



Environmental Impact Assessment (EIA) for the
Proposed Construction, Operation and
Decommissioning of a Sea Water Reverse Osmosis
Plant and Associated Infrastructure Proposed at
Lovu on the KwaZulu-Natal South Coast

DRAFT EIA REPORT

CHAPTER 14: REFERENCES

14. REFERENCES

- Atkinson, L., Sink, K. (2008) User profiles for the South African offshore environment. South African National Biodiversity Institute. Biodiversity Series 10.
- Aurecon (2012) KZN East Coast Desalination Plants - Detailed Feasibility Study. Phase 1 - Due Diligence Report, July 2012, pp78 plus appendices.
- Aurecon (2015) KZN East Coast Desalination Plants - Detailed Feasibility Study. Main Report, June 2015. Report Number: 601.3.2/R01/2015.
- Barendse, J., Best, P.B., Thomson, M., Pomilla, C., Carvalho, I., Rosenbaum, H.C. (2010) Migration redefined ? Seasonality, movements and group composition of humpback whales *Megaptera novaeangliae* off the west coast of South Africa. *Afr. J. mar. Sci.*, 32(1): 1-22.
- Beckley, L.E., Van Ballegooyen, R.C. (1992) Oceanographic conditions during three ichthyoplankton surveys of the Agulhas Current in 1990/91. *S. Afr. J. mar. Sci.*, 12: 83-93.
- Best, P.B., Butterworth, D.S., Rickett, L.H. (1984) An assessment cruise for the South African inshore stock of Bryde's whale (*Balaenoptera edeni*). Report of the International Whaling Commission, 34: 403-423.
- Best, P.B., Findlay, K.P., Sekiguchi, K., Peddemors, V.M., Rakotonirina, B., Rossouw, A., Gove, D. (1998) Winter distribution and possible migration routes of humpback whales *Megaptera novaeangliae* in the southwest Indian Ocean. *Mar. Ecol. Prog. Ser.* 162: 287 - 299.
- Best, P.B. (2000) Coastal distribution, movements and site fidelity of right whales (*Eubalaena australis*) off South Africa, 1969-1998. *S. Afr. J. mar. Sci.* 22: 43 – 56.
- Best, P.B. (2001) Distribution and population separation of Bryde's whale *Balaenoptera edeni* off southern Africa. *Mar. Ecol. Prog. Ser.*, 220: 277 – 289.
- Best, P.B. & C.H. Lockyer, (2002) Reproduction, growth and migrations of sei whales *Balaenoptera borealis* off the west coast of South Africa in the 1960s. *South African Journal of Marine Science*, 24: 111-133.
- Best, P.B. (2007) Whales and Dolphins of the Southern African Subregion. Cambridge University Press, Cape Town, South Africa.
- Branch, G.M., Branch, M. (1981) The Living Shores of Southern Africa. Cape Town, Struik. 272 pp.
- Branch, T.A., Stafford, K.M., Palacios, D.M., Allison, C., Bannister, J.L., Burton, C.L.K., Cabrera, E., Carlson, C.A., Galletti Vernazzani, B., Gill, P.C., Huckle-Gaete, R., Jenner, K.C.S., Jenner, M.-N.M., Matsuoka, K., Mikhalev, Y.A., Miyashita, T., Morrice, M.G., Nishiwaki, S., Sturrock, V.J., Tormosov, D., Anderson, R.C., Baker, A.N., Best, P.B., Borsa, P., Brownell Jr, R.L., Childerhouse, S., Findlay, K.P., Gerrodette, T., Ilangakoon, A.D., Joergensen, M., Kahn, B., Ljungblad, D.K., Maughan, B., Mccauley, R.D., McKay, S., Norris, T.F., Oman Whale And Dolphin Research Group, Rankin, S., Samaran, F., Thiele, D., Van Waerebeek, K. & R.M. Warneke, (2007) Past and present distribution, densities and movements of blue whales in the Southern Hemisphere and northern Indian Ocean. *Mammal Review*, 37 (2): 116-175.

