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Dear Director-General

RE: Proposed regulations for the Protection and Management of Groundwater Resources

Introduction

1. Thank you for the opportunity to comment on the proposed regulations for the Protection and Management of Groundwater Resources, published for comment by the Department of Water Affairs and Sanitation on 10 December 2025 in Government Gazette 53828 under Government Notice 6935 (the “**Groundwater Regulations**”; “**Regulations**”, in terms of the National Water Act 36 of 1998 (“**NWA**”).
2. These comments are submitted by the Biodiversity Law Centre (“**BLC**”), a non-profit law centre that uses the law to protect and restore indigenous species and ecosystems that support sustainable livelihoods in Southern Africa. The BLC is particularly concerned with law and policy that give effect to section 24 of the Constitution, and the State’s obligations to protect the environment for present and future generations, by preventing pollution and ecological degradation, promoting conservation, and securing ecologically sustainable development.

3. These comments are endorsed by Natural Justice and the Centre for Environmental Rights (“**CER**”). The BLC also endorses the comments made by Natural Justice and the CER.
4. South Africa’s groundwater regulation framework is vitally important: groundwater is simultaneously an ecological foundation, a climate buffer, and a human rights resource. Its protection is a constitutional imperative under section 24 of the Constitution, a statutory duty under the NWA and the National Environmental Management Act 107 of 1998 (“**NEMA**”), and a prerequisite for meeting South Africa’s international biodiversity obligations. The Ecological Reserve, the legally mandated quantity and quality of water required to protect aquatic ecosystems while meeting basic human needs, forms a foundational NWA obligation that the Regulations must support through sustainable management practices. As set out below, Draft Regulations fall significantly short of giving effect to the purpose of the Ecological Reserve and to the integrated framework within which it sits.
5. Groundwater is a strategic national resource essential to water security, biodiversity, climate resilience, agriculture, and industrial development,¹ recognised as such in the NWA and in South Africa’s National Water Resources Strategy, which seek to protect South Africa’s water resources, held in the public trust. Prior to the development of these Regulations, South Africa lacked dedicated groundwater-focused regulations to give effect to NWA protection measures.² The Draft Groundwater Regulations therefore represent a necessary and positive step, particularly given the significant and growing pressures on this resource. South Africa is a water-stressed country:³ groundwater sustains numerous wetlands, springs, and non-perennial rivers typical of semi-arid landscapes, underpins the functioning of Strategic Water Source Areas, and supports rural communities and local economies across the country. These pressures are intensifying. South Africa’s development trajectory is poised to expand water-intensive industries, including critical mineral extraction and large-scale infrastructure projects.⁴ Mining activities in particular — including pumping to keep shafts dry, lithium brine extraction, and metal mining operations — lower water tables, alter groundwater flows, and risk generating acid mine drainage and chemical contamination of aquifers.⁵ These activities occur against a background of climate change, which is reducing rainfall reliability and aquifer recharge rates across significant parts of the country. The result is a potentially compounding set of risks that the draft Regulations, as currently drafted, do not adequately address. The Regulations as they stand are unlikely to meaningfully enhance groundwater governance, due to potential challenges relating to their implementation in practice and their coherence with South Africa’s broader water management, climate, environmental, and biodiversity management frameworks.
6. These concerns arise in the context of South Africa’s global biodiversity significance and its corresponding international and constitutional biodiversity, climate, and human rights obligations.

¹National Water Resource Strategy Third Edition 2023, available at [https://www.dws.gov.za/Documents/Gazettes/Approved%20National%20Water%20Resource%20Strategy%20Third%20Edition%20\(NWRS3\)%202023.pdf](https://www.dws.gov.za/Documents/Gazettes/Approved%20National%20Water%20Resource%20Strategy%20Third%20Edition%20(NWRS3)%202023.pdf).

² Pienaar, H., Xu, Y., Braune, E., Cao, J., Dzikiti, S., and Jovanovic, S., ‘Implementation of groundwater protection measures, particularly resource directed measures in South Africa: a review paper’ (2021) *Water Policy* 23 820.

³ Decoupling South Africa’s development from water demand through a circular economy 2021, available at https://www.circulareconomy.co.za/wp-content/uploads/2021/11/8.-Water_CE-Briefing-Note.pdf.

⁴ Critical Minerals and Metals Strategy South Africa 2025, available at https://www.gov.za/sites/default/files/gcis_document/202505/critical-minerals-and-metals-strategy-south-africa-2025.pdf.

⁵ Aska, B., Sonter, L.J., zu Ermgassen, S.O.S.E., Franks, D.M., Mingorria, S., Iniesta-Arandia, I., Lloyd, T.J., & Torre, A., ‘Mining, biodiversity and social conflict in the renewable energy transition’ (2025) *Nature Reviews Biodiversity* 1 597-614 602-604; Alexander, A.C., and Ndambuki J.M., ‘Impact of mine closure on groundwater resource: Experience from Westrand Basin-South Africa’ (2023) *Physics and Chemistry of the Earth* 131 1-2.

South Africa's international and domestic biodiversity governance obligations

7. The BLC's particular interest in biodiversity arises in the context of South Africa being the third most biodiverse country in the world.⁶ Biodiversity is defined as-

'the variability among living organisms from all sources including...aquatic ecosystems and the ecological complexes of which they are part',⁷ and is-

'foundational to the wellbeing of [South Africa's] people giv[ing] our people food, clean water, medicine and materials; support[ing] agriculture and fisheries; offer[ing] resilience against disasters; and provid[ing] the basis of a vibrant tourism industry while offering natural spaces for recreational and cultural activities.'⁸

8. Biodiversity is also essential for climate change resilience, adaptation, and mitigation.⁹

9. Under the Convention on Biological Diversity ("CBD")¹⁰, Parties, including South Africa, adopted the Kunming-Montreal Global Biodiversity Framework ("GBF")¹¹ in response to biodiversity deteriorating worldwide at unprecedented rates,¹² with the aim of galvanising urgent and transformative government action to halt and reverse biodiversity loss.¹³

10. The GBF sets interim targets to be reached by Parties by 2030, including:

10.1. Target 2, which aims to restore 30% of all degraded ecosystems;

10.2. Target 3, which seeks ensure that at least 30% of terrestrial and inland water areas, and of marine and coastal areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed;

10.3. Target 7, which seeks to reduce pollution to levels that are not harmful to biodiversity;

10.4. Target 8, which seeks to minimize the impacts of climate change on biodiversity and build resilience; and

10.5. Target 14, which seeks to integrate biodiversity in decision-making at every level.

⁶ BIOFIN South Africa available at <https://www.biofin.org/south-africa>.

⁷ National Environmental Management: Biodiversity Act 10 of 2004 ("NEMBA") section 1(1) definition of "biodiversity".

⁸ Skowno, A.L., Poole, C.J., Besseling, N.A., Currie, J.C., Da Silva, J.M., Dayaram, A., Harris, L.R., Job, N., Monyeki, M.S., Mtshali, H., Raimondo, D.C., Sink, K.J., Van der Bank, M.G., Van der Colff, D., Van Niekerk, L., Von Staden, L. South African National Biodiversity Institute ("SANBI"). 2025. *National Biodiversity Assessment 2025: The status of South Africa's biodiversity. Summary of Findings and Key Messages*. South African National Biodiversity Institute (an entity of the Department of Forestry, Fisheries and the Environment), Pretoria. <https://hdl.handle.net/20.500.12143/9467> ("2025 NBA").

⁹ 2025 NBA at page 5.

¹⁰ United Nations Convention on Biological Diversity (1992) ("CBD") available at <https://www.cbd.int/convention/text/>.

¹¹ Kunming-Montreal Global Biodiversity Framework (2022) UN Doc UNEP/CBD/COP/DEC/15/4 ("GBF").

¹² GBF at section A 2.

¹³ GBF at section B 4. Among the GBF's goals for 2050 are:

Goal A: "Protect and restore", which includes that 'the integrity, connectivity and resilience of all ecosystems are maintained, enhanced, or restored, substantially increasing the area of natural ecosystems by 2050'.

Goal B: "Prosper with nature", being that 'biodiversity is sustainably used and managed and nature's contributions to people, including ecosystem functions and services, are valued, maintained and enhanced, with those currently in decline being restored, supporting the achievement of sustainable development for the benefit of present and future generations by 2050'.

