UNIVERSITY OF CAPE TOWN

School for Advance Legal Studies

ENTERING MURKY LEGAL WATERS: TRANSBOUNDARY IMPACTS OF ACID MINE DRAINAGE WITHIN THE LIMPOPO RIVER AS POTENTIAL BREACHES OF SOUTH AFRICA'S DUTY NOT TO CAUSE SIGNIFICANT HARM

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I hereby declare that I have read and understood the regulations governing the submission of LLM (Marine & Environmental) dissertations/research papers, including those relating to length and plagiarism, as contained in the rules of this University, and that this dissertation/research paper conforms to those regulations.

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CHAPTER 1 - INTRODUCTION & OVERVIEW

I. ENTERING MURKY LEGAL WATERS

The obligation[1] of a State not to cause significant harm to another State, or the duty of 'no significant harm', has become an important source of legal rights and responsibilities associated the transbounday harm of freshwater resources. The duty not to cause significant harm is now widely seen as a longstanding principle of international environmental law, and international water law.[2] Yet, the principle remains somewhat difficult to enforce, especially as regards to transboundary environmental harm *vis a vis* State responsibility. This has historically deterred States that have been impacted by transboundary harm from pursing matters for potential breaches of this obligation under international law. Recent high-profile international cases such as *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*[3] (*Pulp Mills*) demonstrate however that the status quo may be changing.[4]

Tranboundary watercourses[5] continue to grow in ecological, economic and political significance. This particularly the case for those States, known as riparians, whose territorial borders these rivers cross or touch upon. The Limpopo River is a pertinent example of the three-way collision of the increasing usage demands, rising water scarcity and diminishing water quality of Southern Africa's transboundary fresh water resources. Shared by South Africa, Botswana, Zimbabwe and Mozambique, the river is relied upon heavily by the riparian States for industrial, agricultural and potable water resources, yet is estimated to be nearing its maximum possible water allocation amongst the riparian States.[6] Compounding these issues of water quantity, or lack thereof, and the ongoing growth of water usage by riparian States are critical issues of degrading water quality.

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[1] The terms 'obligation' and 'duty' are used interchangeably hereinafter to denote a legal undertaking which is generally binding upon a State under international law.
[2] See Chapter 2.
[3] *Pulp Mills on the River Uruguay* (*Argentina v Uruguay*) ICJ Advisory Opinion (Order of 20 April, 2010) I.C.J. Reports 2010, (*Pulp Mills*).
[4] See Chapters 2 and 6.
[5] This paper adopts the definitions of a 'watercourse' in Art 2(a) and 'international watercourse' in Art 2(b) of the 1997 United Nations Convention on the Law of the Non-Navigational Uses (see discussion in Chapter 4).
[6] Closure refers to a watercourse in which the total water resources available have been fully allocated for various uses. See discussion in Chapter 4 – I(a)(ii).

The very public issue of acid-mine drainage (AMD), especially on the Olifants River tributary (which flows from South Africa and joins the Limpopo River in Mozambique) is having severe local impacts upstream and transboundary impacts downstream. This poses current and potential future legal problems in relation to resource allocation, pollution, and dispute resolution. In particular, the spectre of potential legal ramifications for transboundary harm on these precious, diminishing and increasingly polluted international watercourses has come to the fore. Therefore, the critical issue of AMD pollution of the Olifants River tributary of the Limpopo River that is occurring in South Africa provides an ideal scenario to examine this intersection of transboundary harm and the potential for establishing breaches of the duty of no significant harm.

II. RECENT DEVELOPMENTS PROVIDING IMPETUS FOR THIS RESEARCH

(a) UNWC nearing entry into force

It is just over 15 years since South Africa became an inaugural signatory to, and ratified, the United Nations Convention on the Non-Navigational Uses of International Watercourses (UNWC).[7] The UNWC represents the key framework agreement governing international watercourses and whilst it was supported by over 103 nations when initially adopted in 1997, it has not entered into force.[8] Yet, an ongoing global campaign targeting riparian States has led to a recent surge in support as well as ratifications, whereby the UNWC currently only requires seven more States to reach the quorum of 35 to enter into force.[9] It is therefore time to re-evaluate the legal obligations for States who have already ratified the UNWC since its adoption - South Africa is one of those States.

[7] United Nations Convention on the Non-Navigational Uses of International Watercourses, opened for signature 21 May 1997, 36 ILM 700 (not yet in force) (UNWC).
[8] Alistair Rieu-Clarke, Ruby Moynihan and Bjørn-Oliver Magsig *UN Watercourses Convention User's Guide* (2012) University of Dundee, U.K., at 36.
[9] Green Cross International, 'Italy ratifies UN Watercourses Convention: Major step towards entry into force of global water treaty' 7 August 2012, *Green Cross International website*, available at: *http://www.gcint.org/news/italy-ratifies-un-watercourses-convention-major-step-towards-entry-force-global-water-treaty* accessed on 10 October 2012.

(b) Possible strict State liability for transboundary pollution

Several academics and legal scholars posit that international environmental law may be entering, or has transitioned to, a new phase of strict State liability for transboundary harm.[10] This issue of State responsibility has been extrapolated and applied specifically to transboundary watercourses through the *Pulp Mills* case finally decided by the International Court of Justice (ICJ) in 2010. There is also the *Aerial Herbicide Spraying (Ecuador v. Columbia)* [11] *(Aerial Herbicide)* case currently pending before the ICJ which also concerns an action for State responsibility regarding transboundary harm. Considering the urgent pollution issues facing most of South Africa's transboundary rivers, it seems very timely to evaluate these legal developments against the current context of the Limpopo River by using the urgent and specific pollution issue of AMD occurring in the Olifants River tributary.

(c) South Africa's transboundary rivers are under extreme stress

South Africa is at a critical juncture regarding its freshwater resources. Most of its population are largely reliant upon the country's transboundary watercourses. Recent studies have shown that South Africa's international watercourses are under extreme stress from the compounding factors of: increased usage (for industrial, agricultural and domestic uses);[12] decreasing quality (from pollution);[13] and growing water scarcity of the limited available freshwater resources.[14] With South Africa's transboundary rivers facing critical usage demands, scarcity challenges and pollution issues, the Limpopo River and its tributaries provide a critical snapshot of the issues that face many transboundary rivers in the Southern African region. It is thus timely to evaluate South Africa's obligations under international law and the key substantive and procedural legal implications that may arise from the breach of its duty to do no significant harm.

[10] See generally, Esposito, R. 'The ICJ and the Future of Transboundary Harm Disputes: A Preliminary Analysis of the Case Concerning Aerial Herbicide Spraying (Ecuador v. Colombia)' (2010) *Pace International Law Review* 1; Viñuales, J.E. 'The Contribution of the International Court of Justice to the Development of International Environmental Law' (2008) 32 *Fordham International Law Journal* 232.
[11] *Case Concerning Aerial Herbicide Spraying (Ecuador v Columbia)* Application Instituting Proceedings (Ecuador v Colombia), 2008 I.C.J. Pleadings 10 (Mar. 31, 2008), available at *http://www.icj-cij.org/docket/-files/138/14474.pdf* accessed on 11 August 2011 (*Aerial Herbicide*).
[12] See discussion in Chapter 4.
[13] Ibid.
[14] Ibid.

III. EXISTING LITERATURE AND RESEARCH QUESTION

In light of the issues raised above, certain critical research questions arise. To date, much has been written on the status of customary international law (CIL) and treaty law in relation to South Africa's transboundary rivers. From a legal perspective, at the regional level, some studies have focused on the interaction between the UNWC and the Southern African Development Community Revised Protocol on Shared Watercourses (SADC Revised Protocol)[15] and the subsequent possible legal implications for Southern African riparian nations.[16] At the country level, few studies have dealt specifically with investigating the legal rights and duties of international watercourse agreements for South Africa's transboundary rivers.[17] However, both regional and country studies have often failed to ground their analysis in tangible case studies of how current uses, management or pollution of these transboundary watercourses translates to the practical impacts on the legal rights and responsibilities of one or more riparian States.

However, several studies have been conducted on South Africa's transboundary rivers and its international agreements with riparian nations regarding matters ranging from institutional governance and integrated water resource management to their underlying political ecology and historical development.[18] Yet, these have generally been perfunctory legal analyses of the intersection between these matters and issues of

[15] Southern African Development Community Revised Protocol on Shared Watercourses, 2000, opened for signature 7 August 2000 (entered into force 22 September 2003) (SADC Revised Protocol).

[16] See generally, Salman, S.M.A. 'Legal Regime for Use and Protection of International Watercourses in the Southern African Region: Evolution and Context' (2001) 41 *Natural Resources Journal* 981; Malzbender, D. and Earle, A. 'The Impact and Implications of the Adoption of the 1997 UN Watercourse Convention for Countries in Southern Africa' (2007) *WWF International – Global Freshwater Programme*.

[17] See generally, SADC, 'Legal Opportunities and Constraints for ORASECOM' *Report No. ORASECOM 007/2009*, April 2009, available at *http://www.orasecom.org/_system/writable/DMSStorage/661ORASECOM %20Legal %20Analysis.pdf* accessed on 12 February 2012.

[18] See generally, Ashton, P.J., et al. 'An Overview of the Impact of Mining and Mineral Processing Operations on Water Resources and Water Quality in the Zambezi, Limpopo and Olifants Catchments in Southern Africa' (2001) *Contract Report to the Mining, Minerals and Sustainable Development (Southern Afirca) Project*, CSIREnvironmentek, Pretoria, South Africa and Geology Department, University of Zimbabwe, Harare, Zimbabwe. Report No. ENV-P-C 2001-042, available at *http://pubs.iied.org/pdfs/G00599.pdf* accessed on 17 September 2012; Kistin, E.J, et al., 'An overview of the content and historical context of the international freshwater agreements that South Africa has entered into with neighbouring countries' (2009) 9 *International Environmental Agreements* 1; Savenije, H.H.G., and van der Zaag, P. 'Conceptual framework for the management of shared river basins; with special reference to the SADC and EU' (2009) 2 *Water Policy* 9; Heyns, P.S.V.H., Patrick, M.J., Turton, A.R. 'Management in Southern Africa: Meeting the Challenge of Joint Planning and Management in the Orange River Basin' (2008) 24(3) *Water Resources Development* 371; Turton, A.R. 'New Thinking on the Governance of Water & River Basins in Africa' (2010) 6 *South African Institute of International Affairs Research Report*; Turton, A.R., et al. 'A Hydropolitical History of South Africa's International River Basins' (2004) *Water Research Commission Report No. 1220/1/04*.

international law, either CIL or treaty law. Moreover, there exists scant analysis of how environmental impacts, specifically transboundary pollution, could potentially be resolved via international law for those States involved.[19] Based on this collective body of knowledge and existing literature, there is a clearly identifiable gap in the existing literature regarding the legal implications for South Africa breaching its obligations under international law regarding specific transboundary pollution impacts originating within its territorial borders.

(a) Research Question

This paper aims to highlight the urgent need to address transboundary harm due to AMD pollution of the Olifants River tributary to the Limpopo River. The legal analysis will be couched within an examination of potential breaches of the duty not to cause significant harm within CIL and treaty law. Hence, the following research question is posed:

> What CIL and treaty obligations apply to South Africa as a result of harm from AMD originating in South Africa which results in transboundary impacts in Mozambique, and what if any breaches could be potentially be established?

It is hoped that by grounding the issue of AMD pollution causing transboundary harm within the context of potential breaches of international legal obligations and State responsibility that decision-makers in South Africa and other co-riparian States will be forced to re-examine current responses to the harmful impacts of AMD. By framing this burgeoning environmental catastrophe through the lens of possible breaches of CIL and

[19] See generally, Ashton et al., op cit n 18; Van Zyl, H.C., et al. 'Collection, Treatment and re-use of mine water in the Olifants River Catchment' (2001) *The Journal of The South African Institute of Mining and Metallurgy* 41; De Villiers, S. and Mkwelo, ST. 'Has monitoring failed the Olifants River, Mpumalanga?' (2009) 35(5) *Water South Africa* 671; Ochieng, G.M., Seanego, E.S., Nkwonta, O.I. 'Impacts of mining on water resources in South Africa: A review' (2010) 5(22) *Scientific Research and Essays* 3351; CSIR, 'Saving the Olifants River catchment will require "a truly collaborative effort"', 23 April 2010, available at *http://www.csir.co.za/enews/2011_mar/03.html* accessed on 6 February 2012; CSIR, 'Risk assessment in pollution in surface waters in the upper Olifants River System: Implications for aquatic ecosystem health and the health of human users of water' (March 2011) *Interim report to the Olifants River Forum – Executive Summary* 1 available at *http://www.orf.co.za/PDF/Risk%20Assessment%20of%20Pollution%20in%20Surface%20Waters_March%202011.pdf* accessed on 12 September 2011; Roux, S., Oelofse, S., de Lange, W. 'Can SA afford to continue polluting its water resources? – With special reference to water pollution in two important catchment areas' Paper presented at the CSIR 3rd Biennial Conference: Science Real and Relevant, 31 August – 1 September 2010, Pretoria, South Africa, available at *http://researchspace.csir. co.za/dspace/bitstream/10204/4262/1/Roux_2010.pdf* accessed on 17 December 2011; Zhu, T., and Ringler, C. 'Climate Change Implications for Water Resources in the Limpopo River Basin' for the International Food Policy Research Institute (IFPRI), *IFPRI Discussion Paper 00961*, April 2010.

treaty law obligations, it raises the potential to forcibly shift the legal and policy discourse regarding persistent and irreversible pollution of transboundary freshwater resources. Consequently, the impending threat of enforced sanctions and/or liability for transboundary damages may hopefully help to shift the persistent and over-riding narrative from national environmental protection measures to focus equally on international, mutually agreed responsibilities.

(b) Scope of research paper and analysis

Despite the various usage and demand issues facing the Limpopo River, this paper applies international law specifically to the issue of AMD pollution of the Olifants River tributary. This is done to provide an isolated case study of how international legal obligations might be breached and to subsequently identify potential resolutions. Legal analysis of the no significant harm principle in relation to pollution of the Olifants River tributary will focus on the substantive issues the obligation raises and directly related principles, in particular equitable and reasonable utilisation (ERU). The paper will subsequently highlight potential procedural options raised by possible breaches of the duty. State responsibility is the focus of this examination of the duty of no significant harm. As such, an in-depth exploration of possible outcomes via dispute resolution procedures and relevant forums is beyond the scope of this paper.

In summary, this paper will: identify the relevant CIL and treaty-based obligations based on the rule 'to do no significant harm' applicable to the issue of AMD polluting the Olifants River tributary; highlight potential breaches and the substantive legal issues such breaches may raise; and finally discuss possible avenues available for Mozambique and South Africa to resolve these issues with a view to discussing potential legal challenges that may arise in the future.

IV. OUTLINE

This paper begins by identifying the original articulations of the duty to do no significant harm in international law. Chapter 2 traces the evolution of this duty in CIL and treaty law (particularly multi-lateral environmental agreements and more specifically international water treaties) to its most recent formulations and status. Chapter 3 seeks to highlight all of South Africa's international agreements,

predominantly in relation to transboundary watercourses, relevant to this critical issue facing the Olifants River with the aim of noting provisions that explicitly (or in some cases impliedly) codify the duty to do no significant harm and its directly related obligations, including dispute settlement procedures. Chapter 4 provides the context for this paper and analysis of the duty to do no significant harm by detailing the general geography and some of the critical issues facing the Limpopo River and its tributaries. These broader challenges facing the Limpopo are then framed within a tangible case study of AMD polluting the Olifants River.

Chapter 5 applies South Africa's CIL and treaty law obligations to do no significant harm highlighted in Chapters 2 and 3 to the specific circumstances of AMD pollution described in Chapter 4 in order to determine the possibility of establishing breaches of the duty. Chapter 6 seeks to investigate the possible legal remedies available to Mozambique should it seek to establish State responsibility against South Africa in relation to any such breaches of its duty, with particular attention given to the applicable dispute resolution procedures under these international agreements. Critical current and predicted future legal challenges facing South Africa and Mozambique as regards the issue of AMD polluting the Olifants Rivers are then discussed before concluding by re-iterating any possible breaches of the duty to do no significant harm.

CHAPTER 2 - THE DUTY NOT TO CAUSE SIGNIFICANT HARM

I. INTRODUCTION TO THE DUTY IN INTERNATIONAL LAW

Due to the critical issue of increasing pollution facing transboundary freshwater resources, the obligation to do no significant harm has come to be of utmost significance in protecting these resources which are vital for environmental and human health. Regarded by some as one of the 'greatest worldwide human and environmental tragedies today'[20], the pollution of freshwater resources is at such a critical stage worldwide that 'more than one half of the world's major rivers are either heavily polluted and/or drying up in their lower reaches because of untreated effluent, overexploitation, and mismanagement'[21]. The issue of transboundary harm to water resources is becoming an increasingly important legal realm for riparian nations. The origins, development, and status of the duty to do no significant harm in relation to CIL and international water laws are examined here.

II. EVOLUTION OF THE DUTY IN CUSTOMARY INTERNATIONAL LAW

The general obligation of a State to 'do no harm' to another State is one of the most established principles of international law, both in CIL and treaty law.[22] Based on the Latin maxim *sic utere tuo ut alienum non laedus*, meaning one should not use one's property in such a way as to cause injury to another's property,[23] the duty to do no harm was firstly articulated as the general obligation of States to not cause injury within the territorial boundaries of another State. This construct of the general duty to do no harm, often referred to as the 'good neighbourliness' principle, is encapsulated in the oft quoted *Trail Smelter Arbitrations (US v. Canada)* of 1938 and 1941, where it was stated that: '[N]o state has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another […] when the case is of serious consequence and the injury is established by clear and convincing evidence'[24].