- Branch, G.M., Griffiths, C.L., Branch, M.L. & L.E. Beckley, (2010) *Two Oceans. A guide to the marine life of Southern Africa*. Struik Nature, Cape Town. 456 pp.
- Brandão, A., Best, P.B., Butterworth, D.S. (2011) Monitoring the recovery of the southern right whale in South African waters. Paper SC/S11/RW18 submitted to IWC Southern Right Whale Assessment Workshop, Buenos Aires 13-16 Sept. 2011.
- Carter, R.A., D'Aubrey, J. (1988) Inorganic nutrients in Natal continental shelf waters. In: *Coastal ocean sciences of Natal, South Africa* (Ed. E.H. Schumann). Springer-Verlag, Berlin., 131-151.
- Carter, R.A., Schleyer, M.H. (1988) Plankton distributions in Natal coastal waters. In: *Coastal ocean sciences of Natal, South Africa* (Ed. E.H. Schumann). Springer-Verlag, Berlin., 152-177.
- Connell, A.D, McClurg, T.P., Livingstone, D.J. (1985) Environmental studies at Richards Bay prior to the discharge of submarine outfalls. Marine Research Group, National Institute for Water Research of the CSIR, Durban Branch Laboratory.
- Connell, A.D, McClurg, T.P., Livingstone, D.J. (1989) Environmental studies in the Richards Bay offshore outfalls region. Part 2. Surveys made between 1985 and 1988. CSIR Division of Earth, Marine and Atmospheric Science and Technology, Marine Pollution Research Group, Durban Branch Laboratory.
- CSIR. (1998) Environmental Impact Assessment for the Proposed Exploration Drilling in Petroleum Exploration Lease 17/18 on the Continental Shelf of KwaZulu-Natal, South Africa. CSIR Report ENV/S-C 98045.
- CSIR. (2007) Environmental Studies in the Richards Bay outfalls region. Report No. 20. Surveys made during 2006/2007. CSIR Report CSIR/NRE/PW/ER /2006/0068/C.
- CSIR. (2009) Environmental studies in the Richards Bay offshore outfalls region. Report No. 22. Surveys made in 2008/2009. CSIR Report CSIR/NRE/CO/ER/2010/0010/B.
- CSIR (2015) Final Environmental Scoping Report, CSIR Report CSIR/CAS/EMS/ER/2014/0014/B
- Department of Water Affairs and Forestry (2005) *A Practical Field Procedure for Identification and Delineation of Wetlands and Riparian Areas*. Department of Water Affairs and Forestry, Pretoria.
- Drennan Maude Consulting, August 2014. Report to Aurecon South Africa (Pty) Ltd. on the Geotechnical Investigation Development Pipelines and Structures, Ilovu Site. Reference 22809-3
- Driver, A, Nel, J.L., Snaddon, K., Murray, K., Roux, D., Hill, L., Swartz, E.R., Manuel, J. and Funke, N. (2011) *Implementation Manual for Freshwater Ecosystem Priority Areas*. WRC Report No. 1801/1/11. ISBN 978-1-4312-0147-1. Pretoria.
- DWAF. (2013) *South African National Water Resource Strategy* (2nd edition).
- Dye, A.D., McLachlan, A., Wooldridge, T. (1981) The ecology of sandy beaches in Natal. *S. Afr. J. Zool.* **16**: 200-209.