11. The NEMA requires international responsibilities relating to the environment to be discharged in the national interest,¹⁴ bolstering the CBD and GBF's obligations on the State to protect ecosystems and the biodiversity they support. Similarly, the NWA's purpose is to ensure that South Africa's water resources are protected, managed and conserved in ways that account for basic human needs of present and future generations,¹⁵ meeting international obligations,¹⁶ reducing and preventing pollution and degradation of water resources,¹⁷ and protecting aquatic and associated ecosystems and their biodiversity.¹⁸ As highlighted above, central to the NWA's protective framework is the Ecological Reserve (sections 16–19), which establishes the legally mandated minimum quantity and quality of water that must be maintained for ecosystem integrity. The Regulations must give meaningfully support this mechanism.
12. Once strengthened, the Groundwater Regulations have the potential to constitute a meaningful step toward the fulfilment of the core objectives of NEMA and the NWA, and GBF Target 3, in particular.
13. Given its implications for water security, groundwater protection is also essential to the realisation of the human right to water, recognised both in international law and in South Africa's Constitution.
14. Internationally, the Committee on Economic, Social and Cultural Rights' General Comment No. 15 interprets the International Covenant on Economic, Social and Cultural Rights ("ICESCR") as entitling everyone to water that is sufficient, safe, physically accessible and affordable. The right imposes duties on States to "respect, protect and fulfil" access to water, including by preventing contamination, over-exploitation and unsustainable management of water resources. Safeguarding natural water systems from harmful pollutants and ecological degradation is therefore not only an environmental objective but a human-rights obligation. The protection of aquifers and groundwater-dependent ecosystems is central to ensuring that the availability and quality dimensions of the right to water are secured over time.
15. South Africa's Constitution expressly enshrines the right of access to sufficient water in section 27(1)(b), read together with section 24, which requires the State to prevent ecological degradation and promote conservation for present and future generations. However, a 2024 study by the Public Affairs Research Institute ("PARI") highlights persistent service delivery failures, declining reliability, affordability barriers and governance weaknesses in the water sector,¹⁹ noting that approximately 8.7% of households still lack access to piped water, with disproportionately severe impacts in rural provinces such as Limpopo and the Eastern Cape. These realities highlight that groundwater protection is not merely an ecological concern but a constitutional and international imperative: failure to prevent aquifer depletion, contamination from mining and other high impact industries, and degradation of groundwater-dependent ecosystems directly threatens the progressive realisation of the right to water.

¹⁴ National Environmental Management Act 107 of 1998 ("NEMA") section 2(4)(n).

¹⁵ National Water Act 36 of 1998 ("NWA") section 2(a).

¹⁶ NWA section 2(i).

¹⁷ NWA section 2(h).

¹⁸ NWA section 2(g).

¹⁹ Public Affairs Research Institute *Empty promises: The Struggle for equitable access to water in South Africa* (2024) available at empty-promises-06-12-b-digi.pdf.

16. It is in this context that our comments are directed at strengthening the biodiversity and environmental governance dimensions of the draft Regulations, to ensure that groundwater management gives meaningful effect to South Africa's constitutional and international obligations.
17. Our comments are structured as follows:
- 17.1. Section 1 (General comments) addresses:
 - 17.1.1. Overarching concerns regarding the integration of the Ecological Reserve framework, climate and biodiversity considerations, and coherence with the NWA, NEMA, National Environmental Management: Biodiversity Act 10 of 2004 ("**NEMBA**"), and the Climate Change Act 22 of 2024 ("**Climate Change Act**"); and
 - 17.1.2. Implementation and enforceability challenges, including ambiguity in key definitions, structural concerns regarding municipal capacity, and the monitoring and offence frameworks.
 - 17.2. Section 2 sets out Specific Comments on individual regulations.
 - 17.3. Section 3 sets out our Conclusions and Recommendations.

GENERAL COMMENTS

18. The general comments below canvas three interconnected themes: first, the Ecological Reserve as the legal baseline for all groundwater management under the NWA; second, the role of groundwater as ecological infrastructure supporting biodiversity and climate resilience and Strategic Water Source Areas; and third, implementation and enforceability challenges that undermine the Regulations' effectiveness. These themes are not isolated concerns — they are mutually reinforcing, and the Regulations' failure to address them in an integrated way is a central legal deficiency.
19. The comments below are to be read in conjunction with those made by Natural Justice and the CER.

Absence of reference to the Ecological Reserve

20. The Ecological Reserve ("**the Reserve**") is the central legal mechanism for water resource management under the NWA. It is defined as "the quantity and quality of water required to maintain a healthy aquatic ecosystem, whilst meeting the basic human requirements", and established under sections 16–19 of the NWA. Critically, the Reserve represents the non-derogable legal baseline for water resource management — the threshold below which water management must not fall. The NWA mandates that all water resource management practices and strategies must give effect to the Reserve. It is accordingly the baseline against which the Regulations must be assessed; however, the Draft Regulations make no express reference to it whatsoever.
21. While reserve determination in the context of groundwater can be challenging, the Reserve remains the critical water resource management mechanism under our law. That said, the Reserve's application to groundwater is not without complexity. Pienaar *et al.* (2021) note that in arid catchments without baseflow, a groundwater-based Reserve cannot be determined — and that the Reserve's scope does not extend to terrestrial ecosystems:

"In the drier parts of the country where there is no baseflow in rivers, no ecological Reserve based on groundwater can be determined, hence the Reserve cannot be utilized as a groundwater management tool. Moreover, the Reserve cannot be used to protect terrestrial ecosystems dependent on groundwater, as it only applies to aquatic ecosystems."

22. These are real constraints that a sound regulatory framework must reckon with. But they are limitations on how the Reserve operates, not grounds for excluding it from groundwater management regulation.
23. The Regulations as they currently stand fail to clarify how they will work alongside surface water management regimes, and how groundwater will be protected when reserve determinations are not viable. This is both a technical and a legal gap. Even in contexts where full reserve determination is infeasible, risk-based alternatives (such as vulnerability mapping, adaptive abstraction thresholds, and monitoring triggers) must be mandated to provide legal and ecological consistency. Incorporating these measures is necessary to ensure compliance with the NWA and to fulfil its objectives. Anything that falls short does not comply with the NWA and NEMA and is therefore unlawful.

Climate, biodiversity, and ecosystem integrity integration

24. The absence of reference to the Ecological Reserve in the Draft Regulations is particularly concerning given the role that groundwater plays in South Africa's ecological infrastructure, sustaining wetlands, springs, and Strategic Water Source Areas that are simultaneously biodiversity assets, climate buffers, and the foundation of water security. This section addresses the Regulations' failure to integrate these realities within the framework established by the NWA, NEMA, NEMBA, and the Climate Change Act.
25. Groundwater is central to climate adaptation, particularly as a buffer during droughts. Climate change impact assessment requirements should therefore be expressly integrated into the Regulations and any authorisation processes.²⁰ As global research on groundwater-dependent ecosystems ("GDEs") confirms, groundwater serves as the primary buffer when surface water and precipitation are insufficient, and this function becomes increasingly critical under warming conditions.²¹ South Africa is acutely exposed to this dynamic: climate change is reducing rainfall reliability and aquifer recharge rates across significant parts of the country, while simultaneously increasing demand on groundwater as a substitute for unreliable surface water. The Regulations must respond to this reality by mandating climate-adjusted abstraction limits and periodic drought reassessments, consistent with the adaptation duties established under the Climate Change Act.²² Critically, any authorisation process for borehole drilling or industrial groundwater use must expressly incorporate climate change impact assessment information — including a climate-adjusted groundwater recharge estimate — to ensure that abstraction decisions are grounded in projected rather than historical conditions.²³

²⁰ *African Climate Alliance and Others v Minister of Mineral Resources and Energy and Others* 2024 ZAGPPHC 1271; *South Durban Community Environmental Alliance and Another v Minister of Forestry, Fisheries and the Environment and Others* 2025 ZASCA 134;

Pittock, J., Hussey, K., Stone, A. (2016). Groundwater Management Under Global Change: Sustaining Biodiversity, Energy and Food Supplies. In: Jakeman, A.J., Barreteau, O., Hunt, R.J., Rinaudo, J.D., Ross, A. (eds) *Integrated Groundwater Management*. Springer, Cham available at https://doi.org/10.1007/978-3-319-23576-9_4; See also global Groundwater Dependant Ecosystems ("GDEs") mapping research finding GDEs present on more than one-third of global drylands analysed, with 53% of GDEs in regions showing declining groundwater trends: Rohde, M.M., Albano, C.M., Huggins, X. *et al.* 'Groundwater-dependent ecosystem map exposes global dryland protection needs' (2024) *Nature* 632 101–107 available at <https://doi.org/10.1038/s41586-024-07702-8>.