[20] United Nations Environment Programme (UNEP) *The Greening of Water Law: Managing Freshwater Resources for People and the Environment* (2011) UNON Publishing Services, Kenya, 48.
[21] UNEP op cit n 20 at 48.
[22] UNEP op cit n 20 at 44.
[23] UNEP op cit n 20 at 43-4.
[24] *Trail Smelter Arbitrations* (*US v Canada)* UN Reports of International Arbitral Awards (16 April 1938 and 11 March 1941) Volume III, 1905-1982 available at

This matter concerned environmental and property damage caused in Canada by toxic emissions originating from metal smelters across the border in the United States of America. Whilst only an arbitral award between two States, its significance stems from the common recognition that the decision, and more specifically that quote, formed the basis for the evolution of the duty of no significant harm in modern international law.[25]

The obligation for nations not to knowingly cause injury to another nation soon became tied to the principle of respect for territorial sovereignty via the *Corfu Channel* case of 1946.[26] Here, the ICJ extrapolated from the principle of respect for territorial sovereignty regarding two British warships passing through the waters off Albania under the established principle of maritime law regarding innocent passage through straits. The warships hit mines laid by the Albanian navy, damaging the ships and killing crew members. The United Kingdom took Albania to the ICJ seeking an order for compensation. In their verdict siding with Britain, the ICJ decreed that all nations are under an obligation to not knowingly allow their territory to be used for acts contrary to the sovereign rights of others.[27]

The ICJ has since re-affirmed the principles set out in the *Trail Smelter Arbitrations* and *Corfu Channel* matters, but significantly made them relevant to the issue of environmental protection.[28] In the *Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons*[29] (*Legality of Nuclear Weapons*) case, the ICJ set the foundations for what is the current formulation of the duty to do no harm in international environmental law. The Advisory Opinion re-iterated the principles to do no harm and the respect for territorial sovereignty but with specific regard to State responsibility for the environmental impacts from nuclear weapons.[30] The dissenting

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http://untreaty.un.org/cod/riaa/cases/vol_III/1905-1982.pdf accessed on 17 August 2011 (*Trail Smelter Arbitrations).*

[25] UNEP op cit n 20 at 44.

[26] *Corfu Channel Case* (United Kingdom v. Albania) ICJ Decision (Order of 9 April, 1949) ICJ Report 4, 1949.

[27] Viñuales op cit n 10 at 241.

[28] Ibid at 243.

[29] *Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons* (1996) 35 *ILM* 809, at 242 para 29. The ICJ considered the question posed by the United Nations General Assembly 'Is the threat or use of nuclear weapons in any circumstance permitted under international law?' whereby 'The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment' at 234 para 34.

[30] UNEP op cit n 20 at 44.

judgment of Weeramantry J supports the recognition that these principles were then an established part of CIL.[31]

However, it was the *Nuclear Test Cases (New Zealand v. France and Australia v. France)*[32] *(Nuclear Test Cases)* which brought together the different elements under the general duty to do no harm. In these cases, the ICJ determined that the environmental impacts from nuclear testing conducted by France in the South Pacific violated the general obligation under international law to do no harm. Significantly, it was the ICJ's specific reference to the fact that this obligation was applicable to *all* States, irrespective of the existence of any treaty obligations between the parties prohibiting transboundary environmental harm, which essentially established this duty under CIL.[33]

This status was later supported by the decision of the ICJ in the *Case Concerning the Construction of the Gabcikovo-Nagymaros Project (Hungary/Slovakia*)[34] (*Hungarian Dams*) matter. Whilst they did not explicitly refer to a specific norm of international law, the ICJ in their judgement re-iterated their statements in the *Nuclear Tests Cases* decisions with respect for territorial sovereignty and prevention of transboundary harm.[35] Therefore, combined with the obligation to prevent environmental harm, or 'injury' as it was originally couched, to another State, a general duty to do no harm was formulated within CIL which has since evolved into the obligation not to cause significant harm. This CIL duty has since been articulated in international environmental agreements, including: Article 21 of the Stockholm Declaration of the United Nations Conference on the Human Environment;[36] Principle 2 of the Rio Declaration on Environment and Development,[37] and, Article 3 of the

[31] Viñuales op cit n 10 at 244, citing the *Legality of Nuclear Weapons, Dissenting Opinion*, where it states: 'These principles of environmental law thus do not depend for their validity on treaty provisions. They are part of customary international law. They are part of the *sine qua non* for human survival'.
[32] *The Nuclear Test Cases* (*New Zealand v France and Australia v France*) ICJ Reports (1973) 135; ICJ Reports (1974) 457. In this matter, New Zealand and Australia separately sought measures against France then conducting underwater nuclear tests in the waters off both countries.
[33] Viñuales op cit n 10 at 234.
[34] *Case Concerning the Construction of the Gabcikovo-Nagymaros Project (Hungary/Slovakia*) (1998) 37 *ILM* 162 (*Hungarian Dams*).
[35] Ibid. at 235.
[36] Stockholm Declaration of the United Nations Conference on the Human Environment, 1972, opened for signature 16 November 1972, ILM 1416 (entered into force 17 December 1975) (Stockholm Declaration).
[37] Report of the United Nations Conference on Environment and Development: Rio Declaration on Environment and Development, 1992, U.N. Doc. A/CONF.151/26/Rev.1 (vol. I) *reprinted in* 31 I.L.M. 874 (Rio Declaration).

Convention on Biological Diversity.[38]As a result, over time this general obligation has also been codified within international water laws.

III. THE DUTY IN INTERNATIONAL FRESHWATER AGREEMENTS

The Helsinki Rules of 1966,[39] drafted by the International Law Association (ILA), were the first truly international effort to codify an agreement governing transboundary watercourses.[40] Yet, the Helsinki Rules did not refer to a separate obligation to do no harm.[41] Instead, they 'specify the injury that may result from the use of the river by one riparian as one of the factors for determining equitable utilization'[42] whereby the factor to be considered is 'the degree to which the needs of a basin State may be satisfied, *without causing substantial* [emphasis added] injury to a co-basin State'[43]. A subsequent iteration of the ILA's interpretation of the rules for transboundary watercourses are the 2004 Berlin Rules discussed below.[44]

In between the codification of the Helsinki Rules and the Berlin Rules as non-legally binding yet authoritative statements of international water laws, the United Nations Economic Commission for Europe (UNECE) agreed the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE Water Convention) in 1992.[45] The UNECE Water Convention is a regional framework agreement for transboundary freshwater resources, the first of its kind, which drew substantially from the Helsinki Rules and tailored them slightly to their geographical context.[46] Importantly, formulated around the two key normative pillars of the duty to do no harm and the principle of ERU, the UNECE Water Convention has extensive

[38] United Nations Convention on Biological Diversity, 1992, opened for signature 5 June 1992, 1760 UNTS 79 (entered into force 29 December 1993) (CBD).
[39] International Law Association (1966) *Report of the Fifty-Second Conference* Helsinki 447-553 ILA: London, U.K (Helsinki Rules).
[40] See Salman, op cit n 41 at 630-31 where it states 'And although they do not have any legally binding effect, the Helsinki Rules have been, as stated before, widely accepted as representing customary international law, and have had major influence on subsequent developments on international water law'.
[41] Salman, S.M.A. 'The Helsinki Rules, the UN Watercourses Convention and the Berlin Rules: Perspectives on International Water Law' (2007) 23(4) *Water Resources Development* 625 at 630.
[42] Ibid.
[43] Art V Helsinki Rules.
[44] International Law Association (2004) *Report of the Seventy-First Conference*, Helsinki 334-421, ILA: London, U.K (Berlin Rules).
[45] United Nations Economic Commission for Europe Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 1992, opened for signature 17 March 1992 (entered into force 6 October 1996) 31 ILM 1312 (UNECE Water Convention).
[46] See, Salman op cit n 41 at 630-31.

provisions in Article 2 regarding both these aspects. Art 2(1) stipulates that 'The Parties shall take *all appropriate measures* [emphasis added] to prevent, control and reduce *any transboundary impact* [emphasis added]'[47] before Art 2(2) lists particular factors which must be the focus of all appropriate measures taken by States, including 'pollution of waters causing or likely to cause transboundary impact'[48].

As evinced by the above provisions, the UNECE Water Convention introduces an element of due diligence to the duty to do no harm via the obligation to take 'all appropriate measures' which will be dealt with later in relation to the impacts of AMD in the Olifants River tributary. Additionally, the Convention noticeably articulates harm in terms of 'transboundary impact'. This is defined in Art 1(2) as 'any significant adverse effect on the environment resulting from a change in the conditions of transboundary waters caused by a human activity, the physical origin of which is situated wholly or in part within an area under the jurisdiction of a Party, within an area under the jurisdiction of another Party'[49]. It then continues by detailing certain physical/natural elements, human health aspects, and socio-economic conditions, or a combination thereof which is encompassed by this definition of 'effects on the environment'.[50] Therefore, the UNECE Water Convention not only signified a strengthening of the duty to do no harm in international water law via the due diligence element to take 'all appropriate measures', but went over and above the Helsinki Rules quantification of harm to mean 'any transboundary impact'.

(a) Clarification of the duty regarding watercourses

A pivotal development in the sphere of international water law, particularly from the perspective of transboundary rivers, and the duty to do no harm was the codification of the UNWC and its adoption in 1997.[51] As stated previously, despite the ongoing delay of its in entry into force, this framework convention represents the first global agreement pertaining to transboundary watercourses, including groundwater, and the culmination of efforts which began in 1970 when the UN General Assembly adopted a

[47] Art 2(1) UNECE Water Convention.
[48] Art 2(2)(a) UNECE Water Convention.
[49] Art 1(2) UNECE Water Convention.
[50] Art 1(2) UNECE Water Convention.
[51] See, Dellapenna, J.W. 'The customary international law of transboundary fresh waters' (2001) 1 (3/4) *International Journal of Global Environmental Issues* 264 at 277-287

resolution requesting the ILC to study the topic of international watercourses.[52] Therefore, the UNWC drew extensively from the work of the ILC over the preceding decades, especially the Helsinki Rules. Consequently, the duty to do no harm is phrased similarly whereby: 'Watercourse states shall, in utilising an international watercourse in their territories, take *all appropriate measures* [emphasis added] to prevent the causing of *significant harm* [emphasis added] to other watercourse States'[53].

Several other international agreements and non-binding documents agreed to since the UNWC further support this articulation as the generally accepted international standard of the duty to do no harm in international water law. The SADC Revised Protocol (it was revised from its original version adopted in 1996 to bring it into line with the UNWC after it was adopted in 1997) of 2000 repeats almost verbatim the same due diligence obligation to take 'all appropriate measures'[54] as well as qualifying the applicable standard of harm as 'significant'[55]. It goes even further by defining 'significant harm' as meaning '*non-trivial harm* [emphasis added] capable of being established by objective evidence *without necessarily rising to the level of being substantial* [emphasis added]'[56]. Hence, it seeks to clarify the level of harm even further than simply as significant which has important implications for its interpretation in terms of treaty obligations and possible breaches, as will be discussed in Chapters 3, 5 and 6.

Indeed, the Berlin Rules, which like their predecessor the Helsinki Rules, have no binding legal status other than to be articulations by the ILA of international water laws, clearly takes a unique approach in relation to both of these integral principles. In this sense, it refers both principles to one another by providing that States should share water equitably and reasonably without causing significant harm,[57] whilst also stipulating that there is a separate duty not to cause significant harm but that States must have due regard to the rights of States and factors associated with ERU.[58] In effect, by subjecting each one to the other, one can be led to conclude that the ILA presents the

[52] Salman op cit n 41 at 631.
[53] Art 7(1) UNWC.
[54] Art 3(10)(a) SADC Revised Protocol.
[55] Ibid.
[56] Art 1(1)(ii) SADC Revised Protocol.
[57] Art 12 Berlin Rules.
[58] Art 16 Berlin Rules.

two principles as equal.[59] The ramifications of such an interpretation will be discussed in Chapter 6.[60]

(b) Current status of the duty in transboundary freshwater agreements

In summary, the duty to do no significant harm has evolved as an essential norm in international water law. From its implicit origins in the Helsinki Rules it has become an established and explicit obligation within most treaties concerning transboundary freshwater resources, particularly international watercourses.[61] The duty is also now commonly recognised as a principle of CIL in relation to these same water resources and one which, based on its general formulation in existing and recent agreements, arguably incorporates the due diligence standard of taking 'all appropriate measures' and is qualified as rising to the level of being 'significant'.[62] To this extent, a number of other important international legal principles emanate from the duty to do no significant harm, including the obligations: to undertake an EIA for activities with the risk of transboundary impacts; to prevent and abate transboundary pollution; and, to protect ecosystems.[63] Many of these general obligations have been touched upon above and will be discussed in relation to South Africa's particular international treaty obligations regarding the Limpopo River.

IV. DEVELOPMENTS REGARDING STATE RESPONSIBILITY FOR HARM

Two recent international cases, one decided and one now being heard, before the ICJ may have significant implications for the duty of no significant harm in CIL, especially in relation to the standard of proof for State responsibility.

[59] Salman op cit n at 637, where it states 'Accordingly, it can be concluded that by subjecting each principle to the other, the Berlin Rules present the two principles as equal'.

[60] For an introductory discussion and overview on the interpretation and relationship between these two principles, see generally, Utton, A.E. 'Which Rule Should Prevail in International Water Disputes: That of Reasonableness or that of No Harm?' (1996) 36 Natural Resources Journal 635; Bourne, C.B. 'The Primacy of the Principle of Equitable and Reasonable Utilization in the 1997 Watercourses Convention' (1997) 35 *The Canadian Yearbook of International Law* 215; Wegerich, K., & Olsson, O. 'Late developers and the inequity of "equitable utilization" and the harm of "do no harm"' (2010) 35(6) *Water International* 707.

[61] UNEP op cit n at 44; Rieu-Clarke, Moynihan, Magsig op cit n 8 at 117.

[62] UNEP op cit n at 43; Rieu-Clarke, Moynihan, Magsig op cit n 8 at 117.

[63] UNEP op cit n 20 at 45; See generally, Rahaman, M.M. 'Principles of international water law: creating effective transboundarywater resources management' (2009) 1(3) *International Journal of Sustainable Society* 207.

(a) Pulp Mills case

The *Pulp Mills* case,[64] which was decided in 2010, has been referred to as the most significant case since the *Trail Smelter Arbitrations*, if not arguably 'the most important case on international environmental law ever decided by any international court so far'[65]. It concerned the planned construction of two pulp mills (approved unilaterally for construction in Uruguay) on the River Uruguay which forms the border between Argentina and Uruguay. Argentina initially sought reparations regarding perceived downstream impacts within its borders from pollution and Uruguay's alleged apparent failure to obey treaty obligations between the States regarding prior notification and consent for planned measures.[66] Argentina also requested provisional measures to make Uruguay suspend all construction of the pulp mills and to make them cooperate in good faith to resolve the matter.[67] Argentina then sought a final declaration that Uruguay: 'cease immediately the internationally wrongful acts; re-establish on the ground and in legal terms the situation that existed before these internationally wrongful acts were committed; pay compensation to Argentina for the damage caused that would not be remedied by that situation being restored; and, provide adequate guarantees that it will refrain in future from preventing the Statute from being applied.'[68]

The ICJ, after refusing different requests for provisional measures from both countries, delivered a final verdict in 2010 that reinforced several key principles and obligations of international environmental law. Not only did it affirm the obligation for Environmental Impact Assessment (EIA) for planned measures where there is any risk of serious transboundary impacts, [69] but additionally decreed that parties have a duty to cooperate in good faith and must consider the principles of ERU and sustainable development in balancing competing uses of a transboundary river.[70] The ICJ decision importantly cites the *Legality of Nuclear Weapons* and *Corfu Channel* cases respectively in re-iterating the duty to do no harm.

[64] *Pulp Mill*s supra n 3.
[65] Boyle, A. 'Pulp Mills Case: A Commentary' 2010, available at http://www.biicl.org/files/5167_pulp _mills _case.pdf accessed on 13 January 2013
[66] *Pulp Mills on the River Uruguay (Argentina v Uruguay)* Provisional Measures, (Order of 13 July 2006), I.C.J. Reports 2006, at 113 para 5 & 6.
[67] Ibid.
[68] *Pulp Mills* supra n 3 para 22-24.
[69] *Pulp Mills*, supra n 3 para 205.
[70] Ibid.

Most significantly though, at least for the purposes of this paper, the *Pulp Mills*[71] case goes as far as to articulate this duty in line with the UNWC, SADC Revised Protocol and Berlin Rules (discussed below) whereby 'A State is thus obliged to use all of the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing *significant damage* [emphasis added] to the environment of another state.'[72] The ICJ also reiterated the due diligence element of this duty which includes: 'adoption of appropriate rules and measures';[73] 'a certain level of vigilance in their enforcement';[74] 'the exercise of administrative control applicable to public and private operators';[75] 'careful consideration of the technology to be used';[76] and, EIA and prior notification and consent. Consequently, the duty not to cause significant harm under CIL is now broadly recognised as incorporating an obligation of due diligence which includes those general requirements.

(b) Aerial Herbicide case

The other crucial proceeding that is currently pending before the ICJ is the *Aerial Herbicide* case.[77] This matter concerns a claim by Ecuador that since approximately 2000 the Columbian Government has been engaging in aerial spraying of extremely toxic herbicides in frontier areas along their border with Ecuador.[78] Columbia has consistently claimed that the sprayings are an attempt to control Revolutionary Armed Forces of Columbia operating illicit cocoa and poppy plantations suspected to be growing in these areas. [79] However, Ecuador's application before the ICJ claims that these sprayings have, over a sustained period of time, led to serious transboundary environmental and health impacts within their territorial boundary.