- eThekweni Municipality (2012) “The South Spatial Development Plan, Annual Review, November 2011/2012”. Durban, South Africa: eThekweni Municipality.
http://www.durban.gov.za/Resource_Centre/reports/Framework_Planning/Documents/SSD P201011draft%REVIEW.pdf.
- eThekweni Municipality (EM) (2013) Integrated Development Plan: 2013/2014 Review. eThekweni Municipality, Durban.
- eThekweni Municipality (2014) “Spatial Development Framework Report 2014/15”. Draft for Public Comment: March 2014. Durban, South Africa: eThekweni Municipality.
http://www.durban.gov.za/Resource_Centre/reports/Framework_Planning/Documents/Annexure_B_SPATIAL_DEVELOPMENT_FRAMEWORK_14_15Draft_EXCO_11_March_2014.pdf.
- Fennessy, S.T., Groeneveld, J.C. (2003) A review of the offshore trawl fishery for crustaceans on the east coast of South Africa. *Fisheries Management and Ecology*, **4(2)**: 135–147.
- Fennessy, S.T., Pradervand, P., de Bruyn, P.A. (2010) Influence of the sardine run on selected nearshore predatory teleosts in KwaZulu-Natal. *African Journal of Marine Science* **32(2)**: 375–382.
- Flemming, B., Hay, R. (1988) Sediment distribution and dynamics of the Natal continental shelf. In: Schumann, E.H. (ed) *Coastal Ocean Studies off Natal, South Africa, Lecture Notes on Coastal and Estuarine Studies* 26, Springer-Verlag, Berlin.
- Findlay, K.P. (1989) The distribution of cetaceans off the coast of South Africa and South West Africa/Namibia. Unpublished MSc. Thesis, University of Pretoria Town. 110pp.
- Findlay, K.P., Best, P.B., Ross, G.J.B., Cockcroft, V.G. 1992) The distribution of small odontocete cetaceans off the coast of South Africa and Namibia. *S. Afr. J. mar. Sci.* **12** : 237-270.
- Findlay, K.P., Best, P.B. (1996a) Estimates of the numbers of humpback whales observed migrating past Cape Vidal, South Africa, 1988-1991. *Mar Mammal Sci.*, **12(3)**: 354-370.
- Findlay, K.P., Best, P.B. (1996b) The Migrations of Humpback Whales past Cape Vidal, South Africa, and a Preliminary Estimate of the Population Increase Rate. Rep Int Whal Commn. SC/A06/HW16
- Forbes, A and Demetriades, N.T. (2010) “Estuaries of Durban” 2010 report 2nd Ed. For eThekweni Municipality.
- Forbes, A.T and Demetriades, N.T. (2008) Estuaries of Durban, KwaZulu-Natal, South Africa. Report for the Environmental Management Department, eThekweni Municipality. 228 pp.
- Gill, A.E., Schumann, E.H. (1979) Topographically induced changes in the structure of an inertial jet: Application to the Agulhas Current. *Journal of Physical Oceanography*, **9**: 975-991.
- GLVIA (2002) *Guidelines for Landscape and Visual Impact Assessment*. 2nd ed. United Kingdom: Spon Press.
- Green, G.A., Brueggeman, J.J., Grotfendt, R.A., C.E. Bowlby, C.E., M.L. Bonnell, M.L., Balcomb III., K.C. (1992) Cetacean distribution and abundance off Oregon and Washington, 1989-1990. In: Brueggeman, J.J. ed. *Oregon and Washington Marine Mammal and Seabird Surveys*. OCS Study MMS 91-0093. Minerals Management Service, Pacific OCS Region, Los Angeles, CA, USA, p. 1-100.