²² Climate Change Act 22 of 2024, section 5 (adaptation duties) and section 7 (sector-specific adaptation plans). Groundwater management is directly implicated in both provisions.

²³ See BLC Comments Fracking Regulations, Annexure A, Dr S. Esterhuysen expert opinion ("Dr. Esterhuysen opinion") section 2.18, available at BLC-comments-Fracking-Regulations-13-Feb-2026.pdf: The opinion recommends that the environmental impact assessment process

26. This concern is particularly acute in arid and semi-arid lands contexts such as the Karoo, where acute groundwater dependence collides with globally significant biodiversity in fragile arid ecosystems. The arid Nama-Karoo receives between 160 mm and 400 mm of rainfall per annum, with pronounced spatio-temporal variability: some years bring significant rainfall, others very little, and some regions experience intense seasonal rains while neighbouring areas remain dry.²⁴ These conditions mean that abstraction decisions anchored to historical rainfall averages are structurally unreliable. The Regulations' failure to expressly require climate-adjusted recharge estimates in authorisation processes constitutes a failure to engage with the hydrological realities of arid lands in South Africa.
27. Groundwater plays a foundational role in sustaining South Africa's ecological infrastructure. Groundwater sustains numerous wetlands and springs hydrologically connected to aquifers, supports baseflows in non-perennial rivers typical of semi-arid regions, and underpins the functioning of Strategic Water Source Areas.²⁵ Research mapping GDEs globally finds them present across more than one-third of drylands analysed — including major biodiversity hotspots — and shows that 53% of GDEs exist in regions with declining groundwater trends.²⁶ South Africa's own 2025 National Biodiversity Assessment (“**2025 NBA**”) confirms this picture domestically, finding that estuaries, rivers, and wetlands are the most threatened and least protected ecosystems in the country, with mining and energy operations identified as a major pressure whose cumulative impacts extend well beyond their direct footprint.²⁷ Declining groundwater levels — whether from over-abstraction, mining dewatering, or cumulative land-use pressures — are associated with wetland desiccation, loss of obligate wetland and spring biota, and vegetation regime shifts in riparian systems, particularly in water-stressed catchments.
28. These ecological functions are given legal form by the NWA, which requires water resources to be protected so as to secure the Ecological Reserve and protect aquatic ecosystems and their biological diversity. This obligation must be read together with section 24 of the Constitution, and the duty of care and biodiversity protection framework under NEMA and NEMBA. NEMBA's objectives include the management and conservation of biodiversity and its components, the protection of ecosystems as a whole, and cooperative governance in biodiversity management. The 2025 NBA makes clear that “action is urgently needed to better integrate biodiversity into spatial planning and decision-making at all levels of government and across all sectors”. The Groundwater Regulations are precisely the kind of instrument through which this integration must occur.
29. This is not a merely abstract legal concern. In semi-arid landscapes such as the Karoo, these obligations engage a unique and fragile suite of ecosystems. The Karoo's ephemeral pans and rock pools support specialised invertebrate communities — including fairy shrimps, tadpole shrimps, and clam shrimps — several of which are entirely dependent on ephemeral wetlands to complete their life cycles. Scientific

'incorporat[e] the required climate change impact assessment information ... in the groundwater section ... to determine a climate adjusted groundwater recharge estimate'. See also Hohne, D., Esterhuyse, C., Fourie, F., Gericke, H., & Esterhuyse, S. 'Enhancing groundwater recharge in the main Karoo, South Africa during periods of drought through managed aquifer recharge' (2020) *Journal of African Earth Sciences* 176 available at [10.1016/j.jafrearsci.2020.104007](https://doi.org/10.1016/j.jafrearsci.2020.104007).

²⁴Dr. Esterhuyse opinion, section 9: the arid Nama-Karoo receives between 160 mm rainfall per annum in the west and 400 mm in the east, with high spatio-temporal variability — 'some years having significant rainfall and some less, and with some regions of the Karoo receiving intense rains in a given rainfall season, and some little rain'. This variability renders abstraction decisions based on historical averages structurally unreliable.

²⁵NWA, sections 2(g) and (h), 3 and 19. These provisions require protection of aquatic ecosystems and their biodiversity and impose a duty to prevent pollution and ecological degradation of water resources. Read with section 24 of the Constitution, which requires the State to prevent ecological degradation and promote conservation for present and future generations.

²⁷2025 NBA.

literature confirms that small changes in groundwater pressure and discharge can trigger disproportionate ecological impacts in these systems.²⁸ Yet knowledge of the species that inhabit the aquatic ecosystems of the more arid parts of the Karoo — their ranges, population sizes, and habitat requirements — remains limited, making the precautionary approach mandated by NEMA all the more critical.²⁹ The Regulations' failure to engage with this reality compounds the legal deficiency identified above.

30. The proposed Regulations acknowledge ecosystems in general terms and reference GDEs, but do not regulate for them in any substantive way. The Regulations do not establish ecological drawdown thresholds, prescribe precautionary triggers linked to declining water tables, or integrate biodiversity spatial planning instruments — including bioregional plans under NEMBA or Critical Biodiversity Areas identified under provincial conservation planning.³⁰ Nor do they operationalise the Ecological Reserve in the context of aquifer management in arid and semi-arid landscapes where groundwater may be the primary determinant of ecological integrity. This is a nominal rather than substantive engagement with ecosystem protection, and it is insufficient to meet the State's legal obligations.³¹

31. The expansion of critical mineral extraction and other high-intensity industries compounds these risks. Mining activities, including pumping to keep shafts dry, lithium brine extraction, and metal mining operations, lower water tables, alter groundwater flows, and risk generating acid mine drainage and chemical contamination of aquifers.³² These are the precise contexts where climate and biodiversity pressures converge: aquifers are being drawn down at the same time as recharge rates are declining, and the ecological systems dependent on stable groundwater levels are already under stress. In the Karoo specifically, these risks are amplified by the region's high aquifer vulnerability, slow recharge rates, and the concentration of animal activity around limited water sources, which increases exposure to contaminated water.³³ The Regulations do not require cumulative impact assessments for these operations, do not set abstraction caps for stressed aquifers, and do not integrate climate and biodiversity safeguards.³⁴ This must be remedied.

²⁸ See BLC Comments Fracking Regulations, Annexure B, Peter Carrick, Biodiversity opinion; Section on Aquatic Biodiversity para 1, available at BLC-comments-Fracking-Regulations-13-Feb-2026.pdf: The Karoo's ephemeral pans and rock pools support specialised invertebrate communities, including fairy shrimps (*Anostraca*), tadpole shrimps (*Notostraca*), clam shrimps (*Spinicaudata* and *Laevicaudata*), cladocerans and ostracods. Several taxa are entirely dependent on ephemeral wetlands to complete their life cycles. Scientific literature confirms that small changes in groundwater pressure and discharge can trigger disproportionate ecological impacts in arid and semi-arid ecosystems.

²⁹Holness, S., Driver, A., Todd, S., Snaddon, K., Hamer, M., Raimondo, D., Daniels, F., Alexander, G., Bazelet, C., Bills, R., Bragg, C., Branch, B., Bruyns, P., Chakona, A., Child, M., Clarke, R.V., Coetzer, A., Coetzer, W., Colville, J., Conradie, W., Dean, R., Eardley, C., Ebrahim, I., Edge, D., Gaynor, D., Gear, S., Herbert, D., Kgatla, M., Lamula, K., Leballo, G., Lyle, R., Malatji, N., Mansell, M., Mecenero, S., Midgley, J., Mlambo, M., Mtshali, H., Simaika, J., Skowno, A., Staude, H., Tolley, K., Underhill, L., van der Colff, D., van Noort, S. and von Staden, L. 2016. *Biodiversity and Ecological Impacts: Landscape Processes, Ecosystems and Species*. In Scholes, R., Lochner, P., Schreiner, G., Snyman-Van der Walt, L. and de Jager, M. (eds.). 2016. *Shale Gas Development in the Central Karoo: A Scientific Assessment of the Opportunities and Risks* available at <http://seasgd.csir.co.za/scientific-assessment-chapters>: The CSIR report notes that 'ephemeral aquatic ecosystems ... have a high intrinsic variability in terms of aquatic community responses to inundation patterns' and that 'our limited knowledge of the species that inhabit the aquatic ecosystems of the more arid parts of the [Central Karoo], their ranges, population sizes, and habitat requirements, is a constraint on the determination of the best aquatic indicator species'. These knowledge gaps are directly relevant to the precautionary approach required under NEMA.