In this regard, Ecuador claims that the toxic herbicides have broadly caused: severe damage to local crops; serious illness to local farm and native animals; and, grave health complications for some of the indigenous populations who live in these

[71] *Pulp Mills*, supra n 3.
[72] *Pulp Mills* supra n 3 para 101.
[73] *Pulp Mills* supra n 3 para 197.
[74] *Ibid.*
[75] *Ibid.*
[76] *Pulp Mill*, supra n 3 para 223.
[77] *Aerial Herbicide* supra n 11.
[78] *Aerial Herbicide* supra n 11 at Annex II para 3.
[79] Ibid.

frontier regions.[80] Ecuador also alleges that Columbia has ignored repeated and sustained attempts to reach a mutual resolution to the aerial sprayings.[81] Therefore, in 2008 Ecuador made an application to the ICJ for an order that Columbia 'Respect the sovereignty and territorial integrity of Ecuador; take all steps to prevent the use of any toxic herbicides in such a way that could be deposited onto the territory of Ecuador; prohibit the use, by means of aerial dispersion, of such herbicides on or near any part of its territory with Ecuador; and, indemnify Ecuador for any loss or damage caused by its internationally unlawful acts'[82]. Both States are still waiting for a verdict on the application from the ICJ.

When viewed in light of the *Pulp Mills* Case, the *Aerial Herbicide* Case could also have tremendously important ramifications for CIL as regards the duty to do no harm. Given the current articulation of key general principles of international law affirmed in the *Pulp Mills* Case, namely the due diligence obligation and that the level of harm must be significant, the *Aerial Herbicide* presents another opportunity for the ICJ to confirm their status as recognised elements of CIL. In effect, if the ICJ were to endorse this formulation, it would arguably be undeniable that States were now under a due diligence obligation to prevent significant transboundary environmental harm under CIL. This is a highly contentious proposition but one which has certain merits that will be investigated in Chapters 5 and 6 with regards to State responsibility for breaching the duty to do no significant harm.

[80] *Aerial Herbicide* supra n 11 para 2-5.
[81] *Aerial Herbicide*, supra n 11 Annex II para 5.
[82] *Aerial Herbicide*, supra n 11 Annex II para 2.

CHAPTER 3 - SOUTH AFRICA'S DUTY TO DO NO SIGNIFICANT HARM

I. SOUTH AFRICA'S DUTY IN INTERNATIONAL AGREEMENTS

Approximately forty percent of the world's 263 international watercourses are currently the source of an international treaty or agreement.[83] These are generally regional or bilateral in nature and are largely developed, signed and ratified by those countries whose borders are adjacent to, or encompass, the international watercourse in question. South Africa is no different in this regard and has developed many international legal agreements to govern its transboundary watercourses. In particular, legal and institutional developments leading up to, and just after, South Africa's constitutional reforms have all played a significant role in re-shaping environmental protection and use of the country's freshwater resources. The result is a complex pattern of often overlapping international watercourse agreements. Due to the scope of this paper, only the specific legal obligations and duties relevant to South Africa and its duty to do no significant harm in relation to the Limpopo River and its tributaries, specifically the Olifants River, are considered.

II. GLOBAL TRANSBOUNDARY WATERCOURSE AGREEMENTS

At the global level, South Africa has ratified the primary framework convention governing the protection, use and management of transboundary rivers – the UNWC – discussed in Chapter 1. South Africa ratified the UNWC yet the other Limpopo River co-riparians (Botswana, Zimbabwe and Mozambique) have not. Hence, in terms of the Convention's obligations, strictly speaking under the international law of treaties, only South Africa is bound by the UNWC.[84] However, as it is not yet in force the UNWC remains non-binding against South Africa, or any of the co-riparians who may ratify.

[83] Loures, F., Rieu-Clarke, A.S., & Vercambe. M.L. 'Everything you need to know about the UN Watercourses Convention' (2008) *World Wildlife Foundation Series* available at *http://www.unwater.org/downloads/wwf_un_watercourses_brochure_for_web_1.pdf* accessed on 12 March 2012 at 4.

[84] As discussed later, if the UNWC is an articulation of the obligations of riparian States under existing customary international law, then theoretically States could be bound by these obligations. This discussion will be extrapolated in more depth in the following Chapters regarding possible breaches and legal remedies.

(a) UNWC

The overall purpose of the UNWC is to codify international norms relating to non-navigational uses of international watercourses. This is encapsulated in the Preamble with its stated aim to 'ensure the utilisation, development, conservation, management and protection of international watercourses and the promotion of the optimal and sustainable utilisation thereof for present and future generations... taking into account the special situation and needs of developing countries'[85]. International watercourses are defined as encompassing both surface water and groundwater which recognises subterranean watercourses as an essential part of, and influence on, terrestrial watercourses in riparian ecosystems.[86]

The core of the UNWC, Part II, sets out general principles, including ERU and participation.[87] In determining what is equitable and reasonable States must take into account all relevant social and economic considerations (a non-exhaustive list is set out in the UNWC).[88] States' actions must also be consistent with adequately protecting the watercourse from environmental degradation[89]. The concept of equitable participation is also introduced. The concept recognises that states must actively engage and cooperate with each other to achieve a regime that realises reasonable and equitable use for all concerned, especially developing nations.[90]

Procedurally, the UNWC prescribes guidelines, including an obligation of prior notification that must be followed when initiating any new planned measures in one state that may have significant detrimental impacts on other riparian states sharing the watercourse.[91] The environmental provisions of the UNWC set out the unqualified obligation for states to 'protect and preserve the ecosystems of international watercourses'.[92] The UNWC subsequently outlines duties whereby states must

[85] Preamble UNWC.
[86] Art. 2 UNWC; See also, McCaffrey, S. 'International Water Law for the 21st Century: The Contribution of the U.N. Convention' (2001) 118 *Water Resources Update* 11 ('2001a') at 11-12; McCaffrey, S. 'The Contribution of the UN Convention on the law of the non-navigational uses of international watercourses' (2001) 1(3/4) *International Journal of Global Environmental Issues* 250 ('2001b') at 251.
[87] Art. 5 UNWC.
[88] Art. 6 UNWC.
[89] Art. 6 UNWC.
[90] Article 8 UNWC.
[91] Part III UNWC.
[92] Art 20, UNWC.

immediately notify other states of harmful conditions and emergency situations that could potentially impact them.[93]

(i) The duty not to cause significant harm and its related obligations

As outlined in Chapter 2, the UNWC codifies the duty to do no significant harm in respect of international watercourses. Art 7(1) sets out the requirement that States take 'all appropriate measures' to prevent causing 'significant harm'. The obligation to take 'all appropriate measures' is one of due diligence whereby a State must implement whatever measures are reasonable to avoid transboundary harm occurring. Additionally, the UNWC clarifies the standard of harm required of the duty as being 'significant' which is in-line with existing CIL.

Art 7(2) stipulates that where significant harm is caused, States will have 'due regard for the provisions of Articles 5 and 6' regarding the principle of ERU, including the factors to be taken into consideration in determining what is equitable and reasonable. The duty in Art 7(2) also includes an element to consult with an affected State in order 'to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation'. This added obligation of discussing compensation is rarely discussed in regards to the duty to do no harm under the UNWC. Nevertheless, it will be touched upon in relation to potential legal remedies for breaches.

The UNWC sets out a number of directly or indirectly related obligations with the duty not to cause 'significant harm'.[94] Directly related is the aforementioned principle of reasonable and equitable utilisation in Arts 5 and 6 which are referred to in Art 7. Art 5(1) states that 'Watercourse States shall in their respective territories utilise an international watercourse in an equitable and reasonable manner' and in doing so they must take into account 'the interests of watercourse States concerned, consistent with *adequate protection* [emphasis added] of the watercourse'. Thereafter, Art 5(2) dictates that riparian nations have the right to 'participate in the use, development and protection of an international watercourse in an equitable and reasonable manner' but that such a right of participation 'includes both the right to utilise the watercourse and the duty to cooperate in the protection and development'.

[93] Arts 27, 28 UNWC.
[94] Those provisions of the UNWC which are indirectly related to the duty to do no harm include specifically: Art 21 which deals with the 'Prevention, reduction and control of pollution', and Art 23 'Protection and preservation of the marine ecosystem'.

Art 6(1) subsequently sets out a list of non-exhaustive environmental, health and socio-economic factors to be taken into consideration in determining what is ERU. In addition, Art 6(2) stipulates that when the need arises to apply these factors in determining whether a use is equitable and/or reasonable, Watercourse States must 'enter into consultations in a spirit of cooperation'. In reaching a determination, Art 6(3) also specifies that 'all relevant factors are to be considered together and a conclusion reached on the basis of the whole'. All of the above provisions are directly related to the duty not to cause significant harm under the UNWC and thus must be given 'due regard' Art 7(2) in evaluating any possible breaches of the duty by South Africa due to AMD.

III. SOUTH AFRICA & REGIONAL WATERCOURSE AGREEMENTS

On a regional scale, South Africa is a party to the SADC Revised Protocol. Adopted in 2000, it supersedes the original 1995 SADC Protocol on Shared Watercourses. The SADC Revised Protocol been ratified by all the member States of the SADC apart from Zimbabwe. Therefore, all of the co-riparians of the Limpopo River and Olifants River tributary except for Zimbabwe are parties to the Protocol and are bound by its obligations.

(a) SADC Revised Protocol on Shared Watercourses

The SADC Revised Protocol is a regional agreement with the overall objective 'to foster closer cooperation for judicious, sustainable and co-ordinated management, protection and utilisation of shared watercourses and advance the SADC agenda of regional integration and poverty alleviation'[95]. Art 1 provides various definitions. 'Industrial use' of a shared watercourse is defined as 'the use of water for commercial, electrical power generation, industrial, manufacturing and *mining* [emphasis added] purposes'.[96] 'Pollution of a shared watercourse' is defined as 'any detrimental alteration in the composition or quality of the waters of a shared watercourse which results

[95] Art 2 SADC Revised Protocol.
[96] Art 1(1) SADC Revised Protocol.

directly or indirectly from human conduct'.[97] Crucially, 'significant harm' is also defined here as will be examined below.

The general principles codified within the SADC Revised Protocol are contained in Art 3. These include: that control over how a State utilises a shared watercourse shall be without prejudice to their rights under the principle of national sovereignty;[98] promoting the principle of sustainable development;[99] the duty to cooperate with other riparian States to exchange information and data relevant to the use and protection of a shared watercourse;[100] and, ERU.[101] As for Part IV and V of the UNWC, Art 4 of the SADC Revised Protocol concerns specific provisions governing: management of shared watercourses;[102] prior notification and consent procedures for planned measures;[103] and protection and preservation of the aquatic environment. It also goes so far as to reiterate the same measures to prevent, reduce and control pollution as are listed in Art 21 of the UNWC.[104]

Finally, Art 6 provides generally for forming watercourse agreements, including the right for watercourse States to 'participate in the negotiation of and to become a party to any watercourse agreement that applies to the entire shared watercourse, as well as to participate in any relevant consultations'[105]. Critically, the final provisions on dispute resolution in Art 7 differ from the UNWC. This difference is investigated further in Chapter 6.

(i) The duty not to cause significant harm and its related obligations

The SADC Revised Protocol provision regarding no significant harm largely repeats verbatim the duty to do no harm enshrined in the UNWC. Indeed, as it was revised to bring it into line with UNWC, the duty follows the same articulation by dictating that State Parties 'shall, in utilising a shared watercourse in their territories, take *all appropriate measures* [emphasis added] to prevent the causing of *significant harm*

[97] Ibid.
[98] Art 3(2) SADC Revised Protocol.
[99] Art 3(4) SADC Revised Protocol.
[100] Art 3(6) SADC Revised Protocol.
[101] Arts 3(7)(a), 3(7)(b) SADC Revised Protocol.
[102] Art 4(3) SADC Revised Protocol.
[103] Art 4(1) SADC Revised Protocol.
[104] Art 2(b) SADC Revised Protocol.
[105] Art 6(6) SADC Revised Protocol.

[emphasis added] to other Watercourse States'[106]. Therefore, the obligation of due diligence on States to take action to avoid causing significant harm is incorporated into the duty to do no harm, and the level of harm is also classified as 'significant'.

Art 1 of the SADC Revised Protocol takes the unique step amongst most existing watercourse agreements of defining 'significant harm'. Significant harm is thus defined as meaning '*non-trivial harm* [emphasis added] capable of being established by objective evidence *without necessarily rising to the level of being substantial* [emphasis added]'. Undoubtedly, this is a critical provision which bears considerably on the ability to establish the level of harm caused, and in-turn identify and prove potential breaches of this duty. Subsequently, Art 10(3)(b) also mirrors the UNWC in its articulation whereby where significant harm is caused, the SADC Revised Protocol obliges the Watercourse State whose uses are causing such harm to have due regard to their responsibilities under Art 3(10)(a). In doing so, the Watercourse State in question must take all appropriate measures 'in consultation with the affected States, to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation'[107].

Similar to the UNWC, there are a number of related provisions in the SADC Revised Protocol which directly and indirectly attach to the duty to do no harm. The most prominent provision is Art 1 which takes the unique step amongst most existing watercourse agreements of defining 'significant harm' as examined above. The SADC Revised Protocol formulation of the duty to do no significant harm was discussed briefly in Chapter 2. This formulation differs from the UNWC in its relationship with the principle of ERU. Whilst Arts 3(7)(a) and (b) detail predominantly the exact same aspects of the principle and list factors to be taken into consideration in determining what uses of a shared watercourse are equitable and reasonable in Arts 3(8)(a) and (b), the relationship differs in that the duty to do no harm does not directly refer to this principle. This could have future legal ramifications which will be highlighted in Chapter 6.

[106] Art 3(10)(a) SADC Revised Protocol.
[107] Art 3(10)(b) SADC Revised Protocol.

IV. TREATIES APPLICABLE TO THE LIMPOPO AND OLIFANTS RIVERS

Over time, South Africa has entered into several international agreements in relation to not only the Limpopo River as a whole, but also specifically the Olifants River tributary. However, as demonstrated below, there is scant reference to the duty to do no significant harm within these treaties. Therefore, this section will provide an overview of the respective agreements and highlight their purpose and relevant application.

(a) The LIMCOM Agreement and the LBPTC Agreement

The key over-arching international body governing cooperation within the Limpopo River Basin (including the Olifants River tributary) is the Agreement on the Establishment of the Limpopo Watercourse Commission Agreement (LIMCOM Agreement)[108] which was established in 2003 via a treaty between Botswana, Zimbabwe, Mozambique and South Africa. Prior to the LIMCOM Agreement, in 1986 South Africa, Botswana, Zimbabwe and Mozambique signed the Agreement for the Establishment of the Limpopo Basin Permanent Technical Committee (LBPTC Agreement)[109] which whilst currently in force, will cease to remain so upon the ratification of the LIMCOM Agreement by all member States. the ratification process for the LIMCOM Agreement was 'expected to be completely ratified in 2011'. Consequently, these are the two principle international agreements governing the Limpopo River and its tributaries.

As an inter-governmental technical advisory institution, LIMCOM's objective, as per Art 7, is to advise the State Parties and provide recommendations regarding the measures for the protection, preservation and management of the Limpopo River and its tributaries. Whilst the Preamble acknowledges applicable existing agreements including the UNWC as well as recognising the 'spirit, value and objectives of the Revised Protocol on Shared Watercourses in the Southern African Development Community',

[108] Agreement between the Republic of Botswana, the Republic of Mozambique, the Republic of South Africa, and the Republic of Zimbabwe on the establishment of the Limpopo Watercourse Commission, 2003, opened for signature 15 September 2004 (entered into force 24 June 2005) (LIMCOM Agreement).
[109] Agreement between the Government of the Republic of Botswana, the Government of the People's Republic of Mozambique, the Government of the Republic of South Africa and the Government of the Republic of Zimbabwe relative to the Establishment of the Limpopo Basin Permanent Technical Committee, 1986, opened for signature 15 June 1986 (entered into force 8 October 1988) (LPBTC Agreement)

the LIMCOM Agreement does not contain a specific provision concerning the duty to do no harm.

Art 3 stipulates that certain general principles of the SADC Revised Protocol apply to the LIMCOM Agreement, including: sustainable development; inter-generational equity; pollution prevention; and the transboundary impact assessment principle. The pollution prevention principle is the most closely related to the duty to do no harm, with prevention defined as 'reasonable action to avoid any detrimental alteration in the composition or quality of the waters of the Limpopo'[110]. Yet, as it is only provided for in the LIMCOM Agreement in equivocal terminology, inter alia 'the prevention principle', and does not specifically reference the SADC Revised Protocol's related provisions, it is of reduced significance in terms of binding obligations on which to hold States to account. Consequently, there seemingly would be limited scope for establishing a State's breach of the obligation to do no harm under the LIMCOM Agreement as it is only vaguely implied rather than explicitly referred to in the text.

Similar to the LIMCOM Agreement, the LBPTC Agreement does not codify a specific provision regarding the duty to do no harm. Indeed, the LBPTC makes no mention of the established principle of ERU nor the principle of pollution prevention which are at least ambiguously alluded to in the LIMCOM Agreement.

