd.org.za/sites/gwd.org.za/files/02%20N%20Breedt_A%20summary%20of%20Wetland%20Legislation.pdf.

⁴⁷¹ These laws included the *Mountain Catchment Areas Act* 63 of 1970; the *Lake Areas Development Act* 39 of 1975; the *Environment Conservation Act* 100 of 1982; the *Conservation of Agricultural Resources Act* 43 of 1983; the *Forest Act* 122 of 1984; and the *Environment Conservation Act* 73 of 1989.

⁴⁷² Breedt and Dippenaar 2013
http://gwd.org.za/sites/gwd.org.za/files/02%20N%20Breedt_A%20summary%20of%20Wetland%20Legislation.pdf.

⁴⁷³ Section 24 of the Constitution and Breedt and Dippenaar 2013
http://gwd.org.za/sites/gwd.org.za/files/02%20N%20Breedt_A%20summary%20of%20Wetland%20Legislation.pdf.

or in close proximity to wetlands. The NWA specifically defined wetlands and provided a regulatory framework for the protection of these systems by including the term wetlands within the definition of "watercourses"⁴⁷⁴ and requiring water use licensing for the impeding, diverting and altering of these systems.⁴⁷⁵ Table 4 summarises the legislation for the protection of wetlands as relevant to the three periods discussed in this chapter.

TABLE 4: Summary of the legislation for the protection of wetlands

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE
Pre-1998	Ramsar Convention on Wetlands of International Importance (1971)
	<i>Water Act</i> 54 of 1956
	<i>Conservation of Agricultural Resources Act</i> 43 of 1893
	<i>Minerals Act</i> 50 of 1991 or the <i>Mines and Works Act</i> 27 of 1956.
	<i>Environmental Conservation Act</i> 73 of 1989 (5 September 1997 to 2 July 2006)
Post-1998 until 2014	<i>National Water Act</i> 36 of 1998
	GN R704 in GG 20199 of 4 June 1999.
	GN R1199 in GG 32805 of 18 December 2009.
	<i>Environmental Conservation Act</i> 73 of 1989 (5 September 1997 to 2 July 2006)
	In the <i>Maccsands</i> case the court held that an environmental authorisation for mining and related activities as listed under the NEMA is required in addition to an EMPr under the MPRDA. ⁴⁷⁶
	<i>National Environmental Management Act</i> 107 of 1998
	GN R385, 386 and 387 in GG 28753 of 2 June 2006. (3 July 2006 to 1 August 2010)
	GN R543, 544, 545 and 546 in GG 33306 of 1 August 2010. (2 August 2010 to 7 December 2014)
<i>National Environmental Management: Biodiversity Act</i> 10 of 2004	

⁴⁷⁴ Section 1 of the NWA and Breedts and Dippenaar 2013 http://gwd.org.za/sites/gwd.org.za/files/02%20N%20Breedts_A%20summary%20of%20Wetland%20Legislation.pdf.

⁴⁷⁵ Section 21(c) and (i) of the NWA.

⁴⁷⁶ Gore and Lala 2010 <http://www.bowman.co.za/eZines/Custom/Environment/OctoberNewsletters/EnvironmentalAuthorisations.html>.

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE
	<i>National Environmental Protected Areas Act 57 of 2003</i>
	<i>National Environmental Management: Integrated Coastal Management Act 24 of 2008</i>
	<i>Mineral and Petroleum Resources Development Act 28 of 2002</i>
Post-2014	<i>National Environmental Management Act 107 of 1998</i>
	GN R982, 983, 984 and 985 in GG 38282 of 4 December 2014
	<i>National Environmental Management Act 107 of 1998: Regulation 2 of Listing Notice 1 GN R983 in GG 38282 of 4 December 2014</i>
	GN R509 General Authorisation for Section 21(c) and (i) water uses.
	<i>DWS 2014 Guideline to regulate activities/developments affecting wetlands</i>

CHAPTER 4 APPLICATION OF LEGISLATION FOR THE PROTECTION OF WETLANDS IN MPUMALANGA

4.1 Introduction

"Environmental law is not static and is constantly updated."⁴⁷⁷ It is therefore a challenge for the mining industry to keep up with the new legislation and also to determine the impact thereof on its activities.⁴⁷⁸ This chapter will discuss the application of the legal framework as detailed in chapter 3 to hypothetical scenarios within the coal mining industry in Mpumalanga. The aim of this application is to determine the challenges faced by the implementation of the legal framework and the consequence of these on the protection of wetlands in the province.

Mining methods can vary significantly depending on the location type and size of the mineral resource.⁴⁷⁹ Generally a distinction is made between two types of mining, namely opencast and underground mining.⁴⁸⁰ The hypothetical scenarios will include both greenfield and brownfield⁴⁸¹ project application for underground and opencast mining.⁴⁸² A further scenario will include the construction of mining-related infrastructure in close proximity to wetlands. This scenario will not distinguish between underground and opencast mining as the legal application to both is similar. The diagram below sets out the scenarios that will be discussed.

⁴⁷⁷ Mabiletsa and Du Plessis 2001 *SAJELP* 187.

⁴⁷⁸ Dixon 1999 *The Journal of the South African Institute of Mining and Metallurgy* 149 and McCourt 1999 *Mine, Water and Environment* 744.

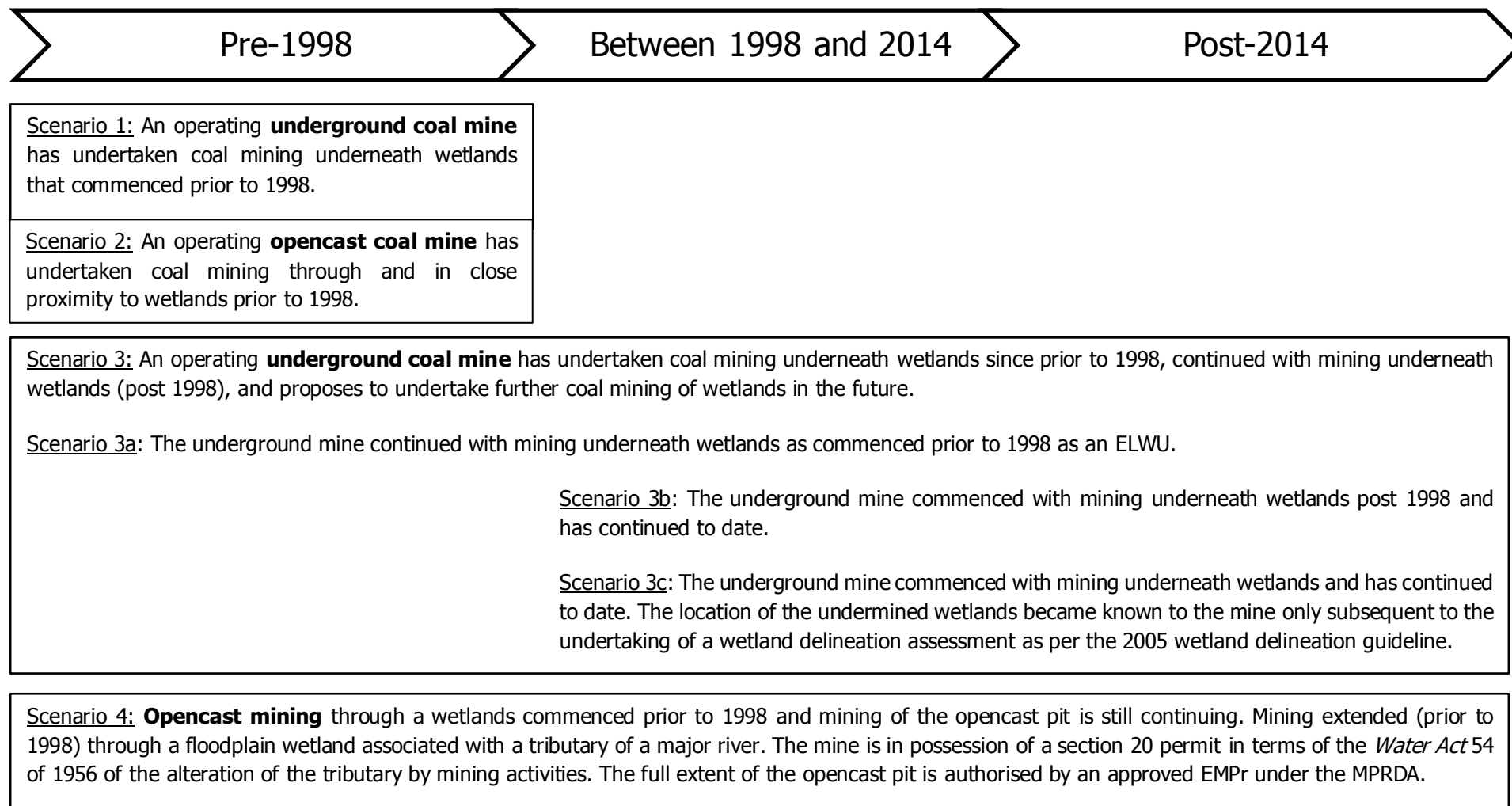
⁴⁷⁹ Ochieng *et al* 2010 *Scientific Research and Essays* 3352. Also see Chapter 2.

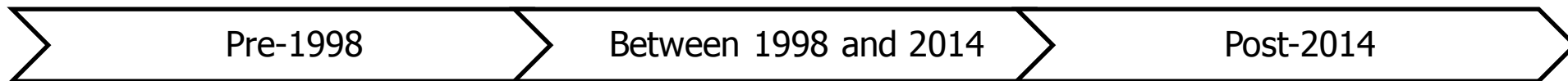
⁴⁸⁰ Ochieng *et al* 2010 *Scientific Research and Essays* 3352.

⁴⁸¹ As explained before, in chapter 1, Greenfield application is "denoting or relating to previously undeveloped sites" while brownfield application is denoting or relating to sites for potential mining development that have had previous mining development on them. Refer to Oxford University Press 2016 <http://www.oxforddictionaries.com/definition/english/greenfield> and Oxford University Press 2016 <http://www.oxforddictionaries.com/definition/english/brownfield>.

⁴⁸² Refer to Chapter 2.

Figure 7: Scenarios





Scenario 5: The **opencast mining** mentioned in scenario 4 advanced (pre-1998) through a pan. The mine did not obtain any authorisation under the *Water Act* 54 of 1956 for this activity. It is unclear whether this pan was regarded as private or public water at the time mining commenced. The extent as authorised in the mine's EMPr includes mining through the pan.

Scenario 1: A new underground coal mine proposes to undertake underground mining underneath wetlands. Refer to figure 9 as an example of future underground mining in relation to wetlands. Figure 9 indicates all the HGM wetlands classes.

Scenario 2: A proposed opencast coal mine will undertake coal mining through and in close proximity to wetlands as illustrated in Figure 10.

Scenario 3: An operating mine would like to carry out future exploration or prospecting activities for the pit extension within and/or in close proximity to the delineated wetland. The mine has an approved prospecting EMPr under the MPRDA for its entire mining and surface right.

Scenario 4: The operating mine mentioned in scenario 3 needs to conduct geohydrological drilling to inform the specialist studies required in support of the environmental authorisation process.

Scenario 5: The construction of mine-related infrastructure for a proposed underground or opencast coal mine.