³⁰NEMBA section 52 (bioregional plans) and related provincial conservation and spatial planning instruments. Critical Biodiversity Areas (CBAs) are identified through systematic biodiversity planning processes and are recognised in provincial conservation and spatial planning. The failure to integrate these instruments into the Regulations means that groundwater management decisions may be made without awareness of the ecological significance of the areas affected.

³¹Gibson, K. & Mc Gibbon, D. (2023). *Guidance document on Protection Zones (Delineation and Protection): Development of methodological approach and implementation plan* Water Research Commission ("WRC") Report No. TT 902/22: The report notes that '[c]urrently, there are no implemented legislative guidelines on establishing groundwater protection zones in South Africa' and that '[g]roundwater quality protection promotes water resilience to the effects of climate change, population growth and changes in land use'.

³² Aska, B *et al.*, 'Mining, biodiversity and social conflict'.

³³Pienaar *et al.* *Implementation of groundwater protection measures*: '[i]n general, local impacts, like mining and industrial activities, are not visible in the national scale monitoring networks'. See also Dr. Esterhuysen opinion, highlighting 'a comparison of projected water with existing cumulative catchment stress' and the determination of 'risk based abstraction thresholds or adaptive management triggers for groundwater abstraction'.

³⁴Pienaar *et al.* *Implementation of groundwater protection measures*: '[k]ey geohydrological parameters in any licence application, groundwater recharge and groundwater contribution to baseflow ... still have very high uncertainty'. The authors recommend an element of adaptive

32. The Regulations' failure to integrate the Ecological Reserve, NEMBA's biodiversity framework, and the Climate Change Act's adaptation requirements into a coherent operational framework raises a significant concern. By not giving meaningful effect to the Reserve, failing to protect GDEs through enforceable thresholds, and not accounting for climate-adjusted recharge in authorisation processes, the Regulations do not comply with the NWA, NEMA, or NEMBA, and do not fulfil the State's constitutional obligations under section 24.³⁵ They are accordingly unlawful and fail to ensure that groundwater governance supports both species and ecosystem integrity.

33. Where the regulations have incorporated certain protective measures to a degree, they present implementation and enforceability challenges that may undermine their intended purpose.

Implementation and enforceability challenges

34. Our concerns pertaining to the implementation and enforceability of the Regulations arise from ambiguity and seemingly contradictory provisions, contextual challenges, as well as structural issues. These challenges risk undermining their effectiveness as a whole.

Ambiguity and contextual challenges

35. Groundwater management is highly complex. Studies have recognised that it requires a unique governance approach, in part due to its "ubiquitous nature and relative ease of local access, with widely distributed and generally dispersed abstraction points and many stakeholders, who are involved in its development, use, as well as misuse."³⁶ For this reason, coupled with its ecological significance, clear regulation that is feasible and implementable in practice is of critical importance. This requires clear and unambiguous provisions as well as clear criteria for decision making.

Contradictory nature of the sections pertaining to prohibited and restricted areas and activities

36. The purpose of the Regulations includes the identification and control of certain activities relating to the drilling of boreholes, to ensure the protection of groundwater resources and to ensure that groundwater is managed in a sustainable way. Chapter 3 in turn lays out a number of prohibitions and restrictions, under the categories of "prohibited" areas and activities and "restricted" areas and activities. However, the Regulations do not clearly define "restricted" and "prohibited" in these contexts. Critically, the regulations dealing with "restricted" and "prohibited" activities raise contradictions which will prevent the regulations from fulfilling their purpose overall.

Prohibited activities

37. Further, in the case of the prohibited activities, under regulation 8, caveats are built into the language of each subregulation that infer that the prohibited activity can, in fact, be permitted in certain, undefined, circumstances. For example, the regulation states that activities are prohibited, unless there is "approval by the responsible authority",³⁷ or that it is prohibited, but only if it is "without a water authorisation"³⁸ or

management in all groundwater schemes, with management monitoring as a critical part of resource directed measures and reserve determination.

³⁵NWA, sections 16–19 (Ecological Reserve); NEMA, section 2(4)(r) (protection of ecosystems and biodiversity) and section 24O (factors relevant to environmental authorisation); NEMBA, sections 1–5. See also Constitution, section 24.

³⁶Pienaar *et al.* 'Implementation of groundwater protection measures' p 821.

³⁷Draft regulation 8(c).

³⁸Draft regulation 8(b).

“without prior authorisation”. Critically, these caveats apply in the case of activities with profound environmental and biodiversity impacts, such as the injection or disposal of waste or chemicals that may detrimentally impact or pollute water resources, the injection of chemicals for borehole rehabilitation, and the disposal of hazardous substances, effluents or contaminated runoff from mining, agricultural, or industrial activities in areas identified as groundwater protected areas.³⁹

38. Given the harmful nature of these activities, the lack of clarity regarding what the specific approvals or authorisations are and what criteria will be applied in granting the authorisations creates significant regulatory gaps and loopholes that are likely to cause environmental harm and seemingly undermine the purpose of the Regulations. Such activities should not, under *any* circumstances, be authorised. Authorisations of such activities without objective criteria would be susceptible to review under the Promotion of Administrative Justice Act 3 of 2000 (“**PAJA**”) on the grounds that they are arbitrary or not rationally connected to the information before the decision-maker or the purpose for which the power was conferred.⁴⁰

Restricted areas and concerns around uniform buffer zones

39. Regulation 9 deals with “restricted areas”, stating that the drilling of boreholes is restricted within:

- “(a) the locally defined distance from Strategic Water Source Areas, informed by the outcomes of research studies on their protection approach;
- (b) five kilometres of a freshwater ecosystem or priority areas, critical biodiversity areas or areas with high conservation status as determined by the South African National Biodiversity Institute (“**SANBI**”); and
- (c) all areas in the Republic of South Africa identified and declared as restricted in terms of any international conventions.
- (d) A borehole may not be drilled within a groundwater protection zone should there be potential impacts by streamflow reduction activities, agricultural activities, and open cast or underground mining; based on specialist studies.”

40. Two issues arise from regulation 9: firstly, similarly to the issue flagged above, a key concern is that the meaning and consequence of “restricted” in this context is not clear. It is not clear whether “restricted” may also imply that exceptions may be possible with prior approval or authorisation. Secondly, while we commend the approach taken in the case of Strategic Water Source Areas, whereby the distance within which borehole drilling is restricted will be determined by research studies, the prescription of a set five kilometre buffer zone in the case of freshwater ecosystem or priority areas, critical biodiversity areas, and areas with high conservation concern is arbitrary and risks failing to meaningfully protect these areas. It also fails to adhere to the precautionary principle as required in section 2(4)(a)(vii) of NEMA.⁴¹ The precautionary principle requires a risk-averse and cautious approach where there is scientific uncertainty regarding serious or irreversible harm, and our courts have reaffirmed that the precautionary principle is not discretionary.⁴²

³⁹ Draft regulation 8(d).

⁴⁰ Promotion of Administrative Justice Act 3 of 2000 (“**PAJA**”) sections 6(2)(e)(iii) and 6(2)(f)(ii).

⁴¹ Draft regulation 8.

⁴² *Fuel Retailers Association of Southern Africa v Director-General, Environmental Management, Department of Agriculture, Conservation and Environment, Mpumalanga Province* 2007 (6) SA 4 (CC). See also *HTF Developers v Minister of Environmental Affairs and Tourism and Others* 2007 (5) SA 438 (SCA).

41. The uniform measures such as fixed 5-kilometre buffers around sensitive areas fail to account for the spatial variability of aquifers and the distribution of GDEs. A fixed buffer of this nature is therefore arbitrary and risks failing to achieve its purpose.⁴³ This could result in both over and under-protection in certain circumstances. To address this, it is recommended that the Regulations adopt an expressly defined approach reliant on context-specific scientifically determined buffer zones informed by hydrogeological vulnerability and GDE mapping. The determination of these buffer zones should also be informed by cumulative impacts of ecosystem pressures in a given area, as mandated by law.