(b) The JWC Agreement and Massingir Dam Agreement

Although the above watercourse agreements, specifically the LIMCOM and LBPTC Agreements, are related to the Limpopo River basin as a whole, we must also consider in isolation some international agreements relevant specifically to the Olifants River tributary. In this regard, the following agreements apply: the 1996 Agreement between the Government of the Republic of Mozambique and the Republic of South Africa on Establishment of a Joint Water Commission (JWC Agreement)[111] between South Africa and Mozambique; and, the Massingir Dam Agreement of 1971 between South Africa

[110] Art 1 LIMCOM Agreement

[111] Agreement between the Government of the Republic of South Africa and the Government of the Republic of Mozambique relative to the Establishment of the Joint Water Commission, 1996, opened for signature 1 July 1996 (entered into force 5 June 1997) (JWC Agreement).

and Portugal (and to which Mozambique would have ceded when it claimed Independence from Portugal in 1975) (Massingir Dam Agreement).[112]

The JWC entered into force in 1996. Its provisions are therefore currently binding on both South Africa and Mozambique. Based predominantly on the Helsinki Rules, its provisions were formulated to assist in dealing with water resources of common interest to both States. Consequently, the JWC's role is similar to the LBPTC and LIMCOM in that is was established to act as a technical advisor to South Africa and Mozambique.[113] Art 3 therefore outlines the powers and functions of the JWC whereby despite its lack of executive mandate, its role is to advise both Governments on all matters relating to water quality, pollution prevention, and issues of soil erosion which may also affect these water resources of 'common interest'.

Similar to the LIMCOM and LBPTC Agreements, the JWC Agreement makes no specific mention in the text of the duty to do no harm. Whilst Art 7 allows for the JWC to co-operate with other related Water Commissions or Organisations regarding the protection and utilisation of water resources, no explicit mention is made of the duty to do no harm or related principles. However, despite the absence of the duty to do no harm, it remains applicable to the resolution of disputes between South Africa and Mozambique over water resources of common interest. Hence, the Olifants River that flows between both States qualifies as a water resource of common interest.

The Massingir Dam Agreement concerns the construction of the Massingir Dam on the border between both countries and in-turn the water resources shared by both States when the Dam is at full capacity. Whilst still in force, its status under international law could potentially be called into question by Mozambique on the grounds of its perceived accession to the Agreement upon gaining independence via its colonial rulers, the Portuguese. This controversial matter is highlighted below.

Whilst it does not codify any explicit obligation regarding the duty to do no harm, Clause 6 of the Massingir Dam Agreement stipulates that 'The Government of the Republic of South Africa *shall not be held responsible for any pollution of the water* [emphasis added] of Massingir dam that may occur, *unless such pollution is caused wilfully or without reasonable precautionary measures* [emphasis added] having been

[112] Agreement between the Government of the Republic of South Africa and the Government of the Republic of Portugal in regard to rivers of mutual interest, 1961, opened for signature 1961 (entered into force 1964) (Massingir Dam Agreement).
[113] Art 3 JWC Agreement.

taken'. The inclusion of 'reasonable precautionary measures' here is especially crucial as it introduces the objective standard of reasonableness in assessing any precautionary measures that may have been taken, rather than adopting the 'all appropriate measures' terminology of the UNWC and SADC Revised Protocol. In effect, the objective standard of reasonableness requires a higher burden of proof to establish alleged fault on behalf of South Africa than the due diligence obligation of 'all appropriate measures' contained in the UNWC and SADC Revised Protocol. Hence, Clause 6 is critical to any implied duty to do no significant harm within the Massingir Dam Agreement in so far as it explicitly ensures that South Africa cannot be held responsible for any water pollution downstream on the Olifants River other than where such pollution is deliberate or South Africa has not taken reasonable precautionary measures.

CHAPTER 4 - TRANSBOUNDARY HARM WITHIN THE LIMPOPO RIVER

I. TRANSBOUNDARY HARM ISSUES FACING THE LIMPOPO RIVER

The Limpopo varies in its environmental status along its course from relatively preserved (in many of the national parks) to highly impacted (such as in the upper Olifants River).[114] As encapsulated by Malzebender and Earle:

> Over-utilisation of water resources and pollution arising from high density urban settlements, *mining* [emphasis added] and other industrial developments are seen to have an impact on the social, economic, political and natural environments downstream.[115]

Recent studies analysing water quality data along the Limpopo and its tributaries has revealed what many scientists have for a long time realised, that the River is already negatively impacted by transboundary pollution.[116] In the case of the Olifants River tributary this is due predominantly to mining activity in South Africa, as well as agricultural runoff.[117] Indeed, when taken as a unitary whole, the Limpopo River and its tributaries are facing critical transboundary issues.

(a) Geography and uses of the Limpopo River and its tributaries

The Limpopo River is one of the most important and largest transboundary rivers in the SADC region.[118]Approximately 1,750 km long,[119] it stretches across four riparian States: South Africa, Botswana, Zimbabwe and Mozambique.[120] The river begins in the highlands of the Limpopo Province in South Africa, flowing north in an arc shape then in an easterly direction to form the borders, firstly between South Africa and Botswana, and secondly between South Africa and Zimbabwe, eventually entering Mozambique before finally continuing southeast and emptying into the Indian Ocean.[121] Collectively, 24 tributaries feed in to the Limpopo River, with the largest ones including the Olifants

[114] Republic of Mozambique, 'Joint Limpopo River Basin Study – Scoping Phase – Final Report' (2010) *Report on behalf of Limpopo Basin Permanent Technical Committee* available at *www.icp-confluence-sadc.org/project/docs/publicfile?id=190* accessed on 17 August 2011 at vi.
[115] See, Malzbender and Earle op cit n 16 at 19-20.
[116] Republic of Mozambique op cit n 114 at 25.
[117] Ibid.
[118] Republic of Mozambique op cit n 114 at 1.
[119] Malzbender and Earle op cit n 16 at 18; Republic of Mozambique op cit n 114 at 2.
[120] Republic of Mozambique op cit n 114 at iv, 2.
[121] Republic of Mozambique op cit n 114, at 2; Malzbender and Earle op cit n 16 at 18.

(or 'Elefantes River' as it is known in Mozambique), Sand and Crocodile (West) Rivers.[122]

(i) Geography

The total catchment area of the entire Limpopo River Basin is approximately 408,000 km squared,[123] with the size and proportion of each riparian States' share of the basin being the following: South Africa, 184,150 (45%); Botswana, 81,400 km squared (20%); Zimbabwe, 62,900 (15%); and, Mozambique, 79,800 (19%).[124] Overall, the basin is broadly classified as arid to semi-arid, [125] yet the availability of water within this region along the Limpopo River is heavily influenced by the topographical and climatic conditions described above. Rainfall is distinctly seasonal, [126] but the upland mountain areas in South Africa, particularly the upper reaches of the Olifants River, receive the highest amounts per annum, whereas the lowland stretches record the lowest average annual rainfall.[127] The significance of this variability in topography, climatic conditions and water availability along the Limpopo River is that it exacerbates the impacts of water quality deterioration from transboundary pollution in relation to the current uses of the River in each of the different riparian States.[128]

(ii) Socio-economic context and current uses of the Limpopo River and its tributaries

Home to approximately fourteen million people, many of whom directly or indirectly rely on transboundary freshwater resources for their daily survival, the Limpopo River Basin is facing critical issues regarding past, current, and future planned uses in an

[122] See, Republic of Mozambique op cit n 114 at 3-5.
[123] Republic of Mozambique op cit n 114 at iv; Malzbender and Earle, op cit n 16 at 18; See also Carmo Vaz, A., and Lopes Pereira, A. 'The Incomati and Limpopo international river basins: a view from downstream'. In: *The management of shared river basins*, In H.H.G. Savenije, and P. Van der Zaag, *Focus on Development 8*. (1998) The Hague: Ministry of Foreign Affairs at 104 where they quote this area as 415,000 and 412,000 km squared respectively.
[124] See, Republic of Mozambique op cit n 114 at iv for the approximate total areas; See also, Carmo Vaz and Lopes Pereira op cit n 123 at 104 for the approximate percentage share of the total areas.
[125] Republic of Mozambique op cit n 114 at 7, See also at iv where it states that Average rainfall is 530mm per annum, ranging from 200 to 1,200 mm/annum.
[126] Republic of Mozambique op cit n 114 at iv.
[127] See, Republic of Mozambique op cit n 114 at 5-6.
[128] See generally, Zhu and Ringler op cit n 19.

increasingly water scarce environment.[129] Thus, 'access to water is of critical strategic importance to development in all parts of the basin'[130]. Current major water uses of the Limpopo River are classified as being: irrigated agriculture; industry; mining; power generation; subsistence agriculture; and, domestic use.[131] These categories can also be separated into urban and rural uses whereby, large urban centres such as Johannesburg and Pretoria (South Africa), Gabarone (Botswana), and Bulawayo (Zimbabwe) utilise a large proportion of the water resources within the basin for domestic use, power generation, *mining* and industry, especially in South Africa.[132]

Conversely, irrigated (mainly in South Africa, but also increasingly in Zimbabwe and Mozambique) and subsistence agriculture, as well as domestic use and to a much lesser extent livestock watering encompass the key water resource uses of rural areas. [133] Mozambique as the most downstream State relies almost solely on the Limpopo for agricultural irrigation, representing almost the entire quantity of water usage demands in Mozambique,[134] especially in the southern region of the country where irrigation schemes are almost completely dependent on the Limpopo for water supply.[135] Indeed, the largest water use by sector amongst all of the riparian States is irrigation which alone accounts for approximately 50% of all the water resource demands of the River.[136]

In regard to the above uses, South Africa and Zimbabwe, collectively, are nearing full capacity in terms of the water resources available from the Limpopo within their borders that they are able to exploit. [137] Additionally, despite water use for irrigation in Mozambique being almost above sustainable levels,[138] there are government plans to further develop significant areas along the Limpopo for agriculture, with the largest irrigation project in the country planned for a sugar cane farm on the banks of the Olifants River.[139] Thus, in scientific terms, the current scenario is that the whole Limpopo River is 'closed – or rapidly nearing closure' which means that overall demand is at the point of outstripping available estimated supply on current and

[129] Malzbender and Earle op cit n 16 at 18, 19; Republic of Mozambique, op cit n 114 at vi.
[130] Republic of Mozambique op cit n 114 at vi.
[131] Malzbender and Earle op cit n 16 at 18.
[132] Republic of Mozambique op cit n 114 at vi.
[133] See, Republic of Mozambique op cit n 114 at vi, 7.
[134] Republic of Mozambique op cit n 114 at 8.
[135] Malzbender and Earle op cit n 16 at 19; Turton 2010 op cit n 18 at 32.
[136] Republic of Mozambique op cit n 114 at vi.
[137] Malzbender and Earle op cit n 16 at 18; Turton 2010 op cit n 18 at 32.
[138] Republic of Mozambique op cit n 114 at 8.
[139] Ibid.

projected annual flow and rainfall averages.[140] As we will see in the sub-sections below, the combination of waste use, scarcity, and pollution challenges confronting the Limpopo subsequently exacerbates the critical issue of transboundary harm from AMD.

II. THE OLIFANTS RIVER AND TRANSBOUNDARY HARM FROM AMD

The Olifants River is one of the most important yet also most degraded tributaries of the Limpopo River. Beginning in the north-east of South Africa and flowing down into the Massingir Dam on the border with Mozambique before joining the main stem of the Limpopo River, the Olifants River is its largest tributary.[141] The upper Olifants River catchment is a critical economic hub for South Africa. Whilst irrigated agriculture presently accounts for almost 70 per cent of the total water usage of the Olifants within South Africa's borders,[142] this region is most notable for the historical uses and subsequent impacts of intensive mining on the River.[143] Due to its location South Africa's agricultural and mining heartlands, and consequently the economic importance of its waters to these resource-intensive and generally highly-polluting industries, the Olifants has been described as 'one of the hardest working, but also one of the most polluted, rivers in South Africa'.[144]

Mining continues to be the largest economic contributor in this region of South Africa, yet the resultant impacts on the Olifants River from years of unregulated or poorly monitored projects have left an indelible mark of pollution on its water resources.[145] Opencast mining conducted during the 1970s and 80s, especially for coal and gold, has left much of the environment adjacent to the River severely impacted.[146] With many of these mines now abandoned or closed, but without proper maintenance or

[140] Turton 2010 op cit n 18 at 32.
[141] Integrated Water Management Institute (IWMI), 'Baseline Report: Olifants River Basin in South Africa' (2008) *Waternet Website,* available at: *http://www.waternetonline.ihe.nl/challengeprogram/AR15%20CP17-Baseline%20study%20Olifants.pdf,* accessed on 13 August 2011 at 4; see generally, Lévite, H., Sally, H., van Koppen, B., & Cour, J. 'IWMI Benchmark Basins: Olifants River Basin, South Africa' (2008) *International Water Management Institute Poster Series* 1 available at *http://www.waternetonline.ihe.nl/challengeprogram/ AR15%20CP17-Baseline%20study%20Olifants.pdf* accessed on 13 August 2011.
[142] IWMI op cit n 141 at 24.
[143] IWMI, op cit note 141 at 4; Mey, W.S., and Van Niekerk, A.M. 'Evolution of Mine Water Management in Highveld Coalfields' Paper presented at the International Mine Water Conference' *19-23 October 2009, Pretoria, South Africa* 38 available at *http://www.imwa.info/docs/imwa_2009/IMWA2009_Mey.pdf* accessed on 17 August 2011 at 38
[144] CSIR April 2011 op cit n 19 at 1.
[145] Mey and Van Niekerk op cit n 143 at 38.
[146] Ibid.

monitoring, uncontrolled discharges of water from mines is resulting in sub-soil leaching into the local groundwater as well as spillage into surface waters.[147] The most notable and significant of these pollution issues from mining is known as AMD, which has been described by some scientists and water policy-makers as the 'single most important environmental concern from mining activities'[148].

(a) Impacts on freshwater resources

AMD causes substantial pollution impacts in situations where water contaminated predominantly with heavy metals from underground mines is decanted or discharged into surface waters, as well as leaching into groundwaters.[149] The AMD solution, produced when the mine tailings and other by-products of mining such as residue oxidise with ground and surface waters, is not only highly acidic but also mobilises heavy metals including copper and zinc, often in toxic concentrations.[150] The process of AMD is completed when this solution leaches back through the adjacent sub-soil into surrounding aquifers or is pumped into surface waters to keep mine shafts from flooding and collapsing, as can occur in developing nations where mining and environmental regulations and enforcement are insufficient to effectively prevent such practices.[151]

In terms of harmful impacts, AMD severely diminishes water quality and concurrently causes broader environmental impacts such as soil contamination with toxic metals as modifying the bio-chemistry of marine species and aquatic habitats.[152] Significantly, many of the chemicals and metals are 'bio-accumulators' and consequently these substances are retained in the biological matter of flora and fauna and thus build up and increasingly impact species function. Based on existing

[147] Oelofse, S. 'Mine Water Pollution - Acid Mine Decant, Effluent and Treatment: A Consideration of Key Emerging Issues that May Impact the State of the Environment' (March 2008) *Department of Environmental Affairs & Tourism* 1 available at *http://www.anthonyturton.com/admin/my_documents/my_files/Mine_Water_ Pollution.pdf*, accessed on 18 August 2011 at 5

[148] Oelefse op cit n 147 at 6; See generally, Ochieng, Seanego, Nkwonta op cit n 19, Republic of Mozambique op cit n 114.

[149] Oelefse op cit n 147 at 1; See generally, Ochieng, Seanego, Nkwonta op cit n 19.

[150] Oelefse op cit n 147 at 1; see generally, Ochieng, Seanego, Nkwonta op cit n 19.

[151] Oelefse op cit n 147 at 4; see generally, Ochieng, Seanego, Nkwonta op cit n 19.

[152] Earthlife, 'Latest acid mine drainage crisis calls for a constructive response from civil society', 19 January 2010, *Earthlife Africa website*, available at *http://www.chroniclesa.co.za/index.php?view=article&catid=1: latest-news&id=712: environmental-disaster-flowing-from-the-west-rand&format=pdf* accessed on 13 September 2011 at 1; see generally, Ochieng, Seanego, Nkwonta op cit n 19.

knowledge and practices, it is also estimated that such impacts in the most severe circumstances are expected to persist for decades if not hundreds of years to come,[153] threatening the sustainability of affected surface and aquifer freshwater resources and their associated environments for the foreseeable future.[154] Therefore, 'water quality management is a growing concern, specifically as the result of non-point source pollution arising from mine closure… [and] acid mine drainage'[155].

(b) Evidence of transboundary harm flowing downstream from South Africa

In the early 2000s, pollution in the Olifants River was initially reported as resulting in the discolouration of surface waters and pollution plumes.[156] This eventually led to the pollution being investigated by several scientists which was found to be specifically as the result of non-point source pollution arising from mine closure and/or AMD (as well as to a lesser extent fertilizer runoff from irrigated agriculture and sewage effluent from urban areas).[157] The downstream impacts from AMD pollution occurring in South Africa have increasingly been recognised by scientific studies over time, leading eventually to a South African Department of Water Affairs (DWA) report due to their 'serious concern'[158] regarding AMD pollution of the Olifants River and other domestic water resources.