- Groeneveld, J.C., Mellville-Smith, R. (1995) Spatial and temporal availability in the multispecies crustacean trawl fishery along the east coast of South Africa and souther Mozambique, 1988-1993. *S. Afr. J. mar. Sci.* 15: 123-136.
- Gründlingh, M.L. (1992) Agulhas Current meanders: review and case study. *S. Afr. Geogr. J.*, **74** (1): 19-29.
- Harrison, T.D, Cooper, J.A.G. and Ramm, A.E.L. (2000) Geomorphology, ichthyofauna, water quality and aesthetics of South African estuaries. Unpublished CSIR report to the Department of Environmental Affairs and Tourism ENV-DC-2000-00.
- Heydorn, A.E.F., Bang, N.D., Pearce, A.F., Flemming, B.W., Carter, R.A., Schleyer, M.H., Berry, P.F., Hughes, G.R., Bass, A.J., Wallace, J.H. Van Der Elst, R.P., Crawford, R.J.M., Shelton, P.A. (1978) Ecology of the Agulhas Current region: an assessmnet of biological responses to environmental parameters in the south- west Indian ocean. *Trans. roy. Soc. S. Afr.*, 43(2): 151-190.
- Heydorn, A.E.F., Tinley, K.L. (1980) Estuaries of the Cape, Part I. Synopsis of the Cape coast. Natural Features, Dynamics and Utilization. Stellenbosch, CSIR Research Report 380, 97 PP.
- Hunter, I.T. (1988) Climate and weather off Natal. In: Coastal ocean sciences of Natal, South Africa (Ed. E.H. Schumann). Springer-Verlag, Berlin, 81-100.
- Hutchings, L., Beckley, L.E., Griffiths, M.H., Roberts, M.J., Sundby, S., Van Der Lingen C. (2003) Spawning on the edge: spawning grounds and nursery areas around the southern African coastline. *Marine and Freshwater Research* 53: 307-318.
- Kleynhans, CJ, Thirion, C and Moolman, J (2005) A Level I River Ecoregion classification System for South Africa, Lesotho and Swaziland. Report No. N/0000/00/REQ0104. Resource Quality Services, Department of Water Affairs and Forestry, Pretoria, South Africa.
- Jackson, L.F., Lipschitz, S. (1984) *Coastal sensitivity atlas of Southern Africa*. Pretoria, Department of Transport: 34 pp.
- Job, N., Snaddon, K., Day, E. (Liz), Nel, J. and Smith-Adao, L. (2008) C.A.P.E. fine-scale planning project: Aquatic Ecosystems of the Upper Breede River Valley Planning Domain. Report to CAPE.
- Jury, M., Macarthur, C. and Reason, C. (1990) Observations of trapped waves in the atmosphere and the ocean along the coast of Southern Africa. *S. Afr. Geogr. J.* 72: 33-46.
- KZN Wildlife (2012) Focus area for additional marine biodiversity protection in KwaZulu-Natal, South Africa, 2012. Unpublished Report, Scientific Services, Ezemvelo KZN Wildlife, P.O. Box 13053, Cascades, Pietermaritzburg, 3202.
- Lutjeharms, J.R.E., Gründlingh, M.L., Carter, R.A. (1989) Topographically induced upwelling in the Natal Bight. *S. Afr. J. Sci.*, **85** (5): 310-316.
- Lutjeharms, J.R.E, Valentine, H.R., Van Ballegooyen, R.C. (2000a) The hydrography and water masses of the Natal Bight, South Africa. *Continental Shelf Research*, **20**: 1907-39.
- Lutjeharms J.R.E., Cooper, J., Roberts, M. (2000b) Dynamic upwelling at the inshore edge of the Agulhas Current. *Continental Shelf Research*, **20**: 737761.