Groundwater protection zones

42. The definition of “groundwater protection zones” in the Regulations also raises concern. Regulation 1 defines “groundwater protection zones” as “areas delineated with the aim of protecting a groundwater resource by restricting certain activities in the vicinity that may compromise its quality”. These zones are crucial safeguards around vital underground water sources, protecting them from risks such as over-abstraction in vulnerable aquifers, pollution from agriculture and industry (e.g., nitrates), and seawater intrusion in coastal areas, particularly important given groundwater’s role in supplying rural communities and small towns across South Africa’s water-stressed catchments, as well as sustaining GDEs.⁴⁴ However, the definition is insufficient, as prior resource-directed measures (“**RDM**”) under the National Water Act have prioritised surface water, leaving groundwater source protection zoning entirely unimplemented despite substantial investments, resulting in inadequate controls for both quantity and quality.

43. To address this, the definition should be amended to mandate science-based delineation—drawing on hydrogeological data such as aquifer recharge/discharge dynamics and radius-of-influence methods—linked to enforceable resource quality objectives (“**RQOs**”), abstraction limits, monitoring requirements, licensing, and stakeholder governance. As it stands, the definition remains vague, and Regulation 11 (“Groundwater protection”) offers scant detail on delineation methodology, merely referencing the Water Research Commission (“**WRC**”) Guidance Document TT 902/22 in regulation 11(2). While referencing this guidance is welcome, the Regulations should explicitly incorporate standardised scientific criteria, mandating vulnerability mapping informed by aquifer properties and GDE data, alongside national approval processes and centralised oversight for consistency and enforceability. Without explicit incorporation of these components, the regulatory framework risks remaining vague and may fail to give practical effect to a comprehensive groundwater protection scheme as set out in WRC Guidance Document TT 902/22.

Structural concerns

44. The Regulations place significant responsibility on municipalities, including: to delineate protection zones (a crucial function, as flagged above), monitor compliance, and enforce restrictions. A 2021 review of South Africa’s groundwater protection mechanisms captured the challenges faced by municipalities:

*“A major concern is that the most strategically important groundwater service, that of domestic water supply, is being poorly managed at the local level. A key reason for this problem is that the intended devolution of water resources management to catchment management agencies (“**CMAs**”) and*

⁴³ PAJA section 6(2)(f)(ii)(bb).

⁴⁴ Pienaar *et al.* ‘Implementation of groundwater protection measures’ pages 821-822, 826, 831-832.

*supporting management institutions, in particular, Water User Associations (“WUAs”), has not taken place in any significant way. Inexperienced and noncapacitated municipalities, already struggling with their water supply function, also have to develop and manage their local groundwater resources, without comprehensive direction, control and support from national government”.*⁴⁵

45. And:

*“...operational plans at provincial and local levels are still lacking coherent implementation of groundwater protection measures, despite this function being an integral part of water resource planning. Planning attention should be focused not only on specific water supply issues **but also on region-wide and national issues relating to vulnerable groundwater resources.**”*⁴⁶

46. Given known capacity gaps at municipal level in South Africa, including technical and financial under-resourcing, the delegation of increased responsibility to municipalities risks inconsistent implementation and could constitute an impermissible devolution of national water resource management functions, raising potential constitutional and administrative law concerns. Further, as highlighted above, groundwater management is an issue of national concern for South Africa, therefore integration of planning and management at provincial and national levels is essential.

47. To mitigate these risks, the Regulations should provide for national oversight, standardised methodologies, and technical support mechanisms for municipalities. This must be accompanied by the funding for the provision of this support, centralised reporting, and intervention mechanisms to ensure consistent implementation and enforcement. The ultimate fulfilment of the Regulations’ purpose depends on these components being in place.

48. As it stands, the Regulations are too vague to be enforceable and fail to protect water sources, contrary to the NWA. They are therefore unlawful.

Licensing framework

49. The Draft Regulations also imply limits on abstraction without clear integration with the existing NWA licensing system, potentially leading to arbitrary decision-making.⁴⁷ As flagged above, the Regulations should explicitly reference the Ecological Reserve as the baseline for groundwater management⁴⁸ while providing for risk-based, adaptive alternatives where reserve determination is not feasible.⁴⁹ Licensing provisions should also be harmonised with NEMA’s section 24 environmental authorisation requirements and should include transitional arrangements for safeguarding existing lawful water uses.⁵⁰

Monitoring framework

50. The Draft Regulations are to be commended for the inclusion of clearer monitoring requirements, reporting obligations, and the integration of data into the National Groundwater Archive signal a commitment to improving transparency, accountability and institutional oversight. The emphasis on structured data submission and centralised record-keeping aligns with the broader objectives of the National Water Act to protect, use, develop, conserve, manage and control water resources in a

⁴⁵ Pienaar *et al.* ‘Implementation of groundwater protection measures’ p 821.

⁴⁶ Pienaar *et al.* ‘Implementation of groundwater protection measures’ p 822.

⁴⁷ PAJA s 6(2)(h); PAJA sections 6(2)(e)(iii), 6(2)(f)(ii), and 6(2)(i).

⁴⁸ NWA sections 16–19.

⁴⁹ Pienaar *et al.* ‘Implementation of groundwater protection measures’; NEMBA sections 1–5.

⁵⁰ NWA sections 21, 27, 43; PAJA section 6(2)(a).

sustainable and equitable manner. These provisions establish an important regulatory foundation for more consistent and evidence-based groundwater management.

51. However, the effectiveness of these measures will ultimately depend on the quality, coverage and scientific robustness of the monitoring regime implemented in practice. As reflected in the Department’s own National Integrated Water Information System (“**NIWIS**”) Groundwater Reserve platform,⁵¹ groundwater assessments across the country remain uneven, with many quaternary catchments based on desktop or rapid determinations rather than comprehensive studies. This uneven data landscape highlights a structural risk: without sufficiently detailed baseline information, conceptual hydrogeological models and adaptive trigger thresholds, monitoring may remain compliance-driven rather than resource-protection-driven.

52. In this context, robust monitoring is not merely an administrative requirement but a constitutional and statutory necessity. To give full effect to the preventive and precautionary principles under NEMA the Regulations should ensure that monitoring frameworks incorporate GDE indicators, recharge and climate-response metrics, aquifer sensitivity assessments, shallow–deep connectivity analysis, and cumulative abstraction stress evaluation.⁵² Given the existing variability in national data confidence, strengthening monitoring design and adaptive triggers is essential to avoid regulatory blind spots and to ensure that groundwater protection is proactive rather than reactive.

Offence provisions

53. While the offence provisions provide for a potential avenue to enforce compliance with the Regulations, the provisions as they stand are extremely broad, citing that “*failure to comply with any of the provisions in the regulations constitutes an offence that could result in a fine or imprisonment*”. Given the broad ambit of the Regulations, in that they apply to all groundwater users, they risk criminalizing minor non-compliance from personal water users, while failing to adequately regulate large industrial users. This raises concerns regarding vagueness, proportionality, and arbitrary enforcement which gives rise administrative justice and Constitutional concerns.⁵³

SPECIFIC COMMENTS

54. The specific comments in this section aim to make recommendations on how certain regulations or chapters could be amended. These comments focus on the thematic areas we have identified in our general comments above, and are not intended to be exhaustive.

Regulation	Current formulation	Comment/ suggested change
Regulation 1 – Definitions	“borehole yield” means the volume of water that can be abstracted from a borehole;	This is not consistent with the concept of the “sustainable yield”, which forms part of the National Groundwater Strategy (“ DWS ”). This requires borehole yield to be understood as the volume of water (measured in L/s, m ³ /hr,

⁵¹ Department of Water and Sanitation (“**DWS**”) Groundwater Reserve Platform available at <https://www.dws.gov.za/niwis2/GroundWaterReserve>.

⁵² Dr. Esterhuyse opinion: robust groundwater monitoring is central to implementing the preventive and precautionary principles under NEMA and highlights the need to strengthen monitoring design, data coverage, and adaptive triggers to avoid regulatory blind spot.

⁵³ PAJA section 6(2)(h), the Constitution section 35(3), NEMA section 28, and NEMBA sections 1–5.