The discussion will follow the same structure as that set on in chapter 2 and 3 by applying the legal framework to the three distinct timeframes a) pre-1998 b) between 1998 and 2014 and c) post-2014. The chapter will focus only on the legal application related to the impacts of the given scenarios on wetlands. Where the scenarios given might require authorisation or licensing not associated with their impact on wetlands, such discussion falls outside the scope of this application.⁴⁸³

4.2 Mining underneath wetlands

Figure 7 illustrates the underground mining scenarios discussed. This section will give the reasons why underground mining is regarded as a section 21(c) and (i) water use. Mining underneath a wetland is regarded as a section 21(i) water use by the DWS, as it may result in subsidence of the wetland, which would have an impact to its characteristics.⁴⁸⁴ The mining could also result in impeding and diverting the water in the wetland⁴⁸⁵ through precipitating water ingress from the undermined wetland into the underground workings (refer to figure 8).⁴⁸⁶ Subsequent to the removal of the orebody, the weight of the overlying strata could weaken the support provided during the mining operations, resulting in strata movement and the formation of cracks in the overlying strata. Wetlands overlaying the mined area could start to drain into the underground workings.⁴⁸⁷

⁴⁸³ The application will be based mainly on primary sources, specifically the MPRDA, the NWA, and the NEMA and its regulations, but will be supported by references to secondary sources. Enforcement action under the primary sources will be discussed for each scenario and will be supported by relevant case law. In all instances where reference is made to enforcement action refer to section 3.5.2.2 of the preceding chapter. The newly amended General Authorisation for section 21(c) and (i) water uses (GN R509) was published on the 26th of August 2016. Refer to footnote 9.

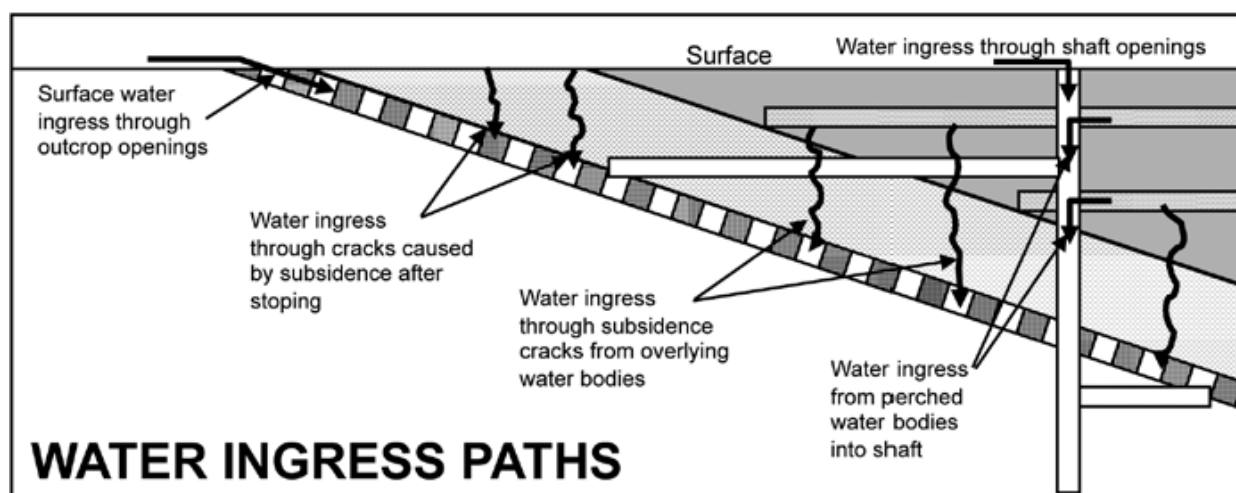
⁴⁸⁴ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 4.

⁴⁸⁵ Section 21(c) of the NWA.

⁴⁸⁶ Department of Water Affairs and Forestry 2008 *Best Practice Guideline – A6: Water Management for Underground Mines* 17.

⁴⁸⁷ Department of Water Affairs and Forestry 2008 *Best Practice Guideline – A6: Water Management for Underground Mines* 17.

Figure 8: Water ingress paths for (a) shallow reef (coal) mining⁴⁸⁸



The listed activities under the NEMA relate to developmental⁴⁸⁹ activities in or in close proximity⁴⁹⁰ to wetlands. Thus the activity of mining underneath wetlands will not trigger any NEMA-listed activities. The body of law regulating the impact of underground mining on wetlands would therefore be the NWA, its regulations and guidelines.

4.3 Opencast mining through and in close proximity to wetlands

This section gives the background on the application of opencast mining to the licensing requirements of the NWA and the NEMA. Opencast mining is regarded as a section 21(c) and (i) water use by the DWS, as the opencast mining may result in the impeding, diverting and altering of wetlands. Opencast mining through wetlands will result in the permanent destruction of the wetlands and the total loss of biodiversity and habitat.⁴⁹¹ Opencast mining operations in close proximity to wetlands can result in the following impacts: erosion of the catchment area adjacent to the wetland; deterioration of the wetland water quality; and a decrease in the wetland area downstream of the opencast pit due to decreased runoff.⁴⁹² Although the NEMA listed activities are primarily focused

⁴⁸⁸ Department of Water Affairs and Forestry 2008 *Best Practice Guideline – A6: Water Management for Underground Mines* 17.

⁴⁸⁹ Or construction. GN R983 to GN R985.

⁴⁹⁰ 32 meters from a watercourse. GN R983 to GN R985.

⁴⁹¹ Wetland Consulting Services 2009 Wetland delineation and impact assessment report for the proposed AEMFC coal mine near Ogies, Mpumalanga Province 23.

⁴⁹² Wetland Consulting Services 2009 Wetland delineation and impact assessment report for the proposed AEMFC coal mine near Ogies, Mpumalanga Province 27.

on developmental activities, some are applicable to opencast mining and will be discussed.

4.4 Location of mining-related infrastructure within and in close proximity to wetlands

The section gives a brief overview of why this was included in the scenario analysis to follow. It is important to ensure that all mine infrastructure, particularly waste management infrastructure, is located in such a manner as to minimise the potential impact on water resources such as wetlands.⁴⁹³ Mining related infrastructure can impact on wetlands by impeding the flow of water to the wetland or altering the beds, banks course or characteristics of a wetland.⁴⁹⁴ The buffer zones as indicated in the NWA and its regulations will be discussed. The NEMA-listed activities, being primarily focused on developmental or construction activities, have reference to the mining and related infrastructure located in close proximity to wetlands.

The legislation as applicable to the three timeframes and as pertaining to the specific scenarios will now be discussed.

4.5 Pre-1998

4.5.1 4.5.1. Brownfields application

4.5.1.1 Scenario 1: Underground coal mine

An operating underground coal mine has undertaken coal mining that commenced prior to 1998 underneath wetlands

The *Water Act* 54 of 1956 was relevant to the mining operations undertaken at the underground mine prior to the commencement of the NWA in 1998. The *Water Act* 54 of 1956 made a distinction between public and private water.⁴⁹⁵ The concept of public and private water was key in determining the legal obligation for mining underneath wetlands

⁴⁹³ Department of Water Affairs 2008 *Best Practice Guideline A5: Water Management of Surface Mines* 33. Also refer to regulation 4 of GN R704.

⁴⁹⁴ Section 21(c) and (i) of the NWA.

⁴⁹⁵ Refer to section 3.4.2.2 of this dissertation.

prior to 1998.⁴⁹⁶ If the undermined wetland was regarded as private water⁴⁹⁷ the mine (as the owner of the land on which the water was found) was entitled to the sole and exclusive use of the wetland.⁴⁹⁸

In the case where the wetlands were regarded as public water the following needed to be taken into account. A determination was required of whether the wetlands were associated with a stream or not, and if the underground mining altered the wetlands.⁴⁹⁹ If alteration of the wetlands occurred, the mine was entitled to use the water only under the authority of a permit from the Minister.⁵⁰⁰ The legal obligation to obtain a permit under section 20 of the *Water Act* 54 of 1956 was therefore relevant to the location of the wetlands in relation to public streams. A public stream was defined in section 1 of the *Water Act* 54 of 1956 as:

A natural stream of water which flows in a known and defined channel, whether or not such channel is dry during any period of the year and whether or not its conformation has been changed by artificial means, if the water therein is capable of common use for irrigation on two or more pieces of land riparian thereto which are the subject of separate original grants or on one such piece of land and also on Crown land which is riparian to such stream: Provided that a stream which fulfils the foregoing conditions in part only of its course shall be deemed to be a public stream as regards that part only (own emphasis).

It is the opinion of the author that floodplain⁵⁰¹ wetlands (and/or wetlands directly associated with streams) would have been regarded as public streams.⁵⁰² If the wetland

⁴⁹⁶ Refer to section 3.3.3.2 of this dissertation for the definition of private and public water.

⁴⁹⁷ Pienaar and Van der Schyff 2007 *Law, Environment and Development Journal* 182 state that in Roman-Dutch law spring water and non-navigable streams were regarded as water at the disposal of the landowner i.e. public water. In 1873 according to principles rooted in English law land owners were entitled to spring water on their land.

⁴⁹⁸ Subject to entitlements lawfully acquired and existing at the time of the commencement of the *Water Act* 54 of 1956 see section 5(1) of the *Water Act* 54 of 1956. This use is limited by certain sections of the subject to entitlements lawfully acquired and existing at the time of the commencement of the *Water Act* 54 of 1956 (refer to section 3.3.2) and thus the mine will have to determine how the water within the wetlands undermined was affected. It is assumed in this scenario that the undermining of the wetlands would not have constituted the use of industrial water (section 12 of the *Water Act* 54 of 1956) and would not have resulted in the disposal of such water outside the boundaries of the land (section 5(3) of the *Water Act* 54 of 1956).

⁴⁹⁹ Section 20 of the *Water Act* 54 of 1956 deals with the alteration of public streams.

⁵⁰⁰ Section 20 of the *Water Act* 54 of 1956.

⁵⁰¹ "Floodplain wetland: the mostly flat or gently sloping wetland area adjacent to and formed by a Lowland or Upland Floodplain river, and subject to periodic inundation by overtopping of the channel bank. For purposes of the classification system, the location adjacent to a river in the Lowland or Upland Floodplain Zone is the key criterion for distinguishing a floodplain wetland from a channelled valley-bottom wetland." SANBI 2009 *Further development of a proposed national wetland classification system for South Africa* 33.

⁵⁰² Refer to section 2.4.2 of this dissertation.

under which mining commenced prior to 1998 was regarded as a public stream, a permit was required under section 20 of the *Water Act* 54 of 1956. If the mine in scenario 1 was not in possession of such a permit this would have constituted an offence in terms of the *Water Act* 54 of 1956 and the then Department of Water, Forestry and Fisheries⁵⁰³ could have taken enforcement action. If the wetland under which mining commenced prior to 1998 was regarded as private water, no permit was required under the *Water Act* 54 of 1956.

4.5.1.2 Scenario 2: Opencast coal mine

An operating opencast coal mine had undertaken coal mining through and in close proximity to wetlands prior to 1998

Prior to 1998 the mine would have operated under an approved EMPr as issued in terms of the *Minerals Act*.⁵⁰⁴ The opencast mining through wetlands should have been included in the EMPr and the surface rehabilitation plan.

The discussion pertaining to water legislation in 4.5.1.1 also applies to this scenario. Opencast mining undertaken prior to 1998 was regulated by the *Water Act* 54 of 1956 with the distinction between public and private water. As in the discussion in 4.5.1.1., if an opencast mine prior to 1998 extended through a wetland and the wetland was regarded as private water, no water use authorisation would have been required. However, if the wetland was regarded as a public stream, typically of wetlands associated with rivers such as floodplain wetlands, the mining required a permit under section 20 of the *Water Act* 54 of 1956.⁵⁰⁵ Failure to obtain the permit would constitute an offence and could be subject to enforcement action.⁵⁰⁶

The DWS operational policy⁵⁰⁷ stipulates how to deal with historic mining activities. This is applicable to determine the lawfulness of the historic mining activities referenced in

⁵⁰³ Now the DWS.