Arguably though, it took a highly publicised incident of pollution of the Olifants River which occurred in 2008 with the sudden deaths of crocodiles in the Kruger National Park section of the tributary situated in South Africa, bordering the Massingir Dam in Mozambique, to provoke a serious response from the South African government.[159] The spike in deaths was immediately investigated due to the dramatic increase (approximately 350 crocodiles died in 2008, while only about 30 crocodile

[153] Saving Water South Africa, 'Acid mine drainage threat could persist for several hundred years' (16 June 2010) available at *http://www.savingwater.co.za/2010/06/16/10/amd-threat-persist-for-hundred-years/* accessed on 16 August 2011.
[154] Oelefse op cit n 147 at 4; see, see generally, Ochieng, Seanego, Nkwonta op cit n 19.
[155] Turton 2010 op cit n 18 at 33.
[156] Department of Water Affairs South Africa, 'Mine Water Management in the Witwatersrand Gold Fields with Special Emphasis on Acid Mine Drainage' (December 2010) *Report to the Inter-Ministerial Committee on Acid Mine Drainage*, available at *http://www.dwaf.gov.za/Documents/ACIDReport.pdf* accessed on 18 August 2011 at 1.
[157] Turton 2010 op cit n 18 at 33.
[158] Department of Water Affairs South Africa op cit n 156 at iv.
[159] Republic of Mozambique op cit n 114 at 17.

deaths occurred in 2009) ,[160] that sparked fears based on the region's economic reliance on nature reserves. It was found that high levels of metal toxicants had accumulated in the water, sediments and banks of the Olifants River that were believed to have reached a threshold that triggered the abnormal number of crocodile deaths.[161] It was also determined that these toxicants were accumulating in the waters and sediments of the Massingir Dam across the border in Mozambique.[162] Although several potential sources of the toxic substances were identified, AMD from closed and abandoned mines was pinpointed as the specific source of many of the heavy metals in the water.[163]

The incident spurred a new wave of studies, including some by South African institutional authorities, on the water quality and environmental status of the Olifants River and its adjacent habitat. The Department of Water Affairs released an Inter-Ministerial Report in 2010 investigating the effects of AMD in and around the most industrialised areas of South Africa. The study, whilst focusing on mining areas proximate to Johannesburg, also identified that 'severe water related problems, including numerous AMD decants have been reported in the Mpumalanga Coal Fields'[164]. The Mpumalanga Coal Fields, which are located in the upstream area of the Olifants River, are therefore a significant region for non-point source AMD pollution of the Olifants River impacting downstream areas. Although there was speculation in the media at the time that the severity of impacts in the report had been diluted to appease the powerful interests of mining companies and lobby groups, it crucially recognised that the pollution problems from AMD 'must be regarded as serious and in need of follow-up action and assessment, particularly in view of the expansion of coal mines in the area and the regional-scale impacts already reported'[165].

More specifically, a group of over 30 government scientists have been conducting ongoing research into the impacts of AMD on the Olifants River since 2009. Their initial risk assessment report, released in 2011, found that the upper catchment of the Olifants River in South Africa is highly contaminated with 'heavy and trace metal ions and sulphate, attributable to abandoned mining and industrial activities'.[166] Significantly

[160] Ibid.
[161] Ibid.
[162] Ibid.
[163] Ibid.
[164] Department of Water Affairs South Africa op cit n 156 at 33.
[165] Department of Water Affairs South Africa op cit n 156 at 33.
[166] CSIR April 2011 op cit n 19 at 1, citing CSIR March 2011 op cit n 19 at 2.

this study identifies and isolates an 'acute need… to counter the current situation of poor water quality and to halt or (preferably reverse) the existing pattern of progressively increasing eutrophication and contamination… to prevent the propagation of adverse water quality impacts further down the Olifants River'[167]. Yet, as will be outlined below, urgent and appropriate responses to recommendations such as this have not been forthcoming from the South African government.

It has also been widely purported by scientists that many dams such as the Massingir are acting as 'pollution sinks',[168] trapping heavy metals and toxic chemicals in their stagnant water and silt which accumulate to increasingly dangerous concentrations over time.[169] As a result, dams such as the Hartebeespoort Dam situated on the Crocodile River (another Limpopo River tributary located upstream in South Africa), have come to be classified as 'some of the most polluted in Africa'[170]. This is particularly the case for the Massingir Dam due to both its location downstream of extensive mining activities adjacent to the highly affected Olifants River tributary, and the Olifants River being one of the most sediment prone rivers in Southern Africa which facilitates transportation of pollutants downstream.[171]

More broadly, AMD in South Africa is having such severe and direct impacts on many elements of the watercourse ecosystem in Mozambique that there are also projected additional detrimental indirect effects, including, but not limited to human health (related to the degradation of potable water supply and increase in ailments associated with ingesting water-borne heavy metals),[172] and local socio-economic development (associated with reduced agricultural productivity from contaminated waters being utilised for irrigation, resulting in decreased yields and potential job losses, as well as impacts on aquatic ecosystem services which support the eco-tourism industry in the region).[173]

[167] Ibid.
[168] Roux, Oelofse, de Lange op cit n 16 at 3.
[169] Mey and Van Niekerk op cit n 143 at 38.
[170] Malzbender and Earle op cit n 16 at 19.
[171] Republic of Mozambique op cit n 114 at 16.
[172] Roux, Oelofse, de Lange op cit n 16 at 2; Mey and Van Niekerk op cit n 143 at 38; Earthlife op cit n 152 at 1.
[173] Ibid.

(i) Evidence of transboundary harm recorded within Mozambique

The implications for water resources as well as environmental and human health in Mozambique throughout the downstream region of the Olifants River (including the Massingir Dam), including from where it joins the Limpopo River and thereafter, are stark and alarming. Research conducted in Mozambique has reported a significant increase over time in the pollutants derived from upstream activities such as mining,[174] whereby heavy metals such as zinc, iron, copper, cadmium were present in the water at all sampled sites along the lower Olifants River and Massingir Dam at levels higher than Mozambican national water quality standards,[175] and some including zinc, copper and cadmium above World Health Organisation (WHO) standards.[176] It has been determined that these concentrations of heavy metals in the lower Limpopo River are derived from 'sediment transport along the river coming from upstream mining areas',[177] specifically upstream mining activities in South Africa.[178]

Additionally, below the confluence of the Olifants where it flows into the Limpopo River, there is a further deterioration in water quality which is estimated to be the 'residual effect of the mining activities in the upper reaches of the catchment'[179]. Furthermore, 'water quality in the Limpopo River Basin was found deteriorated and not meeting the guidelines for potability'.[180] As a result, the major impacts of AMD on the Limpopo River have been identified as increased levels of heavy metal toxicants (particularly in the Olifants sub-catchment) and ions (specifically in the Changane sub-catchment) in the water.[181] In summary, whilst there is still somewhat limited direct scientific evidence of harm in Mozambique, researchers generally agree that the effects of AMD have been slowly propagating downstream to the point now that immediate action is required in order to prevent and abate upstream transboundary harm from AMD pollution sources in South Africa causing further long-term impacts in Mozambique.[182]

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[174] Chilundo, M., Kelderman, P., O'Keeff, J.H. 'Design of a water quality monitoring network for the Limpopo River Basin in Mozambique' (2008) 33 (8-13) *Physical Chemical Earth* 655 at 656.
[175] Chilundo, Kelderman, O'Keeffe op cit n 174 at 658.
[176] Ibid.
[177] Chilundo, Kelderman, O'Keeffe op cit n 174 at 659.
[178] Chilundo, Kelderman, O'Keeffe op cit n 174 at 658.
[179] Republic of Mozambique op cit n 114 at 17.
[180] Chilundo, Kelderman, O'Keeffe op cit n 174 at 664.
[181] Ibid.
[182] Mey and Van Niekerk op cit n 143 at 38.

(c) Possible measures to abate, halt and prevent AMD pollution

Scientists and decision-makers across the world who have studied AMD impacts on freshwater resources propose a range of measures to combat its resulting impacts on water quality as well as the associated marine environment and terrestrial habitats.[183] Many of the commonly proposed direct measures to address AMD pollution range from continuous water pumping and treatment at the mining site sources,[184] which is the most effective method, to rehabilitation of contaminated water bodies through modern water purification technologies.[185] However, it is also acknowledged that these methods are often extremely expensive to implement, to the point of being entirely cost prohibitive.[186] Hence, it is thus especially telling to also consider that scientists widely accept that the effects of AMD on water resources and consequently aquatic species and habitats are practically extremely difficult to remedy or reverse as time progresses.[187]

On an institutional and policy level, researchers posit that there is also a distinct need for increased and improved regulation, enforcement and sanctions for companies responsible for AMD pollution.[188] Whichever combination of direct interventions or over-arching regulatory measures are employed, most agree that the problem requires a 'well-planned and effectively implemented long-term approach'[189] from South Africa in order to halt what is rapidly becoming an environmental catastrophe domestically, but which will have the same result in Mozambique. Yet, despite growing calls for State action, there is no evidence in the literature of legislated action or even a government driven agenda that has actively addressed the specific impacts or associated broader environmental issues resulting from AMD in South Africa. Thus, the crucial question arises as to whether South Africa, through its definite knowledge of the long-term harm being caused by AMD to the freshwater resources of its international watercourses (which is subsequently having severe transboundary impacts in Mozambique) combined with its apparent failure to implement direct technical or over-arching regulatory measures to address this issue, is in breach of its obligation not to cause significant harm?

[183] See, Department of Water Affairs South Africa op cit n 156 at 4-6.
[184] Oelefse op cit n 147 at 7.
[185] Roux, Oelofse, de Lange op cit n 16 at 11.
[186] Oelefse op cit n 147 at 7.
[187] Oelefse op cit n 147 at 1; see generally, Ochieng, Seanego, Nkwonta op cit n 19.
[188] Roux, Oelofse, de Lange op cit n 16 at 11; see generally, CSIR (March 2011) op cit n 19.
[189] CSIR April 2011 op cit n 19 at 1, citing CSIR March 2011 op cit n 19.

CHAPTER 5 - BREACHES OF THE DUTY OF NO SIGNIFICANT HARM

I. ASSESSING IF BREACHES OF THE DUTY CAN BE ESTABLISHED

Having previously identified both explicit and implied obligations regarding the duty to do no harm in both CIL as well as certain treaties governing the Limpopo River, and more specifically the Olifants River tributary, we must now turn our attention to determining whether or not any breaches of the duty could be established under international law. In doing so, this paper seeks to investigate whether particular breaches of the duty could be established under international law by taking the relevant provisions identified in Chapters 2 and 3, and applying them to the facts detailed in the previous Chapter regarding AMD pollution originating in South Africa which is seen to be causing transboundary impacts in Mozambique. Therefore, this Chapter focuses solely on the factual elements and relevant legal requirements associated with determining a potential breach of the duty not to cause significant harm. Given the rapidly evolving and often contentious nature of international tribunals and courts applying scientific evidence to determine potential breaches of international law in matters of transboundary environmental harm and specifically international watercourses,[190] this paper can only purport to make a preliminary analysis via the available information and research.

(a) State responsibility for transboundary harm

State responsibility is a central principle of general international law, including the duty not to cause significant harm, whereby it is has been widely incorporated in international agreements and recognised by the ICJ as well as being articulated as its own law.[191] State responsibility generally arises where 'one state commits an

[190] See generally, Sands, P. 'Water and international law: science and evidence in international litigation' (2010) 22 *Environmental Law and Management* 151.

[191] Rieu-Clarke, Moynihan, and Magsig op cit n 8 at 41; Boyle, A.E. 'Globalising environmental liability: The interplay of national and international law' (2005) 17 (1) *Journal of Environmental Law* 3 at 3; Sucharitkul, S. 'State Responsibility and International Liability Under International Law' (1996) 18 (4) *Loyola of Los Angeles International and Comparative Law Review* 821 at 823. See also, Art 1 International Law Commission Draft Articles on Responsibility of States for Internationally Wrongful Acts, 2001 (not in force) available at: *http://untreaty.un.org/ilc/texts/instruments/english/commentaries/9_6_2001.pdf* accessed on 16 May 2012 (ILC Draft Articles on State Responsibility), where it states that 'every internationally wrongful act of states entails state responsibility'.

internationally unlawful act against another state'[192]. To establish State responsibility there must be two essential elements: an act or omission on behalf of a State that is internationally unlawful;[193] and, such conduct must constitute a breach of an international obligation of that State.[194] If State responsibility can be established on these grounds, the State found responsible is duty bound to cease the act or omission causing the breach and offer a guarantee that it will not be repeated,[195] with the additional requirement for reparations where deemed necessary by a relevant authority.[196] On this basis, this principle has become a crucial legal tool in international cases concerning transboundary environmental harm, especially in regards to bringing cases before international courts, as evinced by the specific ICJ cases described in Chapter 2.

Establishing State responsibility for transboundary harm is widely considered to centre predominantly on objective fault, *inter alia*, 'a failure to act with due care or diligence, or a breach of treaty, or the commission of a prohibited act'[197]. This generally accepted prerequisite for establishing fault in order to prove State responsibility may be changing (as will be explored later in Chapter 6) however it still forms the generally accepted precondition for most legal matters based on this principle.[198] Hence, this Chapter will seek to analyse the possibility of establishing fault amounting to State responsibility under both CIL and the relevant treaty provisions, along with the other requirements of the duty in international law.

II. COULD THE HARM FROM AMD CONSTITUTE A BREACH OF CIL?

In light of the recent legal developments in CIL in the wake of the *Pulp Mills* case there are certainly grounds for exploring whether a breach of the duty to do no harm could be established in the case of the Olifants River. Considering the similar facts regarding transboundary impacts and the related substantive breaches alleged from that matter are

[192] Rieu-Clarke, Moynihan, and Magsig op cit n 8 at 41; see also, Sucharitkul op cit n 191 at 833, whereby this element of an internationally wrongful act in the principle of State responsibility distinguishes it from the State liability which requires no such unlawfulness.
[193] Art 2(a) ILC Draft Articles on State Responsibility.
[194] Art 2(b) ILC Draft Articles on State Responsibility.
[195] Art 30 ILC Draft Articles on State Responsibility.
[196] Art 31 ILC Draft Articles on State Responsibility.
[197] Boyle op cit n 191 at 3.
[198] Boyle, op cit n 191 at 3, 6.

generally analogous to the pollution caused downstream by AMD,[199] there seems to be *prima facie* legal basis for establishing a breach in CIL.

(a) Causation

Scientific research collectively supporting the causal link[200] between AMD *originating* in South Africa from predominantly closed[201] mines and harm caused in Mozambique has been described in-depth in the previous Chapter. First, there are the more general findings from research conducted within South Africa of the potential '*propagation of adverse water quality impacts further down the Olifants River* [emphasis added]'[202] in relation to water quality studies on pollution from mining activities. Secondly, research into the pollution impacts that caused the crocodile death event in 2008 on the lower Olifants River (discussed above) found heavy metals to be accumulating in the waters, sediments and banks of the Massingir Dam within the Mozambican border.[203] Thirdly, recent studies conducted in Mozambique on their section of the lower Olifants River identified a dramatic rise in the recorded levels of heavy metals which were subsequently deduced to derive primarily from anthropogenic factors in the upper Olifants River.[204]

Despite the evidence above and the conclusions detailed in Chapter 4 whereby, based on the available research, scientists and researchers argue that AMD from South Africa is causing the harmful impacts to the water quality in Mozambqiue, the issue of causation will undoubtedly be difficult to establish in an international court or tribunal. In the *Pulp Mills* case, the ICJ clearly stated that in assessing the probative value of the evidence put forward by both States regarding the impacts of discharges on water

[199] See *Pulp Mills* supra n 3 para 229-259, 260-262 where the alleged violations of substantive obligations concerned the 'Impact of discharges on the quality of waters of the river' and the 'Effects on biodiversity', respectively.

[200] Legal causation, the link between an action and its direct consequence, varies widely between jurisdictions and in what context it is being sought to be proved. Generally though, the standard of proof is set quite high in a court of law, and even higher in international legal matters between States. See generally, Sands op cit n 190.

[201] Yet open mines still in operation and potentially future mines will have further impacts. This issue is particularly relevant to the regulations contained with the South African *National Water Act* (36 of 1998) and the *Mineral and Petroleum Resources Development Act* (28 of 2002) because approval for future mining licenses in areas where AMD is a problem will have to take existing AMD issues into consideration.

[202] CSIR (April 2011) op cit n 19 at 1, quoting CSIR (March 2011) op cit n 19 at 2.

[203] Republic of Mozambique op cit n 114 at 17.

[204] Chilundo, Kelderman, O'Keeffe op cit n 174 at 664.

quality, it would 'principally weigh and evaluate the data, rather than the conflicting interpretations given to it'[205]. Indeed, the Court referred specifically to the 'vast amount of factual and scientific material containing data […] of the baseline levels of contaminants'[206] both prior to, and in the three years following, the construction of the mill that was presented in support of both Uruguay and Argentina's claims.

The limited amount of data available on water quality degradation in the case of the Olifants River has primarily been recorded in South Africa,[207] or in limited instances recently in Mozambique.[208] Moreover, it is scientifically uncertain how any of the data recorded could be correlated with pollution not attributed to a single point source (such as the mill in *Pulp Mills*) but instead multiple non-point sources such as mines in certain geographical areas. Certainly, given the current paucity of raw data definitively linking mines in South Africa causing AMD pollution of the Olifants River to degraded water quality levels recorded in Mozambique, this element of the duty would thus appear very to be very difficult to establish before the ICJ or a similar forum.

Even where such data is readily available, the ICJ in *Pulp Mills* noted that 'Uruguayan data indicate that the water quality standard [for phenolic substances] was being exceeded from long before the plant began operating'[209] on the River Uruguay. In such a scenario where evidence which pre-exists an alleged act(s) causing harm shows levels were already recorded at levels exceeding certain national or international standards, it will likely be extremely difficult to establish that the harm is 'significant' due to established impacts. The ICJ supported this when it concluded that there was 'insufficient evidence to attribute the alleged increase in the level of concentrations of phenolic substances in the river to the operations of the […] mill'[210]. Given the reasonable likelihood of pre-existing levels of heavy metals from mining and other industries in the Olifants River over several decades, even if the scientific data regarding water quality standards for these substances were available, the ICJ's determination here seems to ensure it would prove difficult to establish on this basis.