		<p>or m³/d) that can be sustainably extracted from a borehole over a specific time, balancing extraction with natural aquifer recharge.</p> <p>Suggested change: “borehole yield” means the volume of water that can be <u>sustainably</u> abstracted from a borehole <u>over a specific time, while balancing the extraction with natural aquifer recharge.</u></p>
	<p>“cemeteries” means a place where the remains of dead people are buried or otherwise interred. This can include burial grounds, gravesites, graveyards, or a green space called a memorial park;</p>	<p>This has direct implications for the National Heritage Resources Act 25 of 1999 and should refer to the Act and its definition. This will also ensure legislative coherence.</p>
	<p>“existing water user” means a water user that use water from a geosite in an area prior to commencement of these Regulations;</p>	<p>Section 32 of the NWA defines an existing water use as: Definition of existing lawful water use.—(1) An existing lawful water use means a water use—</p> <ul style="list-style-type: none"> (a) which has taken place at any time during a period of two years immediately before the date of commencement of this Act and which— <ul style="list-style-type: none"> (i) was authorised by or under any law which was in force immediately before the date of commencement of this Act; (ii) is a stream flow reduction activity contemplated in section 36 (1); or (iii) is a controlled activity contemplated in section 37 (1); or (b) which has been declared an existing lawful water use under section 33. <p>(2) In the case of—</p> <ul style="list-style-type: none"> (a) a stream flow reduction activity declared under section 36 (1); or (b) a controlled activity declared under section 38, existing lawful water use means a water use which has taken place at any time during a period of two years immediately before the date of the declaration. <p>It is clear that it extends beyond a geosite, and the nature of a geosite is that it comes from an aquifer. Therefore existing users should not be limited overly narrowly to a geosite, but should include water users of a water system as understood in section 32 of the NWA.</p>

	<p>“general authorisation” is an authorisation to use water without a license, provided that the water use is within certain limits and complies with conditions set out in the general authorisation as Gazetted;</p>	<p>This is a wholly insufficient definition and does not explain what legal regime it refers to. These Regulations must be consistent with the NWA and the National Water Strategy. General authorisations under this regime contains many preconditions, including the health and sustainability of the water resource. It must at least refer to sections 29 and 39 of the NWA.</p> <p>Suggested wording: “general authorisation” is an authorisation to use water without a license, <u>as defined and set out in sections 29 and 39 of the National Water Act</u>, provided that the water use is within certain limits and complies with conditions set out in the general authorisation as Gazetted;</p>
	<p>“Geohydrological Report” means the technical report which reflects the hydrogeological Investigations;</p>	<p>Reference should be made to the specific contents of a Geohydrological Report. This is done in regulation 19. It is suggested that the definition explicitly refer to regulation 19.</p>
	<p>“Strategic Water Source Areas” are currently defined as areas of land that either: (a) supply a disproportionate (i.e. relatively large) quantity of mean annual surface water runoff in relation to their size and so are considered nationally important; or (b) have high groundwater recharge and where the groundwater forms a nationally important resource; or (c) areas that meet both criteria (a) and (b). They include transboundary water source areas;</p>	<p>It would be helpful to know the source of the definition in order to make further comments.</p> <p>Suggested wording: “Strategic Water Source Areas” are currently defined in <u>section [] of [] Act</u> as areas of land that either: (a) supply a disproportionate (i.e. relatively large) quantity of mean annual surface water runoff in relation to their size and so are considered nationally important; or (b) have high groundwater recharge and where the groundwater forms a nationally important resource; or (c) areas that meet both criteria (a) and (b). They include transboundary water source areas.</p>
	<p>Defines “groundwater protection zones” as areas delineated to protect groundwater by restricting certain activities.</p>	<p>This definition of a crucial issue is vague, with prescribed methodology, no methodology prescribed; and no linkage to enforceable standards or resource quality objectives.</p> <p>We recommend that this section be amended to require science-based delineation using hydrogeological vulnerability mapping, recharge/discharge modelling, and GDE data; and to expressly link to enforceable</p>

		abstraction limits, monitoring requirements and resource quality objectives.
	“Water User Association” means a water management institution, but their primary purpose is to operate at a restricted localised level, and are in effect co-operative associations of individual water users who wish to undertake water-related activities for their mutual benefit;	This definition needs to refer to the applicable provisions of the NWA.
Regulation 2 – Purpose of Regulations	The purpose of these Regulations is to— (a) identify and control certain activities related to the drilling of boreholes to ensure the protection of groundwater resources;	Groundwater resources are inextricable from the ecosystem they form part of. Without the protection of one, there is not the protection of the other and <i>vice versa</i> . Suggested wording: “The purpose of these Regulations is to— (a) identify and control certain activities related to the drilling of boreholes to ensure the protection of groundwater resources and their ecosystems;”
Regulation 4 – Obtaining existing geosite information	All borehole owners, including Schedule 1, Existing Lawful Use (ELU), General Authorisation (GA), and water use license users, must capture their details and details of the existing geosite information on the National Groundwater Archive (NGA). See Annexure 1 for registration of information. Existing users are expected to register their details within 12 months of these Regulations.	This information should be expressly publicly available on DWS’ website. Suggested wording: “ <u>5(1)</u> All borehole owners, including Schedule 1, Existing Lawful Use (“ ELU ”), General Authorisation (“ GA ”), and water use license users, must capture their details and details of the existing geosite information on the National Groundwater Archive (“ NGA ”). See Annexure 1 for registration of information. Existing users are expected to register their details within 12 months of these Regulations. <u>(2) The information on the NGA will be available to the public on the Department’s website.</u> ”
Regulation 6 – Provision of pump installation settings	(1) Any person who intends installing borehole pumping equipment for the purpose of abstracting water from an aquifer must provide yield test result or recommended sustainable abstraction rate together with the pump installation settings on the NGA before commencement of water abstraction.	A sustainable abstraction rate should not be optional. The definition of “sustainable yield” or “safe yield” (DWS) should be inserted into the Regulations and into this regulation. Suggested wording: (1) Any person who intends installing borehole pumping equipment for the purpose of abstracting water from an aquifer must provide yield test result <u>and</u> or recommended

		sustainable abstraction rate <u>in line with a sustainable yield</u> , together with the pump installation settings on the NGA before commencement of water abstraction.
Regulation 7 – Prohibited Areas	(a) Drilling of boreholes for any water use, including domestic, mining, industrial, livestock and irrigation purposes, are prohibited within 50m from cemeteries, informal waste disposal sites, subsistence agriculture activities, animal kraals, watering points and dipping tanks, fuel tanks, informal vehicle servicing, spray painting and parts washing facilities, pit latrines or other potentially hazardous operations areas.	<p>There does not seem to be a scientific basis for the 50m prohibition. From DWS’ own documents, it notes that these activities pose a real risk to groundwater, including “Dipping tanks are also of concern, because of the use and spillage of pesticides at such sites. Pesticides are designed to be toxic (poisonous), while some may also be carcinogenic (cause cancer). Even a small amount of pesticide in a water resource could be a serious health risk to people who use the water for drinking purposes. In areas with high rainfall and shallow water tables, groundwater is particularly vulnerable to pollution from feedlots and stock watering points. Groundwater vulnerability is potentially significant in high permeability environments, such as sandy and gravelly soils, or where fractured bedrock lies close to the ground surface.” It goes on to list various factors that increase groundwater vulnerability. The 50m prohibition is arbitrary and does not take into consideration these factors, including elevation and runoff, interlocking water systems outside of the 50m, etc.</p> <p>A better way of defining prohibited areas needs to be identified.</p> <p>In addition, this regulation mysteriously omits protected areas, which should fall under prohibited areas. The NEMBA and National Environmental Management Protected Areas Act 57 of 2003 (“NEMPAA”) should be incorporated into these Regulations. This regulation needs serious revision to make it compliant with NEMA, NEMBA, NEMPAA and the Constitution.</p>
Regulation 8 – Prohibited Activities	The following activities are prohibited: (b) the disposal or injection, without a water use authorisation, of any waste or chemicals that may detrimentally impact or pollute the water resources; and (c) the injection, without approval by the responsible authority and without a	As the authorisation and approval pathways are not clarified; and criteria is not specified, this section risks failing to align with the NWA, meeting its objectives, or protecting the environment.