⁵⁰⁴ Refer to section 3.3.2 of this dissertation. Prior to the *Minerals Act* the *Mines and Works Act* 27 of 1956 was safety-orientated, with limited environmental provisions.

⁵⁰⁵ Section 20 of the *Water Act* 54 of 1956 states that "except under the authority of a permit issued by the Minister and in accordance with any condition subject to which such permit was issued, no person shall alter the course of a public stream."

⁵⁰⁶ Refer to footnote 479.

⁵⁰⁷ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 17.

scenario 2 at present. Historic mining activities within the regulated areas or buffers of wetlands can in certain instances be regarded as section 21(c) and (i) water uses. Water users can approach the DWS voluntarily in order to obtain authorisation for these historic water uses, or the DWS could identify such water uses and require to regulate them.⁵⁰⁸ Regulation and authorisation for these historic section 21(c) and (i) water uses could occur as follows:⁵⁰⁹

- (a) If the historic use is not an existing lawful water use as contemplated in section 32(1)(a) of the NWA, a water user should have applied to the DWS to have the water use declared as such in terms of section 33 of the *NWA*.⁵¹⁰
- (b) If the water use cannot be verified to be an existing lawful water use, and the water use does not qualify as a General Authorisation, the water user will have to make a water use licence application. The water use application will follow the same process as a new water use licence application.⁵¹¹ However, in addition an environmental audit will be required to gather information, together with the drafting of a remediation and maintenance plan associated with the risk classification. If the water use licence application is not approved, compliance monitoring and enforcement measures will be implemented.⁵¹²

4.6 Between 1998 and 2014

4.6.1 Scenario 3: Underground coal mine

An operating underground coal mine had undertaken coal mining underneath wetlands prior to 1998,⁵¹³ continued with mining underneath wetlands (post 1998) and proposes to undertake further coal mining of wetlands in the future

⁵⁰⁸ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 17.

⁵⁰⁹ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 17.

⁵¹⁰ Section 33(1) of the NWA stipulates that a person may apply to the DWS to have a water use which has not taken place at any time during a period of two years before the date of commencement of the *NWA* or is not a stream flow reduction of controlled activity declared to be an existing lawful water use.

⁵¹¹ Refer to section 3.4.2.2 of this dissertation.

⁵¹² Refer to section 3.4.2.2 of this dissertation.

⁵¹³ Refer to section 4.5.1.1 of this dissertation.

Scenario 3a: The underground mine continued with mining underneath⁵¹⁴ wetlands, as had commenced prior to 1998,⁵¹⁵ to the present day with an ELWU⁵¹⁶

In scenario 3a in order to rely on the transitional provisions contained in section 34 of the NWA and in order for the mine to lawfully continue with the mining underneath the wetlands when the NWA commenced⁵¹⁷ such mining had to take place at any time two years prior to the commencement of the NWA⁵¹⁸ and had to be authorised under the *Water Act* 54 of 1956 if such authorisation was required.⁵¹⁹ The mine could rely on the transitional provisions in the NWA if the continuation of the mining underneath the wetland was the mining of an extension of the same coal seam located under the wetland that was lawfully mined prior to 1996. Lawful mining prior to 1996 would have taken place if the mining occurred underneath private water or was authorised under a permit in terms of the *Water Act* 54 of 1956 in the case of a public stream.⁵²⁰ If the mining of a public stream commenced and continued post 1998 without a permit,⁵²¹ such mining would not be lawful and the use would not constitute an ELWU. Such mining would constitute an offence in terms of the NWA.⁵²²

Scenario 3b: The underground mine commenced with mining underneath wetlands post 1998 and has continued to date

In scenario 3b, the mine would need to determine if the mining underneath the wetlands constituted a section 21(c) or (i) water use under the NWA.⁵²³ The mine needs to determine if the undermining resulted or might result in future (such as in a case of subsidence) in the impeding, diverting and alteration of the wetlands. If such an inflow

⁵¹⁴ Continuation of mining refers to the uninterrupted continuation of mining of the same coal seam as was mined prior to 1998, situated underneath the same wetland as was undermined prior to 1998.

⁵¹⁵ As under the *Water Act* 54 of 1956 discussed in section 4.5.1.1 of this dissertation.

⁵¹⁶ Section 34 of the NWA states that "A person, or that person's successor in title, may continue with an existing lawful water use, subject to - (a) any existing conditions or obligations attaching to that use; (b) its replacement by a licence in terms of this Act; or (c) any other limitation or prohibition by or under this Act." Also refer to section 32 of the NWA and section 3.4.2.2.

⁵¹⁷ As from 1 October 1998.

⁵¹⁸ Section 32(1)(a) of the NWA.

⁵¹⁹ Section 32(1)(a)(i) of the NWA required that in addition to the use commencing two years prior to the commencement of the NWA such use had to be authorised "by or under any law which was in force immediately before the commencement of this Act." Refer to section 4.5.1.2 of this dissertation.

⁵²⁰ Refer to section 4.3.1 of this dissertation.

⁵²¹ In terms of section 20 of the *Water Act* 54 of 1956.

⁵²² Section 151 of the NWA.

⁵²³ The NWA commenced in 1998.

occurred the mine would have to apply for a section 21(c) and (i) water use. In the event that the mine did not apply for a water use license in such an instance the mining would constitute an offence in terms of the NWA.⁵²⁴ In the case of subsidence, if a subsidence has not yet occurred but might occur in future, the question arises as to whether the mine should apply for a water use license for something that might happen, the reason being that once subsidence occurs the mine would not be in possession of a water use licence for the diversion of the water in the wetland. In such instances the mine might be in contravention of the licensing requirements contained in the NWA.⁵²⁵ Further, section 20 of the NWA deals with emergency incidents. Emergency incidents would not include the formation of sinkholes, as section 20(1)(b) states that "in this section incident includes any incident or accident in which a substance has or is likely to have a detrimental effect on a water resource" (emphasis added). A sinkhole not associated with a substance will therefore not be regarded as an emergency incident.

The requirements for General Authorisation for section 21(c) and (i) water uses and that fall under GN R704 as will be discussed in section 4.7.1.1 will also apply.

*Scenario 3c: The underground mine commenced with mining underneath wetlands and has continued to date, the location of the undermined wetlands became known to the mine only subsequent to the undertaking of a wetland delineation assessment as per the 2005 Wetland Delineation Guideline*⁵²⁶

In scenario 3c the mine submitted a land capability assessment in support of its approved EMPr under the MPRDA⁵²⁷ and water use licence application under the NWA indicating wetland areas. The EMPr was compiled using the Guideline Document called the "Aide-Memoire" and contained a detailed description of the pre-mining environment, impacts from the proposed mining operations, and mitigation measures for surface water, land

⁵²⁴ Refer to section 3.4.2.2.

⁵²⁵ Section 22 of the NWA.

⁵²⁶ Department of Mineral and Energy Affairs 1992 *Aide-Memoire for the preparation of environmental management programme reports for prospecting and mining*. Department of Water and Sanitation 2005 *A practical field procedure for identification and delineation of wetlands and riparian areas*. It should be noted that although this scenario is discussed in terms of underground mining, the legal concepts will also apply to opencast mining.

⁵²⁷ Mining commenced prior to 2014; thus; the MPRDA was applicable.

capability and use, and sensitive landscapes.⁵²⁸ The wetland delineation assessment conducted post 2005 indicated areas that were not regarded as wetlands by the original land capability assessment.⁵²⁹ The legal requirements discussed in the preceding section would apply to all mining underneath wetlands that took place from the date of the wetland assessment's being concluded. Therefore if the undermining impeded, diverted or altered the wetland, a water use licence would be required. If the mine was not in possession of such a water use licence this would constitute an offence under the NWA.⁵³⁰ Accordingly, from the date the wetland assessment was concluded until such time as the DWS approves a water use licence the mine would be in contravention of the NWA and its regulations. This poses a challenge to the mining industry in that the NWA does not make provision for transitional arrangements from the date when new specialist information such as wetland delineation becomes known until the time an application could be lodged for a section 21(c) and (i) water use licence and the water use licence is approved.

4.6.2 Scenario 4: Opencast coal mine

Opencast mining through wetlands commenced prior to 1998⁵³¹ and mining of the opencast pit is still continuing. Mining extended (prior to 1998) through a floodplain wetland associated with a tributary of a major river the mine is in possession of a section 20 permit of the alteration of the said tributary by mining activities and the full extent of the opencast pit is authorised by an approved EMPr under the MPRDA

The opencast mining that commenced prior to 1998 through the tributary and associated floodplain wetland was authorised under section 20 of the *Water Act* 54 of 1956.⁵³² Therefore the mining through the tributary and associated wetland was lawful. The

⁵²⁸ Jansen "Environmental Management Programmes as a tool for effective catchment management in Southern Africa" 2.

⁵²⁹ This scenario is supported by the groundtruth exercise undertaken by WRC indicating that the mapping by the ground-truth exercise "contradicts strongly with the previous best state knowledge" where the WRC study indicated that wetlands amounted to a total area of 590 391 Ha, while the previous National Wetland Map (NWM4) indicated an area of only 213 579 Ha of wetlands. Refer to Water Research Commission 2015 *Supporting better decision-making around coal mining in the Mpumalanga Highveld through the development of mapping tools and refinement of spatial data on wetlands* iv.

⁵³⁰ Section 151 of the NWA.

⁵³¹ Such mining was undertaken lawfully i.e. a permit was obtained for the mining and alteration of public streams, while the mining of private water did not require any authorisation.

⁵³² A permit was required at the time of commencement of the mining for the alteration of a public stream.

mining currently undertaken is a continuation of the same pit and the mine can therefore rely on the transitional provisions contained in the NWA.⁵³³ The current mining through the tributary and associated wetlands is a continuation of an ELWU.⁵³⁴ The mining through the tributary was authorised in the mines EMPr under the *Minerals Act*⁵³⁵ and the MPRDA.⁵³⁶ It is pertinent to mention that the approved EMPr would as from 7 December 2014 be regarded as an approved environmental authorisation in terms of the NEMA, although there is uncertainty on the transitional arrangements as section 38 of the MPRDA has not yet been repealed.⁵³⁷ Thus the mining through the wetlands is seen as approved in terms of the NEMA. However, for the period prior to 7 December 2014 in terms of environmental legislation the following needs to be considered to determine the lawfulness of the activity:

- (a) Between the period 5 September 1997 and 2 July 2006 the ECA and its regulations applied.⁵³⁸ These regulations were not applicable to the mining industry.⁵³⁹ In the *Maccsands* case the court held that an environmental authorisation for mining-related activities as listed under the NEMA was required, in addition to an EMPr under the MPRDA.⁵⁴⁰
- (b) From 3 July 2006 to 1 August 2010 the NEMA 2006 EIA regulations applied⁵⁴¹ to all listed activities specified, including those in wetlands. The 2006 regulations came into force only on 1 April 2007 for mining and related activities, and the then Minister of Minerals and Energy remained the competent authority.⁵⁴²

⁵³³ Section 34 of the NWA.

⁵³⁴ Section 32(1) of the NWA.

⁵³⁵ Prior to May 2004. For the purpose of this scenario, mining commenced post 1991.

⁵³⁶ Post May 2004. Also refer to section 3.3.2 of this dissertation.

⁵³⁷ Proc. No. 17 in GN 36541 dated 6 June 2013. Refer to section 3.5.1 of this dissertation.

⁵³⁸ GN R1182.