South Africa could argue that AMD pollution occurring within its territory is not the direct cause of the impacts recorded in the above research, and my possibly be due

[205] *Pulp Mills* supra n 3 para 236.
[206] Ibid.
[207] See Chapter 4.
[208] Chilundo, Kelderman, O'Keeffe op cit n 174.
[209] *Pulp Mills* supra n 3 para 252.
[210] *Pulp Mills* supra n 3 para 254.

to other non-point sources of the same or similar toxicants recorded in the Olifants River, particularly fertilizer runoff from irrigated agriculture and sewage effluent from urban areas being potential contributors.[211] This would be similar to the argument put forward by Uruguay in the Pulp Mills matter. Here, the link between the operation of the Pulp Mill in Uruguay and elevated recordings of heavy metals within Argentina was refuted on the basis of 'the presence of so many other industries operating along the River Uruguay' and in adjacent water bodies.[212] The Court accepted this argument, stating that were 'no clear evidence to link the increase in presence of dioxins and furans in the river to the operation of the […] mill'.[213]

This evidentiary standard was further supported in relation to harmful levels of nonylphenols (a form of detergent) in the River Uruguay whereby, the ICJ rejected Argentina's claim that this was directly caused by the mill because in the view of the Court, they had not 'adduced clear evidence which establishes a link'[214]. Therefore, it also appears likely that South Africa could plausibly put forward a similar argument which the Court may accept based primarily on the lack of scientific data, especially data which establishes a direct link between AMD pollution in South Africa and harmful levels of metals recorded in Mozambique. In summary, it is reasonable to conclude that the legal causation element of the duty under CIL is unlikely to be established in an international tribunal or court based on the presently available research and scientific data.

(b) Significant harm

Establishing a breach of the duty not to cause significant harm is 'tempered by the qualification that before an injury can be pursued under the principle, it must rise to the level of "significant harm".'[215] However, establishing that the transboundary impacts of AMD to the water quality and or biodiversity of the Olifants River are at the level of 'significant' harm may arguably be the most difficult element of the duty to prove in an international tribunal or court.

[211] Turton 2010 op cit n 18 at 33.
[212] *Pulp Mills* supra n 3 para 258.
[213] *Pulp Mills* supra n 3 para 259.
[214] *Pulp Mills* supra n 3 para 257.
[215] UNEP op cit n 20 at 46.

International 'soft law', such as preparatory documents and declarations, as well as treaties can be utilised to aid interpretation of this phrase.[216] It is therefore instructive that the ILC has asserted in reference to harm caused to watercourses that 'significant harm' can be interpreted as 'harm exceed[ing] the parameters of what was usual in the relationship between the States that relied on the use of the waters for their benefit'[217]. In-turn, this threshold of harm being 'significant' is further articulated by the ILC in this regard as 'something more than 'measurable', but less than 'serious' or 'substantial'[218]. Moreover, specific watercourse agreements clarifying or defining 'significant harm' can also be used to support this interpretation. Thus, the SADC Revised Protocol's definition of significant harm as 'non-trivial harm capable of being established by objective evidence without necessarily rising to the level of being substantial'[219] is also crucial in providing interpretative guidance.

In summary, at the base level, 'what constitutes "harm" has to be more than just an 'adverse effect' – a real impairment of a use, with a detrimental impact of some consequence upon the environment or the socioeconomic development of the harmed state (e.g. public health, industry, property, agriculture)'[220]. However, as noted by UNEP in their analysis of the definition of significant harm as pertains to international watercourses, 'whether a particular transboundary impact is *non-trivial* [emphasis added] or more than measurable, therefore, will be very case specific'[221]. Consequently, any analysis of transboundary impacts and whether they constitute significant harm must be objectively tested and 'will greatly depend on a dispassionately developed factual record evidencing the magnitude of the harm'[222]. As regards the particular impacts of AMD on the Olifants River tributary, changes in water quality can be a basis for establishing harm to the natural environment where 'harmful contaminants traverse

[216] See generally, Vienna Convention on the Law of Treaties (signed 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980) (Vienna Convention).
[217] UNEP op cit n 20 at 46, citing Report of the Commission to the General Assembly on the Work of its Thirty-Second Session, The Law of the Non-Navigational Uses of International Watercourses, A/CN.4/SER.A/1993/Add.1 (Part 2) reprinted in [1993] Yearbook of the International Law Commission, Vo. 2, 89 at 380.
[218] Ibid.
[219] Art 1 SADC Revised Protocol.
[220] Rieu-Clarke, Moynihan, Magsig op cit n 8 at 119, citing Art 7 International Law Commission (1994) Draft Articles on the Law of the Non-Navigational Uses Of International Watercourses and Commentaries Thereto and Resolution on Transboundary Confined Groundwater, available at: *http://untreaty.un.org/ilc/texts/instruments/english/commentaries/8_3_ 1994.pdf* accessed on 7 January 2012.
[221] UNEP op cit n 20 at 46.
[222] UNEP op cit n 20 at 46.

a border through a transboundary watercourse or aquifer, thereby impacting the environment, habitats, species, or dependent ecosystems of another riparian State'.[223] The various substantive arguments put forward in the *Pulp Mills* case support such contentions.[224] Yet, they both also clearly demonstrate that these grounds can be very difficult to establish, as evinced in the following analysis.

(i) Do the impacts to water quality establish the harm as significant?

Based on the existing available research outlined in Chapter 4, the detrimental impacts on the water quality of the Olifants River tributary and the Lower Limpopo River from AMD pollution originating in South Africa would certainly appear to constitute general harm. In particular, the high concentrations of heavy metals such as zinc, iron, copper and cadmium which have been recorded in water samples along the Mozambican section of the Olifants River would seemingly form the basis of any *prima facie* claims by Mozambique that South Africa is in breach of this general obligation under CIL.[225] However, establishing that the impacts of such accumulations of heavy metal toxicants in the water of the Olifants River within Mozambique constitute harm, as legally defined, will be difficult. That it rises to the legally accepted definition of 'significant harm in CIL may prove especially challenging at present to establish.

That specific studies have recorded concentrations of the heavy metals at sites along the lower Olifants River and in the Massingir Dam at levels above the Mozambican national water quality standards could be an initial basis upon which an argument is put forward that this harm is both 'non-trivial' and is, by an objective standard, 'substantial' under the guidance of the SADC Revised Protocol.[226] Related findings that some metals including zinc, copper and cadmium were recorded at levels higher than WHO standards would further support a legal claim that the harm being caused is 'significant' under this same definition.[227] This is largely because WHO standards are *internationally agreed objective standards* rather than subjective national

[223] UNEP op cit n 20 at 47.
[224] See, *Pulp Mills* supra n 3 para 229-259.
[225] See Chapter 4.
[226] Chilundo, Kelderman, O'Keeffe op cit n 174 at 658.
[227] Ibid.

standards based on factors including the strictness of environmental legislation and scientific technological capacity of each nation to support such legal claims.[228]

A similar evidentiary standard was argued by Argentina when it contended that in water samples they had taken, nonylphenols were recorded 'exceeding the European Union relevant standards'[229]. Hence, it could be reasonably argued that the harm being caused in Mozambique is objectively assessed via internationally agreed standards as at being of a significant level to be deemed significant harm within the definition under CIL. Consequently, in regards to the Olifants River, the possibility of establishing this element of the duty is somewhat supported by *Pulp Mills* where the ICJ, in the absence of agreed water quality standards between the States concerned related to levels of the substance or substances in question, adopted those enacted by Uruguay under its domestic legislation.[230] This would support any argument utilising the aforementioned data where levels for particular heavy metals were recorded at levels above the South African *and* Mozambican national standards.

Partially undermining the above evidence as a legal basis for establishing that harm to water quality is in fact 'significant' is the common acknowledgment that until very recently there has been a distinct paucity of consistent and scientifically reliable hydrological data on water quality, as well as information on water uses, in Mozambique.[231] In effect, this lack of reliable scientific information over a prolonged period could lead to disproving that the harm has substantially deteriorated from its status years ago when the environmental impacts of AMD were first noticed on the Olifants River. Therefore, whilst it is undeniable that the impacts of 'upstream developments during the last 25 years have been dramatic and their future trend is unknown'[232], proving that significant harm has been caused during this approximate timeframe may be problematic due to the lack of scientifically accurate and consistent data obtained during this same period in order to form a baseline for comparison. Legal challenges to claims that such harm falls within the legal definition of 'significant' under CIL can only be strengthened on the basis that even today, water quality

[228] Ibid.
[229] See, *Pulp Mills* supra n 3 para 255.
[230] *Pulp Mills* supra n 3 para 242.
[231] Carmo Vaz and Lopes Pereira op cit n 123 at 104.
[232] Ibid.

monitoring and measurements in Mozambique are still often poorly monitored and therefore sometimes inconsistent or incomplete.[233]

(c) Due diligence requirement

The due diligence requirement enunciated in the *Pulp Mills* case is now a recognised component of the duty not to cause significant transboundary environmental harm.[234] Therefore, its application to establishing a breach of this duty in the case of the Olifants River is required. It has been increasingly argued for several years now via many of the aforementioned scientific research and media reports that decision-makers in South Africa must take action in order to abate AMD pollution occurring within their borders as well as attempt to clean up any existing environmental contamination this has caused, particularly to its transboundary rivers.[235] However, despite the obvious need to address the ongoing contamination of these vital watercourses, the matter of preventing, abating or cleaning up pollution caused by AMD remains a much more complex proposition. Consequently, establishing a breach of the due diligence requirement in CIL before an international tribunal or court would pose certain challenges.[236] The issue of knowledge by the South African government of both ongoing pollution, as well as specific incidents, will now be dealt with before investigating whether or not such knowledge has translated into identifiable action to address AMD pollution.

Government recognition of the harm being caused by AMD within South Africa to the water and aquatic environment of the Olifants River tributary can reasonably be established. From 2002, civil society organisations and researchers have been regularly alerting the South African government and private mining companies to the impacts of AMD on its watercourses.[237] Most notably, subsequent acknowledgement by representatives of the South African Government via reports commissioned on their behalf crucially demonstrates that the State is thereby aware that the harm being caused is originating within its own borders.[238]

[233] Ibid.
[234] *Pulp Mills* supra n 3.
[235] See Chapter 4.
[236] See Boyle op cit n 191 at 7, where it states that 'Nor is due diligence always an easy standard to administer unless clearly accepted international standards defining the content of this duty can be identified'.
[237] Earthlife, op cit n 152 at 1.
[238] See generally, Department of Water Affairs South Africa op cit n 156.

As clearly stated in the DWA Report:

> A number of South Africa's statutory institutions have done significant research on the nature and extent of the AMD problem in the country and proposed a number of measures to mitigate the problem, these include measures to better manage water and prevent AMD formation, as well as technologies to treat AMD[239].

In the opinion of the Team of Experts, sufficient information exists to be able to make informed decisions regarding the origins of the mine water, potential impacts, management strategies, and treatment technologies.[240] In the face of such strong evidence supporting State knowledge that such harm existed, one must then examine whether South Africa, the State, has taken any measures to effectively address the issue of AMD pollution to its transboundary watercourses, and specifically for our purposes, within the Olifants River tributary. At a general level, a range of possible measures to prevent, abate and clean up pollution caused by AMD have been highlighted in Chapter 4, yet very few efforts have been taken to utilise such measures, as analysed below in regards to establishing 'all appropriate measures'. Importantly, in considering these elements, it must be noted that the burden of proof in establishing due diligence 'lies with the state whose use of the watercourse is causing significant harm'[241]. This is supported by the ILC which states that:

> [T]he plaintiff state starts with the presumptive rule in its favour that every state is bound to use the waters of rivers flowing within its territory in such a manner as will not cause substantial injury to a co-riparian state. Having proved such substantial injury, the burden then will be upon the defendant state to establish an appropriate defence, except in those cases where damage results from extra-hazardous pollution and liability is strict. This burden falls on the defendant state by implication from its exclusive sovereign jurisdiction over waters flowing within its territory.[242]

Thus, whilst the previous analysis highlighted the difficulties in Mozambique establishing the elements of causation and significant harm, it is possible South Africa would have to prove that its actions in allowing mines within its borders to continue to pollute the Olifants River which in-turn is allegedly causing the transboundary harm from AMD are ERU in the circumstances. This raises the complicated relationship in

[239] Ibid. at 85.
[240] Ibid.
[241] Rieu-Clarke, Moynihan, Magsig op cit n 8 at 120.
[242] Rieu-Clarke, Moynihan, Magsig op cit n 8 at 120, citing Art 7 ILC 1994 Draft Articles op cit n 220.

CIL between the principle of ERU and the obligation of no significant harm, which will be examined below.

(i) Has there been a failure by South Africa to take 'all appropriate measures'?

The question to be asked regarding 'all appropriate measures' is 'one of duty of care: What would be expected of a reasonable government in similar circumstances?'[243] Therefore, one must establish what particular measures could a State reasonably have taken in the knowledge that this type of harm is occurring. Such measures could range from direct scientific and technological interventions through to indirect but over-arching regulations and policies, depending upon the specific source and cause of transboundary harm. As a result, in determining what measures are available and reasonable for a State in this position to utilise, it is extremely significant to note that such is the duty of care that 'a state can be deemed to have breached the obligation not to cause significant harm not only *when it has intentionally or negligently caused the event itself, but also in case the state did not prevent others in its territory from causing it* [emphasis added]'[244].

The need to act in taking 'all appropriate measures' to prevent significant harm is no more pertinent than in the case of the harm being caused to the Olifants River tributary of the Limpopo River. The due diligence requirement articulated in the *Pulp Mills* case lays out certain requirements that a reasonable State government could show to fulfil the requirement of having taken all appropriate measures. As previously stated in Chapter 2, the requirements for due diligence enunciated by the ICJ in the *Pulp Mills* case included (but are not limited to): the obligation to conduct an EIA for planned measures if any risk of serious transboundary impacts exists; a duty to cooperate in good faith in the use and management of a shared watercourse; and, to have due regard to the principles of ERU and sustainable development in weighing up potentially conflicting uses of a transboundary river.[245] Hence, for Mozambique to legally establish under CIL that South Africa has breached its duty not to cause significant harm, each of these elements must be examined individually.

[243] Rieu-Clarke, Moynihan, Magsig op cit n 8 at 119.
[244] Rieu-Clarke, Moynihan, Magsig op cit n 8 at 119.
[245] Pulp Mills supra n 3.

In relation to the activities occurring within its borders that are the cause of significant transboundary harm due to AMD pollution of the Olifants River, South Africa is under an obligation to show that it has reasonably conducted EIAs for the activities occurring within its borders that are the cause of significant transboundary harm due to AMD pollution of the Olifants River. The ICJ in *Pulp Mills* verdict refrained from specifying the necessary content of EIAs which would fulfil this requirement, instead leaving this for States to reasonably determine. Historically, South Africa's management and control over mining waste has been characterised by institutional fragmentation as well as vaguely defined or overlapping mandates which essentially results in inaction.[246] Whilst the constitutional reforms of 1994 led to the newly democratic South Africa developing many new forms of environmental legislation including the National Environmental Management Act of 1998,[247] these laws and their related legislation for mining activities which introduced procedures for EIA did not operate retrospectively. Hence, many closed and abandoned mines established prior to 1994 which were (and are still) responsible for most of the AMD polluting South Africa's freshwater resources were not subjected to EIAs and consequently remained an unregulated source of AMD pollution via groundwater seepage and surface water decants.[248] However, EIAs could reasonably have been conducted once the South African government recognised the significant environmental risks posed by AMD pollution to watercourses such as the Olifants River. On this basis, the due diligence requirement of EIAs for activities which pose a risk of significant transboundary harm may possibly be established, but only if EIAs were not conducted either retrospectively on old mines once the knowledge of harm was attained, or for subsequent mines approved thereafter. This information is unknown and would require further substantiation, particularly in regards to mining licenses approved since the news of AMD pollution came to the government's attention.[249]

Regarding transboundary impacts on its international watercourses, South Africa is under an obligation to cooperate and share information with a co-riparian State. In the

[246] Oelefse op cit n 12 at 7
[247] South Africa National Environmental Management Act (No 107 of 1998).
[248] See generally, Department of Water Affairs South Africa op cit n 156.
[249] For South Africa's domestic regulations, see South Africa, *Mineral and Petroleum Resources Development Act* (28 of 2002); Regarding harmonisation of national laws with international obligations, see generally, Hall, N.D. 'Transboundary Pollution: Harmonizing International and Domestic Law' 2005 40(4) *University of Michigan Journal of Law Reform* 681.

Pulp Mills case, Uruguay's failure to negotiate with Argentina through the legally agreed channels contained in the bilateral treaty was the pivotal ground on which the application was successful.[250] Ecuador's application in the *Aerial Herbicide* matter is based on similar procedural grounds in so far as it is alleged Columbia consistently failed to negotiate regarding ceasing the harmful aerial sprayings. There is little evidence to date to suggest that South Africa has used any of the institutional structures established to govern the utilisation of the Olifants to warn Mozambique of the environmental impacts of AMD.[251] Nor is there any documentation establishing governmental collaboration or negotiation with Mozambique regarding efforts to prevent further transboundary damage being caused.[252] This is compounded by the government's unwillingness to fully acknowledge the extent to which AMD is affecting watercourses within its sovereign borders, let alone international watercourses such as the Olifants where impacts are extraterritorial.[253] Such is the government's failure to act that they have been often accused of a reluctance to discuss AMD and its impacts publicly for fear of liability and compensation claims.[254] This attitude is in direct conflict with scientists, researchers, and civil society organisations which have commonly identified that the South African government 'must play the leading role in directing efforts and evaluating success or failure' to address AMD.[255]

In seeking to address transboundary harm, South Africa must have taken account of the principles of ERU of a watercourse as well as sustainable development. Historically, government-driven implementation to abate or prevent AMD has been extremely minimal and what action has been taken was predominantly focused on the region in and around Johannesburg due mainly to the immediate threat posed to potable water or use by important industries (such as mining and irrigated agriculture) which rely on it heavily for their business processes.[256] Whilst this would appear to show a regard to the principles articulated in the *Pulp Mills* case, even now there exists a dearth of direct preventative measures recorded that take into account any downstream uses or

[250] *Pulp Mills*, supra n 3.
[251] See generally, Van Zyl, et al. op cit n 19; Ochieng, Seanego, Nkwonta op cit n 19.
[252] See generally, De Villiers and Mkwelo op cit n 19.
[253] See generally De Villiers and Mkwelo op cit n 19.
[254] Oelefse op cit n 147 at 2.
[255] CSIR (April 2011) op cit n 19 at 1, quoting CSIR (March 2011) op cit n 19.
[256] See, Department of Water Affairs South Africa op cit n 156 at 7-13.

sustainable development,[257] and those limited measures only constitute piecemeal attempts with no coordinated or concerted vision to resolve this burgeoning transboundary environmental disaster.[258] Rather, the South African government has refused to act swiftly and decisively on this issue for a decade when it has known is causing extensive harm according to extensive scientific research.[259] Hence, the State's evident failure to take reasonable steps to limit the escalating environmental damage caused to Mozambique's water resources via AMD pollution of the Olifants originating in South Africa seems to present potential grounds for establishing a failure to fulfil this due diligence element of the general duty to do no significant harm in CIL.