	<p>water use authorisation, of chemicals for rehabilitation of a borehole.</p> <p>(d) The disposal of hazardous substances, effluents/contaminated runoff from mining, agricultural or industrial activities in areas identified as groundwater protected areas without prior authorisation.</p>	<p>It is unclear how and why disposal or injection of waste or chemicals can ever be authorised, but this provision seems to create a situation, with unknown parameters and checks, where such a situation would be permitted.</p> <p>We recommend that the section be amended to specify that approvals must be granted only under relevant NWA water use authorisation processes; prescribe objective decision-making criteria; and clarify that certain high-risk activities (e.g., hazardous waste injection) may not be authorised in any circumstance (i.e. they are prohibited).</p>
<p>Regulation 9 – Restricted Areas</p>	<p>The drilling of boreholes for any use is restricted within—</p> <p>(a) the locally defined distance from Strategic Water Source Areas, informed by the outcomes of research studies on their protection approach;</p> <p>(b) five kilometres of a freshwater ecosystem or priority areas, critical biodiversity areas or areas with high conservation status as determined by the South African National Biodiversity Institute (SANBI); and</p> <p>(c) all areas in the Republic of South Africa identified and declared as restricted in terms of any international conventions.</p> <p>(d) A borehole may not be drilled within a groundwater protection zone should there be potential impacts by streamflow reduction activities, agricultural activities, and open cast or underground mining; based on specialist studies.</p>	<p>The fixed distance is arbitrary, is likely to fail the precautionary principle, and does not reflect hydrogeological variability. It is recommended that the fixed 5 km buffer be replaced with context-specific delineation informed by hydrogeological studies, aquifer vulnerability mapping, and cumulative impact assessment.</p> <p>Regulations 7 to 9 collectively and individually do not make sense. They seem to contradict themselves and each other. Why is 5m prohibited, and then 5km in a protected area considered restricted? And how is it restricted. All of the above is unclear and arbitrary. These regulations require significant revision and rethinking. It is suggested that an ecosystem approach be adopted, in line with South Africa’s environmental framework and the Constitution.</p>
<p>Regulation 11 – Groundwater Protection</p>	<p>(1) Municipalities must develop a groundwater protection scheme within 5-years from the promulgation of the Regulations.</p> <p>(2) Appropriate groundwater buffers with respect to groundwater protection schemes, including groundwater protection zones, as developed by municipalities in accordance to the WRC Guidance Document TT 902/22 (Gibson & McGibbon, 2023), must be adhered</p>	<p>A 5-year delay in developing protection schemes is far too long. This should be shortened to 12 months.</p> <p>Guidance not legally binding; methodology not incorporated into regulation.</p> <p>Incorporate minimum scientific criteria directly into regulation; require national approval of protection zones and standardised methodology.</p>

	<p>to inform monitoring frequency of a groundwater resource towards compliance reporting.</p> <p>(3) A re-calculation of local groundwater protection zones, based on local aquifer characteristics is recommended if significant groundwater abstractions or land uses are proposed.</p> <p>(4) Municipalities must ensure the appropriate education in respect of safe, effective and efficient groundwater use and management.</p>	
Regulation 12 – Schedule 1 Use	(2) All municipalities must develop municipal abstraction limits for all boreholes in their area of jurisdiction.	Municipalities must develop sustainable abstraction limits and should be given guidance on how to do so. To leave this up to the municipalities delegates too much discretionary power from national government.
Regulations 14-16, and 18	<p>14. (1) Borehole siting must be conducted according to South African National Standards (“SANS”) 10299-1:2003 or any applicable best practices or guidelines.</p> <p>15.(1) All new boreholes must be constructed according to the SANS 10299.</p> <p>16. All dry or unused boreholes must be decommissioned within 60 days of final use. Borehole decommissioning must adhere to SANS 10299-9 or any equivalent best practice guideline or standard.</p> <p>18.(1) Boreholes in use for abstraction, for any purpose contemplated under the Act, must be subjected to borehole testing according to SANS 10299-4 or any applicable best practices or guideline; and must be installed with a pump that is suitable for the capacity of the borehole based on the borehole yield results.</p>	The integration of SANS is a positive step, however SANS standards are not freely available to the public but instead need to be purchased. Now that the standards have been incorporated, we recommend that the SANS be annexed to the Regulations.
Regulation 20 – Water quantity	(1) ELU, GA and water use license holders must measure groundwater levels biannually or in accordance with	Biannual (twice-yearly) monitoring is insufficient to detect seasonal drawdown trends, identify drought-related stress, capture

<p>assessment</p>	<p>the water use license conditions or GA. Water quantity assessment must adhere to SANS 10299-8:2003 or any equivalent best practice guideline and must be captured on the NGA annually or in line with the applicable authorization.</p> <p>(2) All groundwater users must install metering devices to monitor volumes of water abstracted on each geosite in use and data on abstracted volumes must be captured on the NGA annually or in line with the applicable Authorisation;</p> <p>(a) a water user must ensure that metering devices are replaced and repaired should they break or be stolen; and</p> <p>(3) In the event, that a change in pump rate and volume abstracted affects the authorisation of the water use, the water user must notify the Responsible Authority and follow the required e-WULAAS process; and update the information on the NGA.</p>	<p>short-term abstraction spikes, assess aquifer recharge variability, and monitor groundwater–surface water connectivity.</p> <p>Many South African aquifers (particularly fractured rock and shallow alluvial systems) respond rapidly to abstraction and climate variability. Measuring levels only twice per year risks missing threshold exceedances, early warning signals of aquifer depletion, and ecological drawdown affecting wetlands and springs. In stressed aquifers, quarterly or monthly monitoring is often required to detect ecological risk.</p> <p>This provision may be inconsistent with the NWA (Ecological Reserve protection), NEMA (section 2(4)(a)(vii) - risk-averse and precautionary approach), NEMA (cumulative impacts) and section 24 of the Constitution.</p> <p>If monitoring frequency is insufficient to detect harm, the State may fail in its constitutional and statutory duties to prevent ecological degradation.</p> <p>Suggested wording: Replace “biannually” with:</p> <p><u>“at a frequency sufficient to detect seasonal variation and ecological risk, and no less than quarterly in aquifers classified as vulnerable, stressed or strategically important.”</u></p> <p>In addition, regulation 20 requires monitoring groundwater levels but does not require an assessment of ecological drawdown thresholds, monitoring of connected wetlands, springs, or baseflows, or the identification of GDEs. Groundwater level decline is ecologically significant only in relation to root-zone depth of phreatophytes, wetland hydroperiod requirements, spring discharge sustainability, and river baseflow contribution. Monitoring static water levels alone does not protect ecosystems.</p> <p>Suggest insert a requirement that:</p> <p><u>“Where aquifers are hydrologically connected to wetlands, springs, rivers or groundwater-dependent ecosystems, monitoring must</u></p>
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		<p><u>include ecological drawdown thresholds and baseflow impact assessment.”</u></p> <p>In addition, regulation 20(2) requires installation of metering devices but allows data capture “annually or in line with the applicable Authorisation”. Annual reporting is inadequate in high-use or vulnerable aquifers. Without more frequent reporting over-abstraction may continue undetected and adaptive management becomes impossible.</p> <p>Suggested, require: monthly electronic reporting for high-volume users, quarterly reporting for moderate users, and real-time telemetry in Strategic Water Source Areas.</p> <p>Regulation 20 requires monitoring but does not require action if thresholds are exceeded. Monitoring without regulatory response mechanisms is scientifically ineffective.</p>
<p>Regulation 21 – Water quality assessment</p>	<p>(1) Water quality sampling and analysis for groundwater users must be conducted in line with the applicable authorization and results must be captured on Integrated Regulatory Information Systems (“IRIS”) at https://ws.dws.gov.za/IRIS/login.aspx .</p> <p>(2) Water quality sampling and analysis for Schedule 1 and ELU users must be conducted annually; the results must be captured on the NGA.</p> <p>(3) Any water analysis must be conducted using laboratories that are accredited for using the International Organization Standardization (“ISO”/IEC 17025) standards.</p>	<p>Regulation 21 establishes monitoring and laboratory accreditation requirements but, as currently drafted, is insufficient to ensure meaningful protection of groundwater resources and groundwater-dependent ecosystems. The principal concerns are as follows:</p> <p>Annual sampling is scientifically inadequate in many contexts. Requiring annual water quality sampling for Schedule 1 and Existing Lawful Use (ELU) users is insufficient in vulnerable or high-risk areas. Groundwater contamination from agricultural activities (e.g. nitrates), mining (e.g. sulphates, heavy metals, acid mine drainage), industrial activities, and saline intrusion in coastal aquifers. This can occur rapidly and may not be detected through annual sampling. In vulnerable aquifers or high-impact land-use areas, more frequent monitoring (biannual or quarterly) is scientifically necessary to detect emerging contamination before irreversible degradation occurs.</p> <p>Failure to provide for risk-based monitoring frequency may undermine the precautionary principle under the NEMA and the State’s duty to prevent pollution under the NWA.</p>