⁵³⁹ Section 21 of the ECA, GN R1529 in GG 19493 dated 27 November 1998 issued under section 21(1) of the ECA and GN R1182. Also see Cross 2016 Mervyn Tabacks Incorporated (confidential source, on file with author) 17.

⁵⁴⁰ Para 25 of *Maccsand (Pty) Ltd v City of Cape Town 2012 (4) SA 181 (CC)* and *Gore and Lala 2010* <http://www.bowman.co.za/eZines/Custom/Environment/OctoberNewsletters/EnvironmentalAuthorisations.html>.

⁵⁴¹ GN R385, 386 and 387.

⁵⁴² *Ridl and Couzens 2010 PER 80*. Mining is not specifically listed as an activity but sometimes an EIA was required for non-mining-related activities such as the construction of a road. Refer to Du Plessis 2008 *South African Public Law* 10.

(c) From 2 August 2010 to 7 December 2014 the NEMA 2010 EIA regulations applied,⁵⁴³ and again they applied to mining related activities.

As the mining commenced prior to 1998, the legislation listed above did not find retrospective application⁵⁴⁴ and no obligation arose to obtain an environmental authorisation for the mining activities.

If the opencast mining commenced post 1 April 2007, the following NEMA-listed activities would have applied, namely activity 4 of GN R386: "The dredging, excavation, infilling, removal or moving of soil, sand or rock exceeding 5 cubic meters from a river, tidal lagoon, tidal river, lake, in-stream dam, floodplain or wetland" and activity 24 of GN R984. If the opencast mining commenced post 2 August 2010, listed activity 18 of GN R544 would have applied.⁵⁴⁵

The rights of a holder of a mining right includes "actively conducting mining in accordance with the mining work programme."⁵⁴⁶ These mining works programmes for existing coal mines included the mining of pans and wetlands located within the mining right. As seen in the discussion in this chapter, mining underneath and through wetlands⁵⁴⁷ did not require authorisation under the *Water Act* 54 of 1956. However, under the NWA and its regulations these activities required authorisation. The retrospective application of the law is not always feasible, as this would impact negatively on the net present value⁵⁴⁸ of an existing mine.

⁵⁴³ GN R543, 544, 545 and 546.

⁵⁴⁴ Refer to GN R1182, which reads "I further determine that this notice will commence in respect of different activities on the dates indicated in Schedule 2: Provided that this notice is not applicable to an activity that was commenced with before the date of commencement fixed in respect of that activity as indicated in the said Schedule."

⁵⁴⁵ "The infilling or depositing of any material of more than 5 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic meters from: (i) a watercourse; (ii) the sea; (iii) the seashore; (iv) the littoral active zone, an estuary or a distance of 100 meters inland of the high-water mark of the sea or an estuary, whichever distance is the greater but excluding where such infilling, depositing, dredging, excavation, removal or moving is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or occurs behind the development setback line."

⁵⁴⁶ Section 25(2)(c) of MPRDA.

⁵⁴⁷ Seen as private water.

⁵⁴⁸ "Net Present Value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows. NPV is used in capital budgeting to analyse the profitability of a projected investment or project." Refer to Investopedia 2016 <http://www.investopedia.com/terms/n/npv.asp>.

4.6.3 Scenario 5: Opencast coal mine

The opencast mining mentioned in scenario 4 advanced (pre-1998) through a pan, the mine did not obtain any authorisation under the Water Act 54 of 1956 for said activity, it is unclear whether this pan was regarded as private or public water at the time mining commenced, and the extent as authorised in the mine's EMPr includes mining through the said pan

In scenario 5 if the pan were regarded as private water⁵⁴⁹ the mine did not require an authorisation under the *Water Act* 54 of 1956⁵⁵⁰ and mining was conducted lawfully in terms of the requirements of the water legislation. The pan is not regarded as a public stream⁵⁵¹ or public water, the latter being associated with water flowing in or derived from the bed of a public stream.⁵⁵² Therefore the mine did not require a permit in terms of section 20 of the *Water Act* 54 of 1956 for the mining activities⁵⁵³ and the activity can be regarded as lawful. In scenario 5 the same application in terms of the mineral and environmental legislative requirements discussed for scenario 4 would apply.

4.7 Post-2014

4.7.1 4.7.1. Greenfield application

4.7.1.1 Scenario 1: Underground coal mine

A new underground coal mine proposes to undertake underground mining underneath wetlands

Refer to Figure 9 as an example of future underground mining in relation to wetlands. Figure 9 indicates all the HGM wetlands classes.⁵⁵⁴

⁵⁴⁹ In *Breyten Collieries Ltd v Dennil* (1) 1912 Uys WLC 7 T a lease was entered into giving Breyten sole right to search, mine and work for coal on the farm. On the boundary of the property there was a natural pan (with no outflow). A dispute arose between the neighbours on how much water could be used by each from the pan. The court held that the water in the pan was private water in terms of *Water Conservation Act* 8 of 1912.

⁵⁵⁰ Refer to footnote 271.

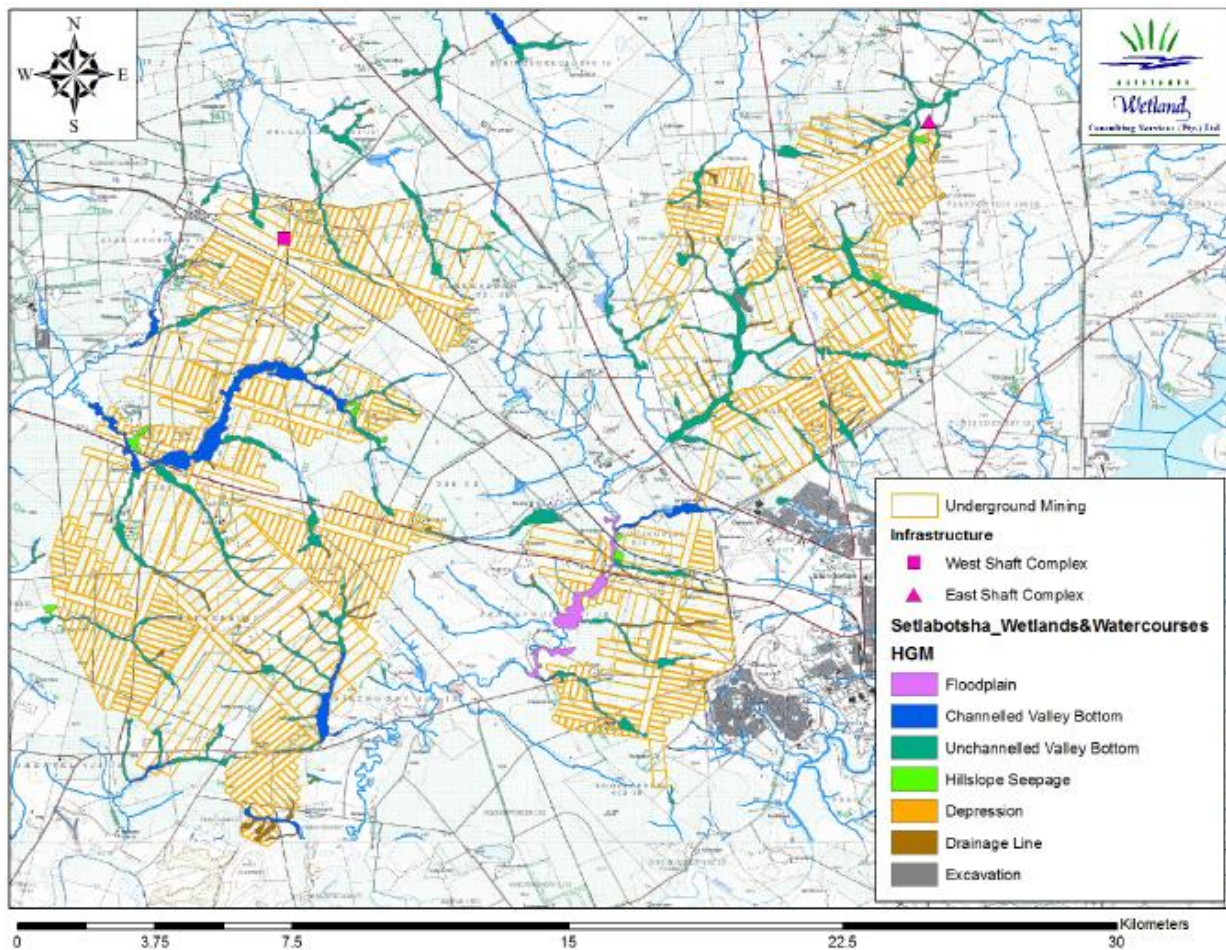
⁵⁵¹ Pans have closed drainage, as referenced in section 2.3 of this dissertation.

⁵⁵² Section 5 of the *Water Act* 54 of 1956. Also see Breedt and Dippenaar 2013 http://gwd.org.za/sites/gwd.org.za/files/02%20N%20Breedt_A%20summary%20of%20Wetland%20Legislation.pdf

⁵⁵³ Note that auxiliary mining activities might have required authorisation under the *Water Act* 54 of 1956.

⁵⁵⁴ Refer to section 2.4.2 of this dissertation.

Figure 9: Map indicating future underground mining in relation to wetlands.⁵⁵⁵



For proposed mining underneath wetlands the following legislation framework is applicable:

- (a) Water use licensing requirements under the NWA

Section 4.2 of this dissertation explains why mining underneath wetlands is regarded as section 21(c) and (i) water uses.⁵⁵⁶ If the mining underneath the wetlands will result in impeding, diverting or the alteration of wetlands, the mine will have to apply for a water use licence from the DWS.⁵⁵⁷ In order for the DWS to consider the authorisation of the

⁵⁵⁵ SRK Consulting 2016 Setlabotsha "EIA/EMP – public review" 64.

⁵⁵⁶ Section 21(c) and (i) of the NWA. Section 21(c) refers to "impeding and diverting the flow of water in a watercourse" and section 21(i) to "altering the bed, banks, courses or characteristics of a watercourse." Refer to Chapter 2 of this dissertation on the inclusion of the term "wetlands" in the definition of "watercourse." Also see 3.4.2.2.

⁵⁵⁷ Section 22 of the NWA.

water uses applied for, the impact of the mining on the wetlands needs to be determined.⁵⁵⁸ The undertaking of such rests with the applicant (the mine) for the water use authorisation,⁵⁵⁹ who will appoint a wetland assessment practitioner to conduct a delineation and impact assessment. Refer to chapter 2.4.2 of this dissertation on the WET-Health and WET-Eco-Services tools used for such an assessment.

(b) General Authorisation for section 21(c) and (i) water uses

A General Authorisation⁵⁶⁰ relieves a water user from the need to apply for a water use licence. General Authorisations constitute flexible administrative measures that are subject to certain limitations and permit the granting of a general permission to use water within a particular geographical area.⁵⁶¹ In order for the General Authorisation to find application the mine needs to determine if any of the exclusions of the General Authorisation for section 21(c) and (i) water uses⁵⁶² find application to the mining underneath the wetland. If the exclusions find application then the mine will not be able to rely on the General Authorisation and will need to apply for a water use licence.⁵⁶³ Regulation 6(b) of GN R1199 indicates that the General Authorisation does not apply to a water use in terms of section 21(c) and (i) within a 500 meter radius from the boundary of a wetland. From the definitions contained in GN R1199 on altering, impeding and diverting,⁵⁶⁴ the mere undertaking of an activity within the 500 meter buffer does not necessarily mean that a water use licence is required. A determination needs to be done as to whether the activity will result in the altering, impeding and diverting of the wetland.⁵⁶⁵ However, in the author's experience,⁵⁶⁶ as substantiated by the DWS *Water Use Authorisation Application Process External and Internal Guidelines*,⁵⁶⁷ the DWS does not

⁵⁵⁸ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 13.