(d) Could a breach under CIL potentially be established?

Whilst it is presently unclear based on the available information whether all of the elements of the duty not to cause significant harm could be established under CIL, it appears that a determination by an international tribunal or court on the requirements of both legal causation and significant harm would be particularly difficult to establish in light of the ICJ's decisions in the *Pulp Mills* and *Hungarian Dams* cases. However, there appears a *prima facie* case for breaching the CIL due diligence requirements regarding transboundary harm. In turn, the ICL due diligence requirements are supplemented by the international agreements binding both States that stipulate similar obligations which will be explored below. Therefore, this paper proceeds on the basis that a determination of a partial breach of the duty may possibly be established in relation to the transboundary impacts of AMD occurring in Mozambique.

[257] Roux, Oelofse, de Lange op cit n 19 at 2; See also, Sonjica, B. (MP, Minister of Water and Environmental Affairs), Keynote address at the official launch of Optimum Coal's Water Treatment Plant at Optimum Colliery, Pullenshope, Mpumalanga, 9 June 2010, available at *http://www.dwaf.gov.za/Communications/ MinisterSpeeches/2010/WATERRECLAMATIONPLANT.pdf* accessed on 16 August 2011 for an example of the type of retrospective measures being announced by the South African government to treat, not prevent, AMD.

[258] Oelefse op cit n 147 at 1; See also, Mey & Van Niekerk op cit n 143 at 43 pointing to the example of Brugspruit Liming Plant which was constructed by the Department of Water Affairs & Forestry to treat AMD from the old and defunct mines located north of Witbank. Here, lime neutralisation was mainly done to enable re-use of mine water in coal processing.

[259] Department of Water Affairs South Africa op cit n 156 at 7.

III. EVALUATING A POTENTIAL BREACH OF THE DUTY IN TREATY LAW

Having discussed the possibility of establishing a breach of the duty under CIL above, it is now necessary to analyse the specific provisions of the applicable treaties in order to determine whether any breaches of those duties may respectively be established therein. Given this in-depth examination above of many of the elements of the duty not to cause significant harm which will be transferable to the treaty obligations, unless otherwise stipulated in the treaty provisions, much of the analysis above in relation to establishing these specific requirements will be referred to where there is any direct overlap with the duty in customary international law.

(a) Establishing a possible breach under the UNWC

In order to establish a breach of the duty not to cause significant harm in the UNWC, very much the same elements are required as for the obligation articulated in CIL. While the due diligence and causality requirements correspond almost exactly, as well as the requirement for the harm to be 'significant', the critical difference concerns the related provisions of the UNWC. It can reasonably be presumed that the element of causation between AMD pollution originating in South Africa and the transboundary harm in Mozambique would be difficult to establish before an international tribunal or court based on the previous discussion regarding CIL.

(i) Level of harm caused by AMD must be 'significant'

Although 'significant harm' is not defined in the text of the UNWC, one must also take note of the *travaux preparatoires*[260] and supporting documentation for the text of the UNWC in seeking to establish a definition. During the formulation of the draft UNWC, the Chairman of the Working Group of the Whole denoted certain statements of understanding which were salient to interpretation of certain provisions.[261] As regards Art 7 of the UNWC, 'The term "significant" is not used in this article or elsewhere in the present Convention in the sense of "substantial". […] While such an effect must be capable of being established by objective evidence and not be trivial in nature, it need

[260] This is the common terminology used to describe the working documents involved in the codification, drafting, negotiation and development of international agreements.
[261] Rieu-Clarke, Moynihan, Magsig op cit n 8 at 63.

not rise to the level of being substantial'[262]. Therefore, as it mirrors the articulation described earlier, 'significant harm' in the UNWC can be taken as being very similar to that articulated by the ICJ in the Pulp Mills case and the definition afforded significant harm in the SADC Revised Protocol. Hence, this element would appear difficult to be satisfied as per the previous discussion on AMD harm being 'significant'. Yet the obligation as articulated within the UNWC arguably hinges on the relationship between Arts 5 and 7, examined further below.

(ii) Requirement of due diligence and related obligations

As for the duty under CIL, the duty not to cause significant harm is an obligation of conduct. This means that rather than being an obligation to obtain a certain result, this is an obligation whereby co-riparians must 'take 'all appropriate measures' to ensure that activities conducted under their jurisdiction do not cause significant harm to the territory of other riparians'[263]. In doing so, a State's actions that will demonstrate specific conduct that will meet the requirements of fulfilling this due diligence obligation include those in CIL, specifically: conducting EIA; giving due regard to the principles of ERU and sustainable development; and, the requirement that co-riparian States cooperate and negotiate in good faith on matters related to the use and management of watercourse. All of these requirements were extensively analysed in the previous section in relation to the obligation not to cause significant harm. However there are certain additional elements to the due diligence obligation provided for within the UNWC.

Particular to the UNWC obligation not to cause significant harm are the specific due diligence requirements that necessarily attach to the duty on the basis of explicit references in the treaty text. The due diligence requirement to take all appropriate measures 'is an obligation of due diligence in utilisation'[264]. As discussed previously, Art 7(2) specifically references Arts 5 and 6 stipulating that the principle of ERU as well as the non-exhaustive factors must be given due regard in determining whether any uses are equitable and reasonable. Included in these provisions is the requirement to take 'account of the interests of watercourse States concerned, consistent with *adequate*

[262] Rieu-Clarke, Moynihan, Magsig op cit n 8 at 64, citing the Chairman of the Working Group of the Whole for the UNWC.
[263] Rieu-Clarke, Moynihan, Magsig op cit n 8 at 119.
[264] Rieu-Clarke, Moynihan, Magsig op cit n 8 at 119.

protection [emphasis added] of the watercourse'[265]. In effect, as Rieu-Clarke, Moynihan and Magsig point out, the reference to Arts 5 and 6 in Art 7 of the UNWC means that the duty is limited because States 'are therefore not legally responsible for causing significant harm if they can show that they have taken all appropriate measures to prevent such harm, and their use of an international watercourse is equitable and reasonable'[266]. However, given the previous examination of need to consider the principle of reasonable and equitable utilisation and the apparent failure to conduct certain elements of the due diligence obligation it would be difficult for South Africa to show that the mining impacts on freshwater resources are equitable and reasonable.

(iii) Could a breach under Article 7 of the UNWC potentially be established?

The UNWC complements the CIL requirements by stipulating a specific obligation for cooperating in good faith and certain procedures States should follow to do so,[267] as well as providing detailed procedures one must take in regards to planned measures. Although there is no explicit obligation to conduct EIA, it is argued that one can be reasonably inferred from these procedures for planned measures. Apparent breaches of the above requirements apply in parallel with the explicit requirement in the UNWC that such uses take into account interests of co-riparians by adequately protecting the watercourse (acting in concert with obligation to protect of ecosystems under Art 20) and the reference to 'significant harm' in Art 21 to the prevention, reduction and control of pollution. Thus, it appears possible that specific breaches of the due diligence elements of the duty could be legally established. Hence, although not in force, South Africa could be in partial breach of Art 7 of the UNWC.

(b) Establishing a breach duty under the SADC Revised Protocol

The legal elements required to establish a breach of Article 3(10) of the SADC Revised Protocol are very similar to that of the UNWC except for two key distinctions: 'significant harm' is defined within the text of the Protocol (as outlined in Chapter 3) whereas the UNWC does not do so; and, the relationship between the duty not to cause significant harm and obligation to give due regard to the principle of ERU differs (as

[265] Art 5(1) UNWC.
[266] Rieu-Clarke, Moynihan, Magsig op cit n 8 at 120.
[267] Art 8 UNWC.

highlighted in Chapter 3). In applying the same facts to determine if a breach of Article 3(10) of the SADC Revised Protocol could be established, the prior analysis above shows: it is likely that causation could be proven; that the level of harm could potentially be proven to be significant in this instance as the same definition of significant harm was used under CIL in the *Pulp Mills* case as is contained within the Protocol; and, the due diligence requirement could plausibly be established as the requirement to take 'all appropriate measures' is the same as for the application of the UNWC investigated above. Therefore, the only analysis seemingly required to establish a breach is to determine the effect of the relationship between the duty not to cause significant harm and the principle of ERU as it is provided under the SADC Revised Protocol.

(i) Primacy: Does the duty subjugate the principle of ERU?

The most notable difference between the SADC Revised Protocol and the UNWC as outlined by some experts concerns whether the principle of ERU takes precedence over the duty not to cause significant harm.[268] The UNWC seems to give precedence to ERU whereas the SADC Revised Protocol may prioritise the obligation not to cause significant harm. Yet, it is also contended that if the SADC Revised Protocol is read in conjunction with its *travaux preparatoires* and Preamble (which states it was revised to be brought into line with the Convention) this may not be the case and both may be interpreted as compatible.[269] In simple terms, under the SADC Revised Protocol, in determining what is reasonable and equitable, States must consider the duty to do no harm.

Alternatively, in the UNWC, in determining what is significant harm, States must take account of reasonable and equitable utilisation of the international watercourse. In substantive terms, some have therefore argued that the SADC Revised Protocol's wording to give due regard to the obligation not to cause significant harm where harm occurs subjugates the principle of ERU to the duty to do no harm.[270] In any case, even if the SADC Revised Protocol is interpreted so as not to subjugate the principle of ERU, it would otherwise most likely be deemed to follow the same interpretation as the

[268] See, Salman op cit n 16 at 1007-1010; Malzbender and Earle op cit n 16 at 38-45.
[269] See, Salman op cit n 16 at 1009-1010; Malzbender and Earle op cit n 16 at 39-40.
[270] Salman op cit n 16 at 1008.

relationship that exists under the UNWC. Hence, having already reasoned that the obligation to not cause significant harm could be partially established under the UNWC, in respect of giving due regard to the principle of ERU and its non-exhaustive list of factors which are to be taken into consideration in any such determination this element of the duty could potentially be established under the SADC Revised Protocol as well.

(ii) Could a breach under Article 3(10) of the SADC Revised Protocol be established?

The reasons for the difference in the relationship between the duty to do no harm and the principle of ERU between these two agreements, and its practical impacts, have been the source of scholarly research and legal debate.[271] In practical terms, this could mean that where a substantive determination is made regarding legal remedies sought to resolve a dispute in relation to alleged significant harm, in balancing these two integral principles of international water law, the duty to do no significant harm may be given preference over the principle of ERU. In effect, by prioritising the duty to do no significant harm it may be easier to establish a case for State responsibility for transboundary harm under the SADC Revised Protocol than through the provisions of the UNWC. Thus, it could potentially be a more effective procedural route for SADC States to pursue State responsibility for AMD pollution causing transboundary harm even if the UNWC enters into force, as will be highlighted in Chapter 6.

(c) Could there be a breach of the duty under the other treaties?

As highlighted in the previous Chapter, there is a range of international agreements which broadly pertain to the Limpopo River as well as specifically to its Olifants River tributary. However, based on the analysis of the respective provisions of those individual agreements, none contain explicit reference to the obligation not to cause significant harm. In fact, the only explicit reference to harm in any of these agreements, Clause 6 of the Massingir Dam Agreement, conversely has the undeniable potential to be utilised by South Africa as a basis to exempt them from breaches of their specific legal obligations not to cause significant harm as contained within subsequent international agreements, particularly the SADC Revised Protocol, and to a lesser extent at present the UNWC seeing as it is currently not in force. However, the legal validity

[271] See, Salman op cit n 16 at 1007-1010; Malzbender and Earle op cit n 16 at 38-45.

of this clause remains circumspect and could reasonably be called into question based on the Massingir Dam Agreement's conclusion between South Africa and Mozambique's colonial predecessors and its arguable conflict with the recognised principle of State responsibility for transboundary harm in CIL.

As a result, despite any arguments to the contrary for an implied reference to this duty via related provisions in each of the LIMCOM Agreement (and inter alia the LPBTC Agreement), the JWC Agreement, and the Massingir Dam Agreement, it would appear unlikely that Mozambique would have justifiable grounds to establish a breach by South Africa under any of these agreements for AMD pollution causing transboundary harm. Nevertheless, the international agreements listed above may be used as additional legal grounds for pursuing a legal matter against South Africa if they are in breach of the recognised customary international law obligation to negotiate in good faith. They also still have an important general role to play as regards the stipulated dispute resolution procedures and institutions for negotiating a possible resolution, or failing that, to pursue action via other legal avenues, as will be elaborated upon in the following Chapter.

CHAPTER 6 - STATE RESPONSIBILITY & FUTURE LEGAL ISSUES

I. STATE RESPONSIBILITY AND DISPUTE RESOLUTION PROCEDURES

Having established in the previous Chapters that there exists potential legal grounds for Mozambique to pursue specific remedies against South Africa for breaches of the duty not to cause significant harm under both the SADC Revised Protocol and CIL, this raises several significant potential legal bases for Mozambique seeking State responsibility in respect of these possible breaches. The following Chapter investigates the possible procedural avenues and current, as well as future, legal challenges for resolving a claim for State responsibility under the potential CIL and treaty-based breaches of the duty not to cause significant harm.

(a) Pursuing State responsibility against South Africa

The likelihood of Mozambique bringing a matter before the ICJ under ICL against South Africa for an order regarding State responsibility in relation to AMD pollution of the Olifants and it succeeding is a legitimate, if not remote, future possibility. However, there are several critical procedural barriers to any application by Mozambique to the ICJ. This is by no means an exhaustive list, but rather, some of the key impediments to such a case based on existing laws (treaty and ICL) governing the Olifants, and the recent ICJ cases.

Due to the complex overlay of bilateral, multilateral and regional international agreements either directly or indirectly governing the Olifants, Mozambique is under several inter-related obligations to pursue negotiations before it could consider seeking adjudication from a third party, let alone apply to the ICJ for a decision regarding State responsibility. Under the SADC Protocol, UNWC and more specifically the LIMCOM and JWC Agreements, Mozambique would likely have to: first, pursue negotiations with South Africa to halt AMD in the Olifants; if reasonable discussions through agreed channels failed, then they must seek a determination from the SADC Tribunal; and, finally, if they were unhappy with this finding, they could take the matter for third party adjudication which includes, but is not limited to, the ICJ. Hence, there are several agreed dispute resolution channels that must first be exhausted before Mozambique

could consider applying to the ICJ, all of which take time and resources that the Government may not have.

Compounding this complexity is conjecture as to the interplay between treaty dispute resolution procedures relevant to the Olifants, as contained in the SADC Revised Protocol, UNWC, LIMCOM and JWC respectively. Added to this, is the need for both parties to agree to jurisdiction before the ICJ for any matter to be heard by the Court.[272] Hence both the polluting source (South Africa, in this instance) and affected (Mozambique) States would have to consent to the matter being determined by the ICJ. This is obviously extremely fraught where one State is responsible for transboundary pollution and their liability is at stake, and in-turn, significant costs relating to compensation (and/or rehabilitation and prevention measures) should they be held responsible.

The actions of the ICJ in the *Pulp Mills* matter is said by some to invite doubts about the efficacy of the Court in determining transboundary water pollution disputes.[273] The *Pulp Mills* case was the first since 2003 in which provisional measures were applied for,[274] which were inevitably refused to both Argentina and Uruguay.[275] Historically, provisional measures have been decreed in approximately only half of all cases between 1946 and 1994 where they were requested as a form of intervention.[276] State liability for transboundary harm may not fall within the ambit of provisional measures, yet it is reasonable to posit that a request for immediate measures preventing further AMD pollution of the Olifants would accompany such an application. Hence, these particular actions provided for under the ICJ's mandate are relevant to displaying both the Court's unwillingness to impose sanctions that require direct and immediate action by the offending State, as well as the ICJ's general inability to enforce such directions.

[272] Esposito op cit note 14 at 29.
[273] Halloran, K. 'Is the International Court of Justice the Right Forum for Transboundary Water Pollution Disputes?' (Fall 2009) *Sustainable Development Law & Policy* 39 at 39
[274] Provisional Measures are a form of injunctive relief whereby States may apply to have specific interventions applied by the ICJ immediately on the basis of urgency whilst the matter is heard in full.
[275] Halloran op cit n 273 at 39; See generally Vinuales op cit n 10, Esposito op cit n 10, McIntyre, O. 'The World Court's ongoing contribution to international water law: The Pulp Mills Case between Argentina and Uruguay' (2011) 4(2) *Water Alternatives* 124
[276] Ibid.