		<p>Regulation 21 does not specify which water quality parameters must be tested. Without a prescribed minimum parameter set, there is a risk of inconsistent, incomplete, or inadequate monitoring. At minimum, baseline groundwater quality monitoring in most South African contexts should include major ions and salinity indicators (including electrical conductivity and chlorides), nitrates, sulphates, heavy metals (where mining or industrial activity is present), and hydrocarbons or other contaminants where relevant.</p> <p>The absence of minimum standards may result in uneven implementation and undermine rational, evidence-based decision-making, raising concerns under administrative law principles.</p> <p>The Regulation applies uniform monitoring requirements across all aquifers, regardless of aquifer vulnerability, proximity to pollution sources, land-use intensity, ecological sensitivity, or location within Strategic Water Source Areas. A uniform annual requirement does not reflect the hydrogeological variability of South Africa's aquifers. Highly vulnerable systems (e.g. fractured rock, karst, shallow alluvial aquifers, coastal aquifers) require stricter monitoring. A risk-based approach is necessary.</p> <p>Regulation 21 requires monitoring and reporting but does not require any regulatory response if contaminant concentrations exceed acceptable thresholds, salinity increases, pollution plumes expand, or ecological risk indicators are detected. Monitoring without mandatory management responses renders the provision administratively weak and environmentally ineffective. To align with the NWA's public trust framework and NEMA's duty of care (s 28), the Regulation should require that exceedances trigger investigation, mitigation, and possible suspension or amendment of authorisations.</p>
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		Regulation 21 does not expressly link groundwater quality monitoring to groundwater-dependent ecosystem protection, Ecological Reserve considerations, cumulative contamination assessment, or climate-related risks (e.g. concentration effects during drought). Without this integration, the regulation risks treating groundwater as a narrow water supply issue rather than as ecological infrastructure central to biodiversity protection and climate resilience.
Regulation 22 – Water Use Authorization	Implied approvals.	Lack of express alignment with NWA and NEMA processes. Insert provision expressly aligning groundwater approvals with NWA ss 21, 22, 40–41 and NEMA s 24 environmental authorisation.
Regulation 23 – Offence Provisions	Non-compliance with any regulation constitutes offence punishable by fine or imprisonment.	Overbroad; no differentiation; risk of disproportionate enforcement. Distinguish between administrative non-compliance and serious environmental harm; provide graduated enforcement approach.

CONCLUSIONS AND RECOMMENDATIONS

55. The Draft Regulations represent an important and necessary intervention in strengthening groundwater governance in South Africa. Groundwater is a strategic national resource, central not only to water security and economic development, but to the integrity of aquatic and terrestrial ecosystems, climate resilience, and the fulfilment of the environmental right in section 24 of the Constitution. In this regard, the development of the Groundwater Regulations presents an opportunity to close key regulatory gaps and to align groundwater governance with South Africa’s broader environmental, climate, and biodiversity framework.

56. However, as currently drafted, the Regulations risk undermining their own purpose due to definitional ambiguity, insufficient integration with the Ecological Reserve framework, limited incorporation of biodiversity and climate considerations, and heavy reliance on municipal implementation without adequate national oversight and standardisation. In particular, uncertainty regarding the meaning and legal consequence of “prohibited” and “restricted” activities; the arbitrary prescription of fixed buffer distances; the absence of explicit ecological drawdown thresholds and groundwater-dependent ecosystem safeguards; and the lack of clear integration with water use licensing and environmental authorisation processes create risks of inconsistent implementation, irrational decision-making, and failure to achieve the protective objectives of NWA.

57. If appropriately strengthened, the Regulations can meaningfully advance South Africa’s compliance with its domestic statutory duties and international biodiversity and human rights commitments, including those arising under the CBD and the GBF. In particular, effective groundwater protection is indispensable to achieving targets relating to ecosystem restoration, pollution reduction, climate resilience, and the conservation of inland water ecosystems. Groundwater governance must therefore be precautionary, science-based, adaptive, and coherently integrated across water, climate and biodiversity regimes.

58. In light of the above, we respectfully recommend that the Regulations be revised to include the following key amendments:

58.1. Clarify legal standards and authorisation pathways

- Clearly define the terms “prohibited” and “restricted,” and specify whether and under what statutory authority exceptions may be granted.
- Explicitly align authorisations referenced in regulation 8 with water use authorisations under sections 21, 22 and 40–41 of the NWA, and with environmental authorisation requirements under NEMA section 24.
- Prescribe objective, transparent criteria to guide decision-making in order to reduce the risk of arbitrary or irrational approvals.

58.2. Replace arbitrary buffer distances with science-based delineation

- Remove the fixed five-kilometre buffer in regulation 9(b) and replace it with context-specific, hydrogeologically informed protection zones.
- Mandate vulnerability mapping based on aquifer characteristics and groundwater-dependent ecosystem (GDE) mapping.
- Require cumulative impact assessment where multiple abstractions or high-impact land uses are proposed.

58.3. Integrate the Ecological Reserve and risk-based alternatives

- Expressly recognise the Ecological Reserve (sections 16–19 of the NWA) as the legal baseline for groundwater management.
- Where Reserve determination is not feasible (particularly in arid regions), mandate adaptive, risk-based tools such as abstraction thresholds, monitoring triggers, and ecological drawdown limits to ensure ecosystem protection.

58.4. Strengthen biodiversity safeguards

- Incorporate explicit protection thresholds for groundwater-dependent ecosystems, wetlands, springs, and riparian systems.
- Require decision-makers to consider Critical Biodiversity Areas, bioregional plans, and Strategic Water Source Areas in authorisation decisions, and expressly clarify the statutory authority for these decisions.
- Include ecological indicators and GDE metrics within the monitoring framework under Chapter 5.

58.5. Integrate climate resilience measures

- Require climate-adjusted recharge assessments in licensing and abstraction decisions.
- Mandate periodic reassessment of abstraction limits in light of drought and projected climate impacts, consistent with the Climate Change Act.

58.6. Provide for national oversight and capacity support

- Establish minimum national standards and approval mechanisms for municipal groundwater protection schemes.
- Provide for technical guidance, funding support, and intervention powers where municipalities lack capacity.
- Require centralised reporting and data integration across the National Groundwater Archive, IRIS, and licensing systems.

58.7. Refine offence provisions

- Differentiate between administrative non-compliance and serious environmental harm.
- Ensure proportionality and clarity to avoid criminalising minor Schedule 1 users while maintaining strong deterrence for high-impact industrial and mining activities.

59. As this submission has set out, the Regulations as currently drafted fall significantly short of the legal standard required of them in three key ways: the omission of the Ecological Reserve; the failure to integrate biodiversity, ecosystem integrity, and climate resilience requirements in a substantive and enforceable way; and the implementation and enforcement deficiencies that would render even their existing provisions ineffective in practice. These issues render the Draft Regulations non-compliant with the NWA, NEMA, and NEMBA, and therefore unlawful. Given just how consequential groundwater governance is for South Africa's ecological integrity and water security, this must be addressed.

60. The BLC respectfully urges the Department to revise the Regulations in accordance these submissions and in particular to: give express effect to the Ecological Reserve as the central tool for water management in South Africa and mandate risk-based alternatives where its determination is not feasible; integrate the biodiversity, ecosystem, and climate frameworks established by NEMA, NEMBA, and the Climate Change Act through enforceable thresholds and science-based tools; remedy the definitional and structural ambiguities that currently undermine the Regulations' enforceability; and establish a national oversight and support framework adequate to the capacity challenges of implementation. Strengthened in these ways, the Regulations can ultimately provide for a precautionary framework for the sustainable governance of South Africa's groundwater to give effect to our constitutional, statutory, and international obligations for present and future generations.

61. Kindly advise as to whether oral hearings will be held in respect of these Regulations and if so, the details of such hearing.

62. Please do not hesitate to contact us if you require further information or clarity on these submissions.

Yours faithfully,

BIODIVERSITY LAW CENTRE NPC



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