⁵⁵⁹ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 13.

⁵⁶⁰ Section 39 of the NWA. Refer to section 3.4.4.2 of the dissertation.

⁵⁶¹ Part 6 of the NWA and Stein 2005 *Texas Law Review* 2180.

⁵⁶² GN R1199.

⁵⁶³ Regulation 6 of GN R1199.

⁵⁶⁴ Refer to section 3.4.4.2 of the dissertation.

⁵⁶⁵ Section 21(c) and (i) of the NWA and Cross 2016 Mervyn Tabacks Incorporated (confidential source, on file with author) 9.

⁵⁶⁶ The author has worked for 12 years within the environmental management fields for the mining industry, of which the last 5 years were as Environmental Permitting Manager for Anglo American Coal South Africa.

⁵⁶⁷ Refer to the discussion under section 3.4.2.2.

agree with this interpretation and is of the view that any activity within the 500 meter boundary of a wetlands constitutes a section 21(c) and (i) water use and requires a water use licence irrespective of whether the activity alters, impedes or diverts the wetland. The question also arises as to whether the boundary of the wetlands applies only on the surface (refer to Figure 5 in section 2.4.1) or is also applicable horizontally (below the wetland). In other words, does the mine require section 21(c) and (i) water use licenses for mining underneath the wetland only, or also for mining underneath the 500 meter buffer of the wetland? Upon the review of the definitions of a watercourse edge and boundary it seems that the physical area or extent is applied to the surface only.⁵⁶⁸ Groundwater is also excluded from the definition of a watercourse.⁵⁶⁹ With reference to Figure 8 of this dissertation, impeding, diverting or the alteration of a wetland will occur in the event of subsidence or cracks in the substrata leading to the inflow of water into the underground mine workings. If the 500 meter buffer is indeed applicable to underground mining, and the ingress of water from a wetland results from underground mining outside of this 500 meter buffer, the application of this arbitrary line would not protect the wetland from underground mining impacts. On the other hand, if mining within the 500 meter buffer does not result in the ingress of water from the wetland into the underground mine, such mining underneath wetlands should not require a water use licence under section 21(c) and (i) of the NWA.

(c) Regulation GN R704

From 1998 the mine needed to comply with the GN R704 Regulation on the use of water for mining and related activities, the regulation being aimed at the protection of water resources. Regulation 4 of GN R704 stipulates that no person in control of a mine may carry out any underground mining within the 1:50 year flood line or within a horizontal distance of 100 meters from a watercourse. GN R704 is the only legislative requirement

⁵⁶⁸ The definition of "regulated area" refers to the terms "flood line" and "riparian habitat," whereas "flood line" is not defined in the NWA or its regulations. "Floodplain" is "land which adjoins the channel of a natural stream and which is subject to overflow flooding. In hydrologic terms it is the area subject to inundation by floods of a particular frequency" as in James *et al User's guide to SWMM5* 839 (the flood line is the edge of the floodplain). Riparian habitat as per section 1 of the NWA refers to the "physical structure and associated vegetation of the areas associated with a watercourse."

⁵⁶⁹ Section 1 of the NWA. Refer to section 2.4 for the definition of a watercourse. Department of Water and Sanitation 2016 *Section 21(c) and (i) water use training*.

that specifically refers to underground mining. The mine would thus need to apply to the DWS for exemption from the requirements of regulation 4.⁵⁷⁰

To conclude, I submit that if the proposed activity of mining underneath the wetlands will result in the altering, impeding or diverting of the wetlands, regardless of the distance of the mining below the wetlands, a water use licence will have to be obtained. However, the DWS does not hold this view, in that they apply the section 21(c) and (i) water use licence requirements to any activity regardless of whether that activity impedes, diverts or alters the watercourse, if the activity is located within the buffer zones specified.⁵⁷¹ If the DWS interpretation is applied, any mining underneath wetlands and within 500 meters of the boundary of a wetland will require a water use licence. Also, in order for a company to mine underneath wetlands it will have to apply for exemption from the requirements of GN R704, where such mining occurs within the 100 meter buffer zone. A section 21(c) and (i) water use licence and GN R704 exemption are required for each instance where the underground mining crosses underneath a wetland.

4.7.1.2 Scenario 2: Opencast coal mine

A proposed opencast coal mine will undertake coal mining through and in close proximity to wetlands as illustrated in Figure 10

The following listed activities in terms of the NEMA relate to the proposed opencast mining scenario:

The infilling or depositing of any material of more than 5 cubic meter into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic meters from (i) a watercourse...⁵⁷²

The extraction or removal of peat or peat soils, including the disturbance of vegetation or soils in anticipation of the extraction or removal of peat or peat soils, but excluding where such extraction or removal is for the rehabilitation of wetlands in accordance with a maintenance management plan.⁵⁷³

⁵⁷⁰ Regulation 3 of GN R704.

⁵⁷¹ DWS Water Use Authorisation Application Process External and Internal Guidelines.

⁵⁷² Activity 19 of GN R983. Activities within Listing Notice 1 are subject to a Basic Assessment process as detailed in regulation 19 and 20 of GN R982. Also see section 3.5.2.

⁵⁷³ Activity 24 in GN R984.

The mine will require the approval of an environmental authorisation application by the DMR⁵⁷⁴ for the opencast mining activities that will extend through the wetlands.⁵⁷⁵

With regard to the NWA, section 21(c) and (i) water use authorisation licences will be required for the mining of wetlands, as the mining will result in the total loss of the wetlands.⁵⁷⁶ For opencast mining in close proximity to wetlands, the buffer zones as indicated in the General Authorisation for section 21(c) and (i) water uses⁵⁷⁷ and the requirements in GN R704 will apply. Opencast mining within 500 meters of the boundary of a wetland will require water use licensing if such mining will impede, divert and alter the watercourse.⁵⁷⁸ However, as explained in the preceding section, the DWS holds the view that any activity within the 500 meter zone buffer requires water use licensing.⁵⁷⁹ Regulation 4 of GN R704 indicates that a mine may not carry out any opencast mining within the 1:50 year flood line or the horizontal distance of 100 meters for any watercourse.⁵⁸⁰ All opencast mining should be outside the exclusion zones.⁵⁸¹ If opencast mining will occur within the exclusion zones, exemption should be obtained from the DWS.⁵⁸² In conclusion and with reference to Figure 10, all the mining areas overlapping delineated wetlands or within the 500 meter buffer zone will require a section 21(c) and (i) water use licence from the DWS. In addition, all mining areas within the 100 meter buffer zone or 1:50 year flood line will require an exemption from GN R704.

⁵⁷⁴ Section 24C(2A) of the NEMA indicates that the Minister responsible for mineral resources must be identified as the competent authority in terms of listed activities related to mining. Also see section 3.5.1.

⁵⁷⁵ For the inclusion of wetlands in the definition of watercourses, please refer to section 2.4.

⁵⁷⁶ Impeding, diverting and altering of wetlands.

⁵⁷⁷ GN R1199.

⁵⁷⁸ Regulation 6 of GN R1199.

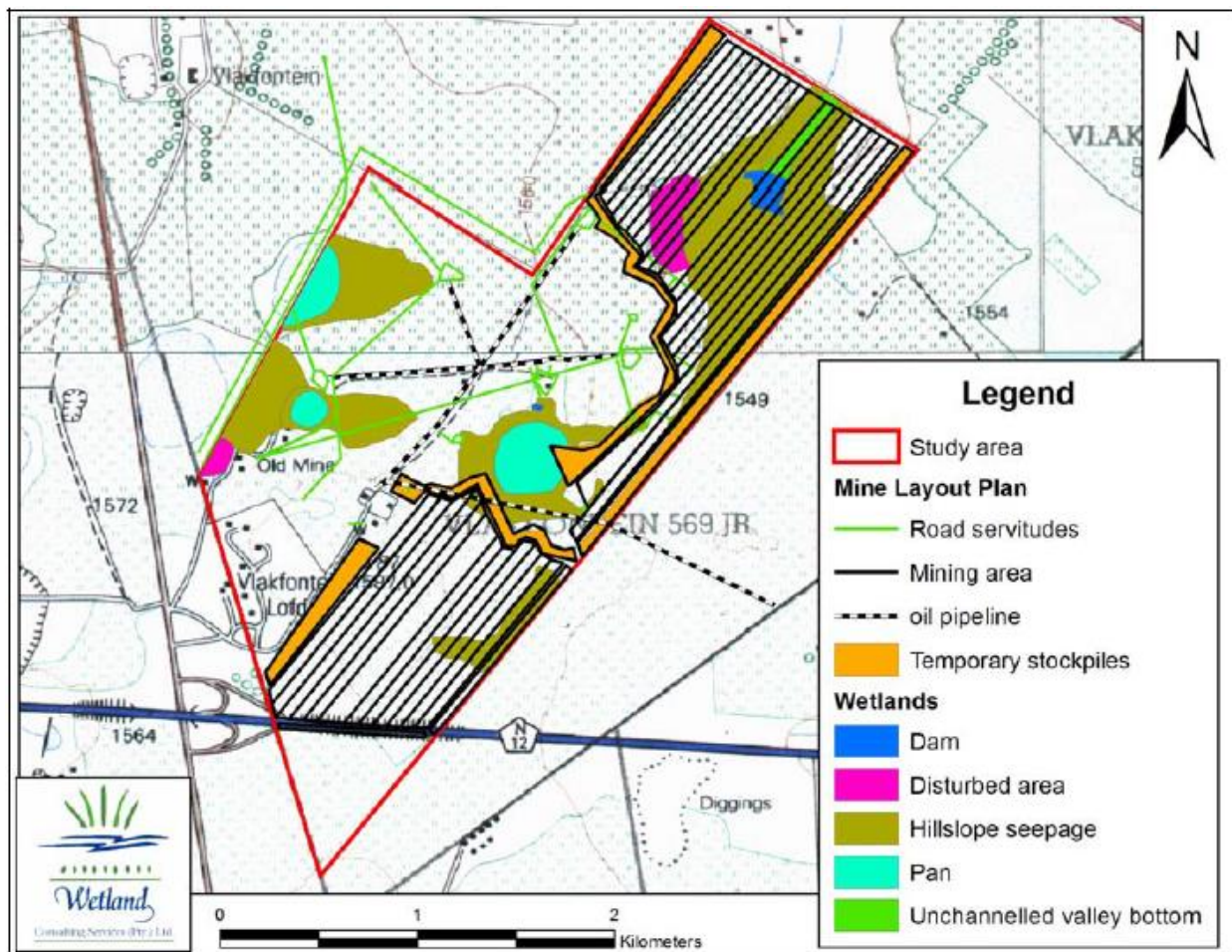
⁵⁷⁹ DWS Water Use Authorisation Application Process External and Internal Guidelines.

⁵⁸⁰ Regulation 4(a) of GN R704.

⁵⁸¹ 1:50 year flood line or 100m from the centre of a wetland.

⁵⁸² Regulation 3 of GN R704 and Department of Water Affairs 2008 *Best Practice Guideline A5: Water Management of Surface Mines* 36.

Figure 10: Map indicating a proposed opencast footprint overlain on the delineated wetland areas⁵⁸³



4.7.2 *Brownfield application*

4.7.2.1 Scenario 3: Opencast/ underground coal mine prospecting

An operating mine would like to carry out future exploration⁵⁸⁴ or prospecting⁵⁸⁵ activities for the pit extension within and/or in close proximity to the delineated wetland; the mine

⁵⁸³ Wetland Consulting Services 2009 Wetland delineation and impact assessment report for the proposed AEMFC coal mine near Ogies, Mpumalanga Province 23.