Procedurally, the ICJ can apply to the UN Security Council for enforcement measures should a party fail to adhere to a final judgement,[277] yet this seems an unlikely step based on the Court's preference for 'declarative' international environmental norms and the good faith of parties to adhere to advisory opinions in transboundary water disputes.[278] Concurrently, one must also consider that there are also several defences available to both provisional measures and other orders, whereby South Africa could viably argue that even if it implemented a full spectrum of what is considered best practice water management actions aimed at preventing AMD, it may still probably result in excess water decanting from mine operations, especially after closure.[279] Hence, it is difficult to presuppose a decision by the ICJ regarding AMD transboundary pollution of the Olifants that due to an historical aversion to provisional measures and the accompanying weak enforcement procedures it has at its disposal to ensure enforcement. However, the ICJ, as in the case of *Pulp Mills*, could likely order South Africa to re-negotiate in good faith in order for Mozambique to obtain measures which would satisfy them in regards to preventing and abating the AMD pollution which is causing transboundary harm.

(b) Treaty-based dispute resolutions procedures

Certain procedural and institutional obligations must be followed in terms of resolving disputes under specific transboundary agreements for the Limpopo and Olifants Rivers. Notably, the UNWC dispute resolution procedures are not dealt with specifically here because Mozambique would strictly speaking have to wait for the UNWC to enter into force as well as become a party to the Convention to enforce the dispute resolution provisions against South Africa.

(i) Massingir Dam Agreement, JWC, LBBTC and LIMCOM Agreement

The LBPTC Agreement and Massingir Dam Agreement both do not include any dispute resolution procedures. Only Art 5 of the former agreement makes it possible for the LBPTC to advise on 'any other relevant matters' in regards to water availability. Similar to the LBPTC Agreement, as regards dispute resolution, only a vague reference

[277] Halloran op cit n 273 at 39.
[278] Ibid.
[279] Mey & Van Niekerk op cit n 143 at 43.

is made in Art 8 that any disputes between the State parties regarding the interpretation or application of the JWC Agreement must, at the request of either party be resolved through negotiations between Mozambique and South Africa.

Under the LIMCOM Agreement, as regards possible breaches of the pollution prevention principle that could be applicable to a duty to do no harm, Arts 7 and 9 set out certain guidelines for the settlement of disputes. Art 7 stipulates that one of the purposes of the LIMCOM Council is to advise 'measures with a view to arriving at settlement of disputes'. Art 9 elaborates on certain procedures for dispute settlement, whereby in the event of a dispute with 'regard to the planning, utilisation, development, protection and conservation of the Limpopo including its ecosystem or the interpretation or application of this Agreement' parties to the dispute must enter into negotiations with the aim of arriving at a settlement. It goes on to state that if such a settlement is not reached within six months of a request for negotiations, the dispute can be referred to the SADC Tribunal with all State parties' consent. Art 9 subsequently reiterates the SADC Revised Protocol dispute settlement provisions in decreeing that the State parties to the dispute must consequently accept any decision of the SADC Revised Tribunal as binding and final. Hence, the LIMCOM Agreement essentially follows the same dispute resolution procedures as the SADC Revised Protocol and in-turn defers to the SADC Tribunal for a final verdict if negotiations fail.

(ii) SADC Revised Protocol

Under Art 3(10)(b) of the SADC Revised Protocol a Watercourse State whose uses are causing such harm must have due regard to their responsibilities under Art 3(10)(a) whereby the State in question must take all appropriate measures 'in consultation with the affected States, to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation'[280]. Notably, the issue of possible compensation is raised here concerning potential legal remedies for transboundary harm caused from AMD pollution. Another particularly distinctive aspect of the duty to do no harm under the SADC Revised Protocol, especially as opposed to the UNWC, is the provision for legal and other remedies to ordinary citizens and corporate entities. Art 3(10)(c) grants (unless otherwise provided for) 'natural or juridical' people who 'who have suffered or

[280] Art 3(10)(b) SADC Revised Protocol.

are under a serious threat of suffering significant transboundary harm as a result of activities related to a shared watercourse'[281] access to legal or other procedures as well as a right to compensation or other relief. It also crucially obliges Watercourse States in granting such remedies to 'not discriminate on the basis of nationality or residence or place where the injury occurred, in granting to such persons, in accordance with its legal system […] in respect of significant harm caused by such activities carried on in its territory '[282].

The SADC Revised Protocol sets outs out the most probable dispute resolution procedures that will be followed in so far as it dictates that where negotiation attempts fail, States must submit their dispute to the SADC Tribunal for a final and binding decision. In conjunction, it also provides legal grounds for ordinary citizens and other legal persons such as corporations to pursue procedures and remedies, legal or otherwise, including compensation against a State which has caused significant harm through its own legal system. In effect, it means that legal remedies which would normally be limited to application on a State versus State basis can be accessed by individuals. That such a right is granted irrespective of an affected person's location or nationality or where significant harm occurs is also particularly crucial. This has extremely important implications for legal remedies regarding AMD pollution in terms of providing the most effective treaty-based procedural avenue for Mozambique to seek not only State responsibility against South Africa for breaches of the obligation, but also allows individuals to pursue compensation against the State for such breaches in respect of damages that have occurred, irrespective of where that individual is located. Therefore, the SADC Revised Protocol provides the most attractive treaty-based means by which Mozambique could pursue a matter seeking to hold South Africa responsible for breaches of the duty not to cause significant harm.

(c) Main procedural avenues for Mozambique to pursue State responsibility

On a regional level, both Mozambique and South Africa are parties to the SADC Revised Protocol which is in force and governs both the Limpopo River and its Olifants tributary. Based on the likelihood of establishing specific breaches as analysed in the previous Chapter, and in the understanding that the UNWC has yet to enter into force,

[281] Art 3(10)(c) SADC Revised Protocol.
[282] Art 3(10)(c) SADC Revised Protocol.

the most likely grounds for Mozambique to pursue State responsibility against South Africa for its apparent failure to adhere to its obligations to not cause significant harm would be under CIL and/or the SADC Revised Protocol. Notwithstanding the duty of no significant harm identified above which would be forming grounds for an application based on CIL or the SADC Revised Protocol, in Mozambique's favour is that the other global (UNWC), multilateral (LIMCOM and LBPTC Agreements), and bilateral agreements (JWC and Massingir Dam Agreements) exist with obligations governing the cooperative planning, use, and resolution of disputes the shared international water resources of the Limpopo and Olifants Rivers respectively.[283] Hence, any application to the ICJ on the aforementioned grounds could also potentially be accompanied by concomitant grounds regarding breaches of certain treaty obligations under these agreements. However, this possibility would have to be explored further through future legal research.

(b) STATE RESPONSIBILITY FOR HARM: FUTURE LEGAL CHALLENGES

(a) UNWC entry into force and co-riparians ratifying it

One of the most pressing potential legal issues facing South Africa in relation to its duty not to cause significant harm is the likely entry into force in the near future of the UNWC. Given that the UNWC needs only seven more ratifications to reach the necessary quorum of 35 this makes its entry into force a very real possibility in the next few years. Not only will this subsequently have major implications for transboundary watercourse law worldwide, but it will have especially for State parties to the UNWC.

Once the UNWC enters into force, under the rules of international law, South Africa will be bound by its provisions. Whilst this may not appear to be a significant issue considering that the SADC Revised Protocol essentially mirrors most of the major principles, obligations and procedures of the UNWC, it will establish another legal ground by which South Africa could potentially be held responsible for the transboundary harm caused by AMD in Mozambique. However, at present, Mozambique is not a party to the UNWC so strictly speaking it would not have legal grounds to seek to establish State responsibility for breach of its duty not to cause significant transboundary harm.

[283] See, Kistin et al. op cit n 18.

Nevertheless, given the potential for establishing breaches of the duty as explored in Chapter 5, Mozambique would have definite incentive to ratify the UNWC and seek to negotiate some agreed measure(s) to address the issue or, if that were to fail, a finding by an arbitral tribunal or otherwise the ICJ that achieves similar outcomes based on State responsibility. Hence, this presents another potential legal challenge for South Africa in so far as Mozambique may reasonably consider ratifying the UNWC. They could then use the UNWC as additional grounds for action to address not only the issue of AMD pollution causing transboundary harm, but other pollution issues impacting the Limpopo River downstream, as outlined previously.

(i) Relationship between the SADC Revised Protocol and the UNWC

The ratification of the UNWC by other SADC States raises the issue of substantive and procedural compatibility between the Convention and the SADC Protocol. As highlighted in Chapter 5, one crucial difference is the UNWC Art 7 reference to give due regard to the principle of reasonable and equitable utilisation where significant harm is caused, whereas the SADC Revised Protocol refers back to the obligation not to cause significant harm where such harm occurs. How this difference will impact parties to both agreements will most likely not be known until a dispute is raised and the issue can be clarified by an international authority, such as the SADC Tribunal under the SADC Revised Protocol. The significance of this difference lies in the reality that if the no significant harm principle takes precedence, States will be held to a higher standard in regards to any uses that may cause environmental harm to another riparian state. Under the UNWC, and most agreements, development of water resources is prioritised and is only prohibited where the harm would be so significant as to not justify that use.

The other key differentiation is that the UNWC has very specific procedures (such as fact-finding) and timeframes for dispute resolution yet the SADC Revised Protocol stipulates State parties should attempt to peacefully negotiate any disputes then use the Tribunal. This leaves considerable scope for indecision and delay if states choose to follow and/or are obliged to follow the SADC Revised Protocol. The issue of whether the UNWC provisions take precedence if it comes into force is also a legal question that experts have debated, and could have ramifications for those that have already ratified it, namely South Africa and Namibia. This would also impact upon Mozambique if it

chooses to ratify the UNWC and subsequently pursue remedies for harm caused by AMD, as discussed above.

(a) State responsibility for harm verging on strict liability

As previously outlined, certain legal scholars have pointed to distinct First and Second 'Waves' of State responsibility in CIL as regards State responsibility for transboundary harm. The 'First Wave' is said to constitute the basic foundations of territorial sovereignty and obligation for States not to allow activities within their borders to cause harm within the borders of another State.[284] The 'Second Wave' reiterated these initial principles and extended content specifically pertaining to the environmental protection and prevention of transboundary harm,[285] as well as applying the principles of ERU and sustainable development.[286]

The so-called recent 'Third Wave' of international environmental law regarding transboundary harm has prompted these experts to suggest that a favourable result in the *Aerial Herbicide* case, along with treaty developments concerning compensation for such harm may eventually lead to the due diligence requirement for States to prevent significant environmental harm becoming a strict liability obligation. In effect, this would mean that States proven to have caused significant transboundary environmental harm would be held legally responsible and liable for redress or even compensation, irrespective of culpability. Indeed, the *Pulp Mills* case arguably represents what McIntyre has coined the 'proceduralisation' of international environmental law and the obligation for States to do no harm.[287] Here, the ICJ was very clear that certain measures (outlined in Chapter 2) are now inherent requirements of the due diligence component of the obligation to do no harm as regards State responsibility for that harm.

The most crucial element of the due diligence obligation articulated by the ICJ was that all of these requirements and processes were framed within the principle of State responsibility for causing significant transboundary harm. As a result, some scholars now suggest that a failure to fulfil all or part of each these requirements is

[284] Viñuales op cit n 10 at 243.
[285] Ibid.
[286] See, *Hungarian Dams* supra n 34 at 78, para 140, where it is stated that the 'need to reconcile economic development with protection of the environment is aptly expressed in the concept of sustainable development'. See also the discussion and cases listed in the development of CIL in Chapter 2.
[287] See generally, McIntyre op cit n 275.

prima facie a breach of a riparian State's obligation not to cause significant transboundary harm under CIL, whereby a State may be held legally responsible irrespective of culpability.[288] Hence, it has been posited that a decision by the ICJ that 'Columbia's actions, regardless of due diligence, are so repugnant to the obligation *sic utere* as to be a violation of this principle of general international law'[289], could subsequently lead to more States pursuing similar matters against States which have caused them transboundary harm irrespective of the partial fulfilment of the due diligence obligation. A ruling in favour of State responsibility for significant transboundary harm (specifically those impacts which occur gradually and have long-term consequences) despite Columbia possibly having only fulfilled some of its due diligence requirements, would send a strong message 'to all States currently engaged in significant transboundary pollution that certain activities are likely to be *a priori* deemed significantly harmful and, therefore, susceptible to claims for damages pursuant to rules of customary international law'[290].

(i) Possible implications for South Africa from the ICJ cases

Historically, most transboundary pollution disputes have attempted to be resolved at least initially through diplomatic channels and/or institutional structures established through bilateral, multilateral and regional agreements governing use of shared natural resources.[291] Certainly, the *Pulp Mills* and now *Aerial Herbicides* cases are notable for the fact that in both instances the States claiming transboundary harm alleged that the States causing the harm failed or demonstrated an unwillingness to participate in good faith in negotiations to address the harm being caused. However, Viñuales posits the *Pulp Mills* and *Aerial Herbicide* Cases represent the 'Third Wave' of CIL development

[288] See, Viñuales op cit n 10; Esposito op cit n 10; For further discussion on this debate, see generally, Percivall, R.V. 'Liability for Environmental Harm and Emerging Global Environmental Law' (2010) 25 *Maryland Journal of International Law* 37; Jorgenson-Hull, A. 'A Sticky Situation: The Seepage of Liability into International Environmental Law' Paper presented at *Environmental Law Student Society Symposium 'Rio + 20: Contemporary Issues in International Environmental Law'* on 28 May 2011, Canberra, Australia, available at *law.anu.edu.au/coast/events/environment/papers/jorgensen-hull.pdf* accessed on 18 November 2012; Sheffield, K. 'Of Pulp Mills and Oil Spills: Strict state liability under customary international law when energy and resource projects cause transboundary environmental harm' (June 2010) *Ecobulletin: National Environmental, Energy and Resources Law Section Newsletter* 1 available at *http://www.cba.org/cba/newsletters-sections/pdf/2011-06-neerls_estrin.pdf* accessed on 20 July 2012

[289] Esposito op cit n 10 at 39.

[290] Esposito op cit n 10 at 40.

[291] See generally, Halloran op cit n 287.

by the ICJ whereby States such as Mozambique are now more likely to use their legal agreements or CIL to seek State responsibility for breaches of the duty not to cause significant harm.[292] This trend suggests that States such as South Africa can no longer enter into negotiation processes for transboundary resource management through agreements such as LIMCOM for the Olifants River or the SADC Revised Protocol for all of its international watercourses, with no bona fide intention to actually cooperate in good faith to address issues of transboundary harm.

It is undeniable that these cases are not only developing both the content and, to an extent, the specificity of CIL for the duty to not cause significant harm, but also its importance within the international community.[293] Indeed, rather than the importance attached to these cases regarding whether State liability for tranboundary harm is strict or reaching that point, simply 'it matters more if dispute resolution is more prevalent'[294] for issues of transboundary harm. Considering AMD's persistent and long-term environmental impacts and the lack of preventative/treatment measures currently being undertaken to resolve the issue, the urgent transboundary pollution of the Olifants River by AMD unfolding in South Africa appears to be a valid matter for Mozambique to take to the ICJ should negotiations fail with South Africa. The potential ramifications are very significant for not only South Africa in respect of AMD which is polluting the Olifants River, but more broadly any nation which does not fulfil its procedural and/or substantive obligations under CIL to prevent pollution originating within its territorial borders causing significant harm.

[292] See generally, Viñuales op cit n 10.
[293] Bodansky, D. 'Customary (And Not So Customary) International Environmental Law' (1995) 3 (1) *Indiana Journal of Global Legal Studies* 105 at 119.
[294] Ibid.

CHAPTER 7 - THE TIMEBOMB OF TRANSBOUNDARY HARM

I. TRANSBOUNDARY HARM CAUSED BY AMD: A TICKING TIMEBOMB

It is evident from the central argument of this piece, if not at least from the previous body of research on the subject, that South Africa has reached a crucial juncture regarding transboundary harm caused to one of its major international watercourses, namely the Limpopo River and its tributaries. Undoubtedly, the impacts of AMD on the water quality and the marine environment of the Olifants River is approaching or has already reached a threshold whereby there will be long-term and possibly irreversible impacts within the upper reaches of the River in South Africa. Consequently, if this trend continues, the weight of scientific evidence clearly suggests that certain heavy metal toxicants from AMD will continue to propagate downstream and lead to similarly harmful levels as are being recorded in South Africa.

Taking into account the developments in international environmental law along with the likely entry into force of the UNWC and possible ratification by other co-riparians on the Limpopo River, it would appear that the obligations regarding the duty not to cause significant harm are strengthening and being seen as increasingly important in international law. To this end, South Africa and the other co-riparians must address issues of transboundary pollution now because based on the recent ICJ cases it appears probable that existing and future agreements will increasingly tend to be interpreted so as to give a higher legal standard to the obligation to take appropriate and reasonable measures for the prevention of transboundary harm. Concurrently, it seems increasingly likely that States in breach of their due diligence requirements of the duty to do no significant harm will be held responsible for their actions, or failure thereof.

In time, the range of increasing freshwater pollution problems within the SADC region will only exacerbate the challenges posed by the transboundary harm of South Africa's international rivers. In seeking to avoid gross and irreversible harm from AMD and other sources of transboundary pollution, South Africa and its other co-riparians must immediately start to face the enormity of the freshwater challenges facing their shared watercourses and freshwater resources more broadly in the region. By implementing regulatory and technical measures that seek to protect the water quality of these international rivers for their future sustainability, South Africa can seek to fulfil their CIL and treaty obligations and at the same time hopefully maintain these

diminishing freshwater resources upon which their populations rely. Conversely, if States such as South Africa who are duty bound under international law not to cause significant harm fail to act swiftly, comprehensively and effectively, they are seemingly certain to enter murky legal waters in the not too distant future.

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