⁵⁸⁴ Exploration means "The search for a mineral deposit (prospecting)" as defined in SACMA 2005 *Surface Strip Coal Mining Handbook* 1-5.

⁵⁸⁵ Prospecting is defined in section 1 of the MPRDA to the effect that it "means intentionally searching for any mineral by means of any method - (a) which disturbs the surface or subsurface of the earth, including any portion of the earth that is under the sea or under other water."

has an approved prospecting EMPr under the MPRDA for its entire mining and surface right⁵⁸⁶

Exploration or prospecting requires the preparation of an environmental impact assessment, an EMPr and rehabilitation plan, as drilling has an environmental impact.⁵⁸⁷ Section 5 of the MPRDA refers to the requirements under the NWA for the use of water from watercourses⁵⁸⁸ for prospecting purposes. In the event that the prospecting activities within and in close proximity to wetlands are included in the prospecting EMPr and the associated environmental aspects, impacts and mitigation measures are stipulated, such an EMPr would be regarded as an environmental authorisation.⁵⁸⁹ The prospecting activities would therefore be authorised under the NEMA. If the proposed prospecting activities are not included in the approved prospecting EMPr under the MPRDA, such activities would require authorisation from the DMR under the 2014 EIA regulations for listed activities, as they trigger activity 19 in GN R983 relating to the infilling or excavation of more than 5m² from a watercourse.⁵⁹⁰ If no listed activities are triggered, an amendment of the EMPr would be required. Regulation 32 of GN R982 indicates:

An environmental authorisation may be amended by following the process prescribed in this Part if the amendment will result in a change to the scope of a valid environmental authorisation where such change will result in an increased level or nature of impact where such level or nature of impact was not - (a) assessed and included in the initial application for environmental authorisation; or (b) taken into consideration in the initial environmental authorisation; and the change does not, on its own, constitute a listed or specified activity.

If the prospecting activities will be carried out in wetlands or within or near the floodplains buffer zones, the provisions of the NWA and the GN R704 regulations should be taken

⁵⁸⁶ Section 38 of the MPRDA. Section 38 was repealed by section 31 of Act 49 of 2008 with effect from 7 June 2013.

⁵⁸⁷ Activity 20 of GN R983 and SACMA 2005 *Surface Strip Coal Mining Handbook* 9-8.

⁵⁸⁸ Such as a "natural spring, lake, river or stream, situated on, or flowing through, such land or from any excavation previously made and used for prospecting, mining, exploration or production purposes, or sink a well or borehole required for use relating to prospecting, mining, exploration or production on such land."

⁵⁸⁹ Section 38B(1) of the *Mineral and Petroleum Resources Development Amendment Act* 49 of 2008 and NEMLA Bill 2015. Refer to section 3.5.1 of this dissertation.

⁵⁹⁰ Refer to the *Anker Coal* case on contraventions of the NEMA related to prospecting activities in a wetland discussed in section 3.4.2.2 of this dissertation. Contraventions relate to section 28(14)(a) read with sections 1, 28(15), 32, 34, 34B, 34C and 34H of the NEMA as in para 6.1.2 of the *Anker Coal* case.

into account. The prospecting activities will require a water use licence⁵⁹¹ unless they are otherwise authorised by the NWA, for example under a General Authorisation.⁵⁹² The discussion in section 4.7.1(b) on the requirements relating to the 500 meter buffer zone specified in GN R1199 will also be applicable here. Regulation 4(b) of GN R704 prohibits prospecting within the 1:50 year flood-line or within a horizontal distance of 100 meters from a wetland. If the prospecting activities are located within these buffer zones a GN R704 exemption will have to be obtained from the DWS.⁵⁹³

4.7.2.2 Scenario 4: Opencast/ underground coal mine geohydrological drilling

The operating mine mentioned in scenario 3 needs to conduct gehydrological drilling to inform the specialist studies required in support of the environmental authorisation process

The legislative requirements discussed in scenario 3 would also apply to geohydrological drilling to be conducted within or in close proximity (i.e. within the legislative buffer zones specified) of wetlands. The challenge lies in the fact that authorisation has to be obtained in order to gather data to inform authorisations. This has a significant impact on the timeframe for proposed mining projects. Regardless of whether the prospecting or geohydrological drilling is temporary and the impact thereof low, the environmental legal requirements remains applicable. In order to mitigate this challenge, the DWS has amended specifically the General Authorisation for section 21(c) and (i) water uses.⁵⁹⁴

4.7.2.3 Scenario 5: Mine-related infrastructure

The construction of mine-related infrastructure⁵⁹⁵ for a proposed underground or opencast coal mine

⁵⁹¹ See section 21(c) and (i) of the NWA for impeding, diverting or altering of the wetland.

⁵⁹² GN R1199 will have reference.

⁵⁹³ Regulation 3 of GN R704.

⁵⁹⁴ GN R509. Refer to section 3.5.2.2 of this dissertation.

⁵⁹⁵ "Mine-related infrastructure" refers among other things to conveyors, pipelines, haul roads, sewage treatment plants, mineral residue stockpiles and deposits and coal processing plants. Section 1 of the MPRDA states that processing, "in relation to any mineral, means the winning, extracting, concentrating, refining, calcining, classifying, crushing, screening, washing, reduction, smelting or gasification thereof."

In terms of water legislation the same principle applies as previously discussed, in that if the infrastructure impedes, diverts or alters the wetland a section 21(c) and (i) water use licence under the NWA is required.⁵⁹⁶ An example is the crossing of a wetland by a coal conveyor or water pipeline. Again, as with mining itself, the DWS holds the view that if infrastructure is located within the 500 meter buffer zone specified in GN R1199, a water use licence is required regardless of the nature of the impeding, diversion or alteration of the wetland. In this regard reference is made to the DWS Operational Policy⁵⁹⁷ that indicates that dams constructed for water management on mines, whether clean or dirty water, can entail section 21(c) and (i) water uses if located in the regulated zone or buffers of wetlands. However, it is unclear from the DWS policy if this approach should be followed only in the event that the activity which the mine has commenced with triggered a listed activity under the NEMA EIA regulations⁵⁹⁸ or in all instances of section 21(c) and (i) water uses. If the DWS requirements are met and the competent authority for environmental authorisation, in this instance the DMR, is willing to include it in the environmental authorisation, a section 22(3)⁵⁹⁹ process under the NWA can be followed to dispense with the requirement for a water use license.⁶⁰⁰ If the DWS requirements cannot be included in the environmental authorisation, a water use licence application will have to be submitted for approval.⁶⁰¹ In contrast, GN R704 is more specific in that it places a restriction on the location of residue deposits, dams, reservoirs and associated structures within the 1:100 year flood line or within a horizontal distance of 100 meters of a watercourse, including a wetland.⁶⁰² In order to position mining infrastructure legally, the following process is to be followed:

Step 1: identify all watercourses (inclusive of wetlands),

⁵⁹⁶ See section 3.5.2.2.

⁵⁹⁷ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 17.

⁵⁹⁸ GN R983, GN R984, GN R985 in GG 38282 of 4 December 2014.

⁵⁹⁹ Section 22(3) of the NWA stipulates that "a responsible authority may dispense with the requirement for a licence for a water use if it is satisfied that the purpose of this Act will be met by the grant of a licence, permit or other authorisation under any law."

⁶⁰⁰ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 18. Refer to section 3.4.2.2.

⁶⁰¹ Department of Water Affairs 2012 *Operational policy to regulate development and activities affecting watercourses* 18.

⁶⁰² Regulation 4 of GN R704.

Step 2: determine the 1:100 year flood lines for all the watercourses,

Step 3: determine the horizontal distance exclusion zones (100 meter),

Step 4: plot all the above on a map/ plan,

Step 5: obtain GN R704 exemption for all mining-related infrastructure within the exclusion zones from the DWS.⁶⁰³

A further restriction is the placement of sanitary conveniences, fuel depots and reservoirs for any substance that is likely to cause pollution of a water resource within the 1:50 year flood line of any watercourse.⁶⁰⁴ This poses a challenge to mine planning, as all mining infrastructure needs to be located outside of the 1:100 year flood, but sanitary conveniences outside the 1:50 year flood line.

Further restriction on the location of developmental activities is found in the 2014 EIA regulations under the NEMA. Development is defined as:⁶⁰⁵

building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, including any associated post development monitoring, but excludes any modification, alteration or expansion of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint.

Linear activities include railways, roads, pipelines, conveyor belts, powerlines, fences, and telecommunication lines.⁶⁰⁶ For the applicable listed activities refer to section 3.5.2.1 of this dissertation. In the event that listed activities are triggered, an application⁶⁰⁷ must be made to the DMR.⁶⁰⁸ In the light of the above discussion it is evident that if a single piece of infrastructure, for example a road, is located within 32 meters⁶⁰⁹ of the boundary of a wetland, multiple applications to different regulatory authorities will be required. For

⁶⁰³ Department of Water Affairs 2008 *Best Practice Guideline A5: Water Management of Surface Mines* 36.

⁶⁰⁴ Regulation 4(b) of GN R704.

⁶⁰⁵ Regulations 2 of GN R983.

⁶⁰⁶ Regulation 2 of GN R983.

⁶⁰⁷ In terms of regulations 19 and 20 of GN R982 if a basic assessment must be applied, and in terms of regulations 21 to 24 if a Social and Environmental Impact Assessment must be applied.

⁶⁰⁸ Regulations 6(7) of GN R982.

⁶⁰⁹ 32 meters being the closest buffer to the boundary of a wetland included in the NEMA listed activities.

the single road, an application under the NEMA is required to the DMR; an application for GN R704 exemption is required to the DWS, as well as a section 21(c) and (i) water use licence application to the DWS. If this is multiplied for each piece of infrastructure on the mine, this will result in a huge number of applications for approvals to different regulatory authorities for one mining project.

4.8 Conclusion

In this chapter the legislation described in chapter 3 has been applied to various scenarios pertaining to the impact of mining on wetlands in Mpumalanga. Existing mines have been deemed viable based on the mining works programme⁶¹⁰ approved by the DMR.⁶¹¹

From the application of the legislative framework set out in chapter 3 to practical scenarios it has become evident that the governance of the protection of wetlands is complex. It has become evident that legislative requirements overlap or even contradict one another with reference to buffer zones. The implementation of these buffer zones by the regulator further complicates the application of these requirements. What is evident is that the greenfield application is more streamlined than that of the brownfield application. In the different time periods discussed, different legal requirements applied relating to the protection of wetlands. Some mines' lives span these "legal" timeframes. This complicates the operation of the mines as they need to take into consideration their historic activities, their current activities (relying on transitional requirements) and their future activities, as well as the location of these activities in relation to wetlands. Table 5 summarises the three periods discussed in this and the preceding chapters, the legislation for the protection of wetlands, and its application to the scenarios given in this chapter.

⁶¹⁰ "Mining works programmes" means "the planned mining works programme to be followed in order to mine a mineral resource optimally" as per section 1 of the MPRDA.

⁶¹¹ Section 23 (1) of the MPRDA indicates that the Minister must grant a mining right if the mineral can be mined optimally.

TABLE 5: Summary of the legislation and the application thereof for the protection of wetlands within the coal mining industry in Mpumalanga

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	APPLICATION		
		UNDERGROUND MINING	OPENCAST MINING	MINING INFRASTRUCTURE
Pre-1998	Ramsar Convention on Wetlands of International Importance (1971)	Not included in the scenario analysis.		
	<i>Conservation of Agricultural Resources Act</i> 43 of 1893	Not directly applicable to mining.		
	<i>Water Act</i> 54 of 1956	<p>The Water Act 54 of 1956 made a distinction between public and private water.</p> <p>a) If the undermined wetland was regarded as private water the mine was entitled to the sole and exclusive use of the wetland.</p> <p>b) If the undermined wetland was regarded as a public stream it was the mine's legal obligation to obtain a permit</p>	<p>The Water Act 54 of 1956 made a distinction between public and private water.</p> <p>a) If the mined wetland was regarded as private water the mine was entitled to the sole and exclusive use of the wetland.</p> <p>b) If the mined wetland was regarded as a public stream it was the mine's legal obligation to obtain a permit under</p>	Not applicable

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	APPLICATION		
		UNDERGROUND MINING	OPENCAST MINING	MINING INFRASTRUCTURE
		under section 20 of the Water Act 54 of 1956.	section 20 of the Water Act 54 of 1956.	
Pre-1998	<i>Minerals Act 50 of 1991 or the Mines and Works Act 27 of 1956.</i>	Mining underneath wetlands should have been included in the EMPr and the surface rehabilitation plan.	Opencast mining through wetlands should have been included in the EMPr and the surface rehabilitation plan.	Not applicable
	<i>Environmental Conservation Act 73 of 1989 and GN R1182. 5 September 1997 to 2 July 2006.</i>	These regulations were not enforced in the mining industry.		

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	APPLICATION		
		UNDERGROUND MINING	OPENCAST MINING	MINING INFRASTRUCTURE
Post-1998 until 2014	<p><i>National Water Act 36 of 1998</i></p> <p>Section 21(c): Impeding and diverting the flow of water in a watercourse.</p> <p>Section 21(i): Altering the bed, banks, course and characteristics of a watercourse.</p>	<p>Mining underneath a wetland is regarded as a section 21(i) water use by the DWS, as this may result in subsidence of the wetland resulting in an impact on the characteristics thereof.</p> <p>It may also be regarded as a section 21(c) water use as it can result in the impedance or diversion of water in the wetland through water ingress from the wetland into the underground workings.</p>	<p>Opencast mining through wetlands will result in the permanent destruction of the wetlands and the total loss of biodiversity and habitat and is regarded as a section 21(c) and (i) water use.</p>	<p>Mining related infrastructure can impact on wetlands by impeding the flow of water to the wetland or altering the beds, banks course or characteristics of a wetland.</p>
		<p>If the mining underneath the wetlands would result in impeding, diverting or altering the wetlands, the mine had to apply for a water use licence from the DWS.</p>	<p>If the opencast mining would result in impeding, diverting or altering the wetlands the mine had to apply for a water use licence from the DWS.</p>	<p>If the mining-related infrastructure would result in impeding, diverting or altering the wetlands, the mine had to apply for a water use licence from the DWS.</p>

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	APPLICATION		
		UNDERGROUND MINING	OPENCAST MINING	MINING INFRASTRUCTURE
Post-1998 until 2014		<p>Underground mining can be regarded as an ELWU under section 24 of the NWA if:</p> <p>a) Mining commenced 2 years prior to the commencement of the NWA and</p> <p>b) Such mining was authorised under the <i>Water Act</i> 54 of 1956.</p> <p>The mine can rely on the transitional provisions in the NWA if the continuation of the mining underneath the wetlands is an extension of the same coal seam that was lawfully mined prior to 1996.</p>	<p>Opencast mining can be regarded as an ELWU under section 24 of the NWA if:</p> <p>a) Mining commenced 2 years prior to the commencement of the NWA and</p> <p>b) Such mining was authorised under the <i>Water Act</i> 54 of 1956.</p> <p>The mine can rely on the transitional provisions in the NWA if the continuation of the mining of the wetlands is an extension of the same opencast pit that was lawfully mined prior to 1996.</p>	<p>The impedance, diversion or alteration of the wetlands by infrastructure can be regarded as an ELWU under section 24 of the NWA if:</p> <p>a) Construction commenced 2 years prior to the commencement of the NWA and</p> <p>b) Such construction was authorised under the <i>Water Act</i> 54 of 1956.</p>

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	APPLICATION		
		UNDERGROUND MINING	OPENCAST MINING	MINING INFRASTRUCTURE
Post-1998 until 2014	GN R704 in GG 20199 of 4 June 1999.	<p>Regulation 4 stipulates that no person in control of a mine may carry out any underground mining within the 1:50 year flood line or within a horizontal distance of 100 meters from a watercourse.</p> <p>The mine would thus need to apply for exemption from the requirements of regulation 4 from the DWS for mining underneath wetlands.</p>	<p>Regulation 4 indicates that a mine may not carry out any opencast mining within the 1:50 year flood line or the horizontal distance of 100 meters for any watercourse.</p> <p>All opencast mining should be outside the exclusion zones. If opencast mining will occur within the exclusion zones exemptions should be obtained from the DWS.</p>	<p>Regulation 4 places a restriction on the location of residue deposits, dams, reservoirs and associated structures within the 1: 100 year flood line or within a horizontal distance of 100 meters from a watercourse. A further restriction is the placement of sanitary conveniences, fuel depots and reservoirs for any substance that is likely to cause pollution of a water resource within the 1:50 year flood line of any watercourse.</p> <p>The mine would thus need to apply for exemption from the requirements of regulation 4 from the DWS if any infrastructure is located within the exclusion zone.</p>

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	APPLICATION		
		UNDERGROUND MINING	OPENCAST MINING	MINING INFRASTRUCTURE
Post-1998 until 2014	GN R1199 in GG 32805 of 18 December 2009.	A General Authorisation relieves a water user from the need to apply for a water use licence. Regulation 6(b) of GN R1199 indicates that a General Authorisation does not apply to a water use in terms of section 21(c) and (i) within a 500 meter radius from the boundary of a wetland. If the exclusions find application then the mine will not be able to rely on the General Authorisation and will need to apply for a water use licence.		
	<i>Environmental Conservation Act 73 of 1989. 5 September 1997 to 2 July 2006.</i>	These regulations were not enforced in the mining industry.		
	<i>National Environmental Management Act 107 of 1998</i>	The NEMA-listed activities refer to developmental activities within 32 meters of a wetland or activities undertaken within a watercourse. These activities would not be applicable to underground mining.	The NEMA-listed activities refer to developmental activities within 32 meters of a wetland. These activities would not be applicable to opencast mining.	Developmental activities within 32 meters of a wetland.
	2006 EIA regulations: GN R385, 386 and 387 in GG 28753 of 2 June 2006. 3 July 2006 to 1 August 2010 (1 April 2007 for mining operations).		If opencast mining commenced post 1 April 2007, listed activity 4 of GN R386 would have applied: "The dredging, excavation, infilling, removal or moving of soil, sand or rock exceeding 5 cubic meters from a river, tidal lagoon, tidal river, lake, in-stream dam, floodplain or wetland."	The requirements for mining infrastructure during this period were not included in the scenario analysis.

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	APPLICATION		
		UNDERGROUND MINING	OPENCAST MINING	MINING INFRASTRUCTURE
Post-1998 until 2014	2010 EIA regulations: GN R543, 544, 545 and 546 in GG 33306 of 1 August 2010 (2 August 2010 to 7 December 2014).		If opencast mining commenced post 2 August 2010 the following NEMA-listed activity would have applied - activity 19 of GN R544: "The infilling or depositing of any material of more than 5 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic meters from: (i) a watercourse..."	
	<i>National Environmental Management: Biodiversity Act 10 of 2004</i>	Not included in the scenario analysis.		
	<i>National Environmental Protected Areas Act 57 of 2003</i>	Not included in the scenario analysis.		
	<i>National Environmental Management: Integrated Coastal Management Act 24 of 2008</i>	Not applicable to mining in Mpumalanga.		

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	APPLICATION		
		UNDERGROUND MINING	OPENCAST MINING	MINING INFRASTRUCTURE
Post-1998 until 2014	<i>Mineral and Petroleum Resources Development Act 28 of 2002</i>	Mining underneath wetlands should have been included in the EMPr and the surface rehabilitation plan.	Opencast mining through wetlands should have been included in the EMPr and the surface rehabilitation plan.	Not applicable
Post-2014	<i>National Environmental Management Act 107 of 1998</i>	An approved EMPr, it seems, would as from 7 December 2014 be regarded as an approved environmental authorisation in terms of the NEMA.		
	GN R982, 983, 984 and 985 in GG 38282 of 4 December 2014	None of the listed activities would be triggered by underground mining.	The following listed activities in terms of the NEMA relate to the proposed opencast mining scenario: activity 19 of GN R983 and activity 24 of GN R984 related to the undertaking of activities within a watercourse. The mine will require an environmental authorisation by the DMR for the opencast mining activities that will extend through the wetlands.	Developmental activities within 32 meters of a wetland.
Post-2014	<i>National Water Act 36 of 1998</i> Section 21(c): Impeding and diverting the flow of water in a watercourse	The same application as for the period 1998 to 2014.		

TIME PERIOD	LEGISLATION, POLICY OR GUIDELINE	APPLICATION		
		UNDERGROUND MINING	OPENCAST MINING	MINING INFRASTRUCTURE
	Section 21(i): Altering the bed, banks, course and characteristics of a watercourse.			
	GN R509 Draft General Authorisation for Section 21(c) and (i) water uses.	The draft regulations were not included in the scenario analysis as were published in August 2016 only.		
	DWS 2014 <i>Guideline to regulate activities/developments affecting wetlands</i>	The DWS is of the view that any activity within the 500 meter boundary of a wetland constitutes a section 21(c) and (i) water use and requires a water use licence, irrespective of whether the activity alters, impedes or diverts the wetland.		

CHAPTER 5 CONCLUSION

5.1 Introduction

The aim of this dissertation was to determine if the current legal framework guarantees the protection of wetlands located within the coal mining industry in Mpumalanga.⁶¹² As discussed in chapter 2, coal mining has significant and unique impacts on wetlands. These impacts can occur during any or all lifecycle phases of a mine (prospecting, operational and decommissioning) and are likely to increase as the activities on the ground progress.⁶¹³ Coal mining impacts on the key hydrological processes⁶¹⁴ supporting wetland functionality. Opencast coal mining can result in the total destruction of these systems.⁶¹⁵ In 2013, of South Africa's "792 wetland ecosystems, 65% have been identified as threatened and 48% as critically endangered."⁶¹⁶ In the Mpumalanga Province, coal seams are inherently linked to the occurrence of wetlands.⁶¹⁷ The protection and governance of the impacts of coal mining on wetlands has in recent years attracted increased attention.⁶¹⁸ In order to support the main aim of the research, this dissertation has reviewed the legal definition of the term wetland, evaluated the South African environmental legal framework governing wetlands, and applied the legal framework to various scenarios within the Mpumalanga coal mining environment to determine if the legal framework sufficiently protects wetlands within the province.⁶¹⁹

5.2 Defining the challenges related to the term "wetland"

This dissertation⁶²⁰ indicated the complexity in defining the term "wetland" and the inconsistency in the legal interpretation thereof. The interpretative challenges are

⁶¹² Refer to section 1.1.

⁶¹³ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 10. Also refer to figure 4 in chapter 2.

⁶¹⁴ Through the impact on water quantity (flow) and water quality of wetlands.

⁶¹⁵ Refer to section 2.3.

⁶¹⁶ Department of Water and Sanitation 2013 *National Water Resource Strategy* 2013 9 (hereafter NWRS2). The NWRS2 "sets out the strategy to plan, develop, manage, protect and control the use of our water resources effectively for the future." Refer to Chapter 2 for the inclusion of wetlands in the definition of water resources.

⁶¹⁷ Exarro date unknown <http://www.exxaro.com/index.php/sustainability/wetlands-and-coal/>.

⁶¹⁸ Refer to section 2.2.

⁶¹⁹ Due to the scope of the legal framework governing wetlands, all of the challenges experienced in the practical application could not be covered in this dissertation. The challenges discussed are limited to those derived from the scenarios in chapter 4.

⁶²⁰ Refer to section 2.4.

exacerbated by the inclusion in the legal framework of a set of different buffer zones for developmental impacts on wetlands.⁶²¹ The South African legislation contains a wide array of direct and indirect definitions of wetlands.⁶²² For example, water resources are held in public trust by the DWS. The definition of water resources includes "watercourse," which in turn includes the term "wetland." The definition of "environment" in the NEMA also refers to water, while the NEMA also defines "watercourse" and "wetland." The inclusion of the term "wetland" in the definition of "watercourse" is relevant as the licensing requirements of water uses as contained in section 21 of the NWA⁶²³ and the listed activities requiring authorisation under the NEMA refer to the term "watercourse". "Wetland" is defined in the RAMSAR Convention, the NWA and the NEMA.⁶²⁴ The definition of "wetland" in the NEMA and the NWA is:

Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

Wetlands are thus defined based on hydrology, vegetation and soil.⁶²⁵ The NWA and NEMA definition refers to natural wetlands, while the RAMSAR definition explicitly includes artificial wetlands.⁶²⁶ The DWS, however, applies the legal framework to both natural and artificial wetlands, as both maintain hydrological flow. A wetland, despite what the term suggests, is not land that is always wet, as some types of wetlands such as pans can be dry for years.⁶²⁷ Due to the variability in the South African climate, wetlands in some years are wetter than in others. This is particularly evident at the outer boundary of the wetland. The presence of water alone is thus an unreliable indicator of the boundary and conditions of the wetland.⁶²⁸ The definition indicates that wetlands are

⁶²¹ Refer to 2.4.1 and 3.4.2.2 and 3.5.2.2.

⁶²² Table 3 contains a summary of the definitions of wetlands as contained in the South African legal framework.

⁶²³ Section 21(c) of the NWA refers to "impeding and diverting the flow of water in a watercourse" and section 21(i) refers to "altering the bed, banks, course or characteristics of a watercourse." Refer to 3.4.2.2.

⁶²⁴ Refer to Table 3.

⁶²⁵ Marnewecke and Kotzé 1999 "Guidelines for delineation of wetland boundary and wetland zones" W6/2.

⁶²⁶ Coaltech 2007 *Upper Olifants river catchment wetland inventory, Mpumalanga and Gauteng province* 12.

⁶²⁷ Water Research Commission 2015 *Wetland rehabilitation in a mining landscape* 6.

⁶²⁸ Marnewecke and Kotzé 1999 "Guidelines for delineation of wetland boundary and wetland zones" W6/2.

transitional in nature and the boundary of a wetland is often not clearly apparent in the field.⁶²⁹ However, as is evident in chapter 3, the legal framework is grounded on the notion of the boundary and buffer of a wetland.

5.3 "Boundaries" set by the definition of wetlands

The primary goal of classifying wetlands is to impose boundaries on natural ecosystems for the purpose of inventory, evaluation and management.⁶³⁰ While it is recognized that this boundary may be a human construct, it is necessary from a management and legal point of view and can be undertaken on the basis of scientifically defensible criteria.⁶³¹

South African legislation protects wetland systems and riparian habitats from developmental pressures by referring to wetland buffers.⁶³² It is recognised that wetland buffers have an important function in maintaining basic aquatic processes, reducing the impacts made by adjacent and upstream water users, protecting wild habitat, and in providing a number of supplementary societal benefits.⁶³³ In Mpumalanga the delineation of riparian buffers has significantly improved water quality and mitigated the impacts of mining activities.⁶³⁴

From the discussion in chapter 2 it is evident that the definition of buffer zones differs, depending on the purpose thereof.⁶³⁵ "The width of a buffer depends greatly on what resource you are trying to protect."⁶³⁶ Buffers around wetlands have only recently been

⁶²⁹ Marnewecke and Kotzé 1999 "Guidelines for delineation of wetland boundary and wetland zones" W6/2.

⁶³⁰ Cowardin *et al* 1979 in Breedts *Understanding subterranean hydrology in the delineation of wetlands* 4.

⁶³¹ Marnewecke and Kotzé 1999 "Guidelines for delineation of wetland boundary and wetland zones" W6/2.

⁶³² 500m buffer in GN R1199 and GN R509, 100m buffer in GN R704 and 32m buffer in GN R983 to 985. NWRS2 37. Chapter 2 referred to boundaries or buffer zones around wetlands as means of protecting these ecosystems.

⁶³³ Macfarlane *et al* 2014 "Preliminary guideline for the determination of buffer zones for rivers, wetlands and estuaries." iii.

⁶³⁴ Water Research Commission 2011 *Implementation Manual for Freshwater Ecosystem Priority Areas* 57.

⁶³⁵ Macfarlane *et al* 2014 "Preliminary guideline for the determination of buffer zones for rivers, wetlands and estuaries." iii.

⁶³⁶ Hawes and Smith "Riparian Buffer Zones: Functions and Recommended Widths" 4.

defined⁶³⁷ on a scientific basis through reference to the wetland delineation.⁶³⁸ Prior to this definition a 500 meter buffer was applied to the licensing of water uses impacting on wetlands under section 21(c) and (i) of the NWA.⁶³⁹ This is still in contradiction of the requirements of GN R704, which still includes a 100 meter arbitrary buffer, and of the NEMA, which includes a 32 meter buffer for developmental activities.⁶⁴⁰ In addition, while section 21(c) and (i) specifically refer to a "wetland from which water flows," the 500 meter buffer has been applied not only in respect of the flow regime of a wetland but also the physical and ecological attributes of a wetland, thereby increasing the regulated area.

Despite the importance of buffers zones, they are far from "the silver bullet that addresses all water resource related problems."⁶⁴¹ Buffer zones, for example, do not assist in addressing the hydrological impacts arising from stream-flow reduction activities.⁶⁴² What is important is that water can be introduced to a wetland through direct rainfall, runoff, channel flow and groundwater discharge.⁶⁴³ The 500 meter buffer⁶⁴⁴ was set in order to protect the wetland connectivity and recharge. However, the area required to sustain these functions might be larger, subject to the geohydrological, hydrological and spatial connectivity of the wetlands, soil conditions and groundwater flow.⁶⁴⁵ Some activities such as opencast coal mining may require buffers extending beyond the 500 meter mark in order to prevent the destruction of the wetland.⁶⁴⁶ Therefore, whether a section 2(c) and (i) water use is triggered should be decided by whether the water introduced to the

⁶³⁷ September 2016. Refer to table 3 for the definition of "extent of a watercourse" as included in GN R1180 and GN R509. The 500 meter radius buffer has been removed from the definition of a regulated area. As a scientifically delineated buffer has only recently been introduced, the scenario analysis in chapter 4 of this dissertation has focused only on the challenges faced prior to this introduction.

⁶³⁸ As per the DWS 2005 Practical Field Procedure for Delineation of Wetlands and Riparian Areas. Refer to section 2.4.3. The challenges experienced by the mining industry through the application of the DWS 2005 procedure fall outside the scope of this dissertation.

⁶³⁹ GN R1180.

⁶⁴⁰ Refer to table 5.

⁶⁴¹ Macfarlane *et al* 2014 "Preliminary guideline for the determination of buffer zones for rivers, wetlands and estuaries." iii.

⁶⁴² Such as section 21(c) and (i) water uses related stream flow reduction in wetlands. Macfarlane *et al* 2014 "Preliminary guideline for the determination of buffer zones for rivers, wetlands and estuaries." iii.

⁶⁴³ Ingram, 1983 and Williams, 1990 in Stoop *A framework methodology for the cumulative impact assessment of wetlands* 31.

⁶⁴⁴ GN R1199.

⁶⁴⁵ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* First edition Pretoria 33.

⁶⁴⁶ Department of Water and Sanitation 2014 *Guideline to regulate activities/ developments affecting wetlands* First edition Pretoria 45.

wetland will be impeded, diverted or altered by the water use. However, as seen in the scenario analysis in chapter 4, the buffer zones (especially the 500m buffer) are used to define the water use, and not the impedance, diversion or alteration caused by the activities.

5.4 Un/effective legislative framework?

As argued in chapter 3, various pieces of legislation govern the protection of wetlands in South Africa's mining industry. They can be characterised by their having had application in three distinct timeframes, namely pre-1998,⁶⁴⁷ between 1998 and 2014,⁶⁴⁸ and post-2014.⁶⁴⁹ During the analysis of the legislation and its application to scenarios within Mpumalanga, the following challenges were identified:

- (a) There is no uniform definition of a "wetland" in South African legislation.⁶⁵⁰
- (b) There is no uniform definition of the "buffer of a wetland" in South African legislation. Legislative requirements overlap or even contrast with one another, with reference to buffer zones.⁶⁵¹
- (c) The legislative framework made limited or no provision at all for the governing of the impacts of the mining industry on wetlands prior to 1998.⁶⁵²
- (d) The Delineation Guideline of 2005 and the NFEPA maps has had the result that areas previously delineated as non-wetland areas by land capability assessments and authorised as such are now being delineated as wetlands. The legislative framework does not include transitional arrangements to authorise activities that occurred and are occurring in such areas, and a mine would in this context immediately be in contravention of the legislation.⁶⁵³

⁶⁴⁷ 1998 saw the promulgation of the NWA and the NEMA.

⁶⁴⁸ As of December 2014 the "One Environmental System" is being implemented.

⁶⁴⁹ Refer to table 4.

⁶⁵⁰ Refer to section 2.5.

⁶⁵¹ Refer to section 2.5

⁶⁵² Refer to sections 3.3 and 4.5.

⁶⁵³ Refer to sections 2.4.2 and 4.6.1.1.

- (e) Therefore uncertainty exists as to the lawfulness of mining activities that lawfully commenced prior to 1998 but are presently located within wetlands and their associated buffers, as defined.⁶⁵⁴
- (f) Mining activities occur over a long period of time, some spanning over the three legislative timeframes discussed. The changes in legislation over the life of the mine have resulted in uncertainty about the applicability of the legislation to the mining activities, specifically activities impacting on wetlands.
- (g) The application of the legislative buffer zones, specifically the 500 meter contained in the general authorisation, is incorrect. The DWS requires that all activities located within the 500 meter buffer zone, regardless of whether they impede, divert or alter the wetland, are to be authorised merely on the location of the activity in relation to the wetland.⁶⁵⁵

To address the above challenges the following recommendations are made:

- (a) The definition of a "wetland" should be reviewed to be uniform for all legislation governing the protection of these ecosystems.
- (b) The definition should be based on the scientific understanding of the functioning of wetlands and should ensure the protection of all these functions.
- (c) In all relevant legislation the buffer zones are not to be arbitrarily determined but are to be based on scientific delineation and a risk-based approach to the impact of the mining activities on the delineated wetland. The implementation of a science-based tool to replace the arbitrary buffer included in the South Africa legislative framework will ensure better protection of these systems. It is proposed that such a tool be included in the norms and standards or regulations to replace the arbitrary buffer zones currently contained in the legislation.
- (d) Legislative requirements should be clear on the authorisations required for mining activities to commence and continue within the buffer zones defined. The amended

⁶⁵⁴ Refer to sections 4.6.1.1- 4.6.1.3.

⁶⁵⁵ Refer to section 4.7.1.1.

General Authorisation should provide relief in relation to the number of applications required by the DWS and abbreviate the turnaround time for the approval of such.

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