- Mann-Lang, J. (2000) Coastal and Marine Life – Animals : Vertebrates – Reptiles.
www.aquarium.co.za/pdf/kids/educational/3d_turtles.pdf.
- Marine & Coastal Management (M&CM) (2005) Policy for the allocation and management of commercial fishing rights in the KwaZulu-Natal prawn trawl fishery: Department of environmental Affairs and Tourism: Branch Marine and Coastal Management.
- Marine & Coastal Management (M&CM) (2007) Recommendations for the Sustainable Management of the KwaZulu-Natal Trawl Fishery in 2007. Unpublished Memorandum for Ministerial Approval.
- Martin, A.K., Flemming, B.W. (1988) Physiography, structure and geological evolution of the Natal continental shelf. In: Coastal ocean sciences of Natal, South Africa (Ed. E.H. Schumann). Springer-Verlag, Berlin, 11-46.
- Mardon, D.W., Stretch, D.D. (2002) The effects of wind speed, direction and duration on crosscurrents at the Port of Durban entrance. In: Proc. HEFAT2002 – 1st Int. Conf. on Heat Transfer, fluid mechanics and Thermodynamics, Kruger Park, South Africa.
- Mather, A.A., Stretch, D.D. (2012) A perspective on sea level rise and coastal storm surge from Southern and Eastern Africa: A case study near Durban, South Africa. *Water*, 4: 237-259.
- McClurg, T.P. (1988) Benthos of the Natal continental shelf. In: Coastal ocean sciences of Natal, South Africa (Ed. E.H. Schumann). Springer-Verlag, Berlin., 178-208.
- McClurg, T.P., Blair, A., Gumede, S.V. (1999) Benthic Fauna. In: Environmental Studies in the Richards Bay offshore outfalls region. Report No. 12. Surveys made during 1998. East Coast Program; Division of Water, Environment and Forestry Technology; CSIR, Durban. CSIR Report ENV/ECP/EXT:98-JEEOF.
- McClurg, T.P., Blair, A., Gumede, S.V. (2000) Benthic fauna. In: Environmental Studies in the Richards Bay offshore outfalls region. Report No. 13. Surveys made during 1999. East Coast Program; Division of Water, Environment and Forestry Technology; CSIR, Durban. CSIR Report ENV-D-C-2000-011.
- McClurg, T.P., Blair, A., Gumede, S.V. (2001) Benthic fauna. In: Environmental Studies in the Richards Bay offshore outfalls region. Report No. 14. Surveys made during 2000. East Coast Program; Division of Water, Environment and Forestry Technology; CSIR, Durban. CSIR Report ENV-D-C-2001-015.
- McClurg, T.P., Blair, A., Gumede, S.V. (2002) Benthic fauna. In: Environmental Studies in the Richards Bay offshore outfalls region. Report No. 15. Surveys made during 2001. East Coast Programme; Division of Water, Environment and Forestry Technology; CSIR, Durban. CSIR Report ENV-D-C-2002-003.
- McClurg, T.P., Blair, A., Mapukata, T. (2003) Benthic fauna. In: Environmental Studies in the Richards Bay offshore outfalls region. Report No. 16. Surveys made during 2002. East Coast Programme; Division of Water, Environment and Forestry Technology; CSIR, Durban. CSIR Report ENV-D-C-2003-003.

- McClurg, T.P., Blair, A., Mapukata, T. (2004) Benthic fauna. In: Environmental Studies in the Richards Bay offshore outfalls region. Report No. 17. Surveys made during 2003. East Coast Programme; Division of Water, Environment and Forestry Technology; CSIR, Durban. CSIR Report ENV-D-C-2004-013.
- McClurg, T.P., Blair, A. (2005) Benthic fauna. In: Environmental Studies in the Richards Bay offshore outfalls region. Report No. 18. Surveys made during 2004. East Coast Programme; Division of Water, Environment and Forestry Technology; CSIR, Durban. CSIR Report ENV-D-C-2005-031.
- McClurg, T.P., Blair, A. (2006) Benthic fauna. In: Environmental Studies in the Richards Bay offshore outfalls region. Report No. 19. Surveys made during 2005. CSIR Report CSIR/NRE/PW/ER/2006/0068/C.
- McClurg, T.P. & A. Blair, A. (2007) Benthic fauna. In: Environmental Studies in the Richards Bay offshore outfalls region. Report No. 20. Surveys made during 2006/2007. CSIR Report CSIR/NRE/ECO/ER/2008//0027/C.
- McClurg, T.P., Blair, A. (2008) Environmental studies in the Richards Bay offshore outfalls region. Report No. 21. Surveys made in 2007/2008. CSIR Report CSIR/NRE/ECO/ER/2008/ 0145/C.
- Oberholzer, B. (2005) "Guideline for Involving Visual & Aesthetic Specialists in EIA Processes". Guidelines ENV-S-C 2005 053 F. Cape Town: CSIR, Provincial Government of the Western Cape, Department of Environmental Affairs & Development.
http://www.capegateway.gov.za/Text/2005/10/5_deadp_visual_guideline_june05.pdf.
- Oliff, W.D. (1973) Chemistry and productivity at Richards Bay. CSIR/NPRC Oceanography Division Contract Report CFIS 37B. Durban, South Africa.
- Otway, N.M., Gray, C.A., Craig, J.R., McVea, T.A., Ling, J.E. (1996) Assessing the impacts of deepwater sewage outfalls on spatially- and temporally-variable marine communities. *Marine Environmental Research* **41**: 45-71
- Pearce, A.F. (1977a) The shelf circulation off the east coast of South Africa. CSIR Professional Research Series, 1, 220 pp.
- Pearce, A.F. (1977b) Some features of the upper 500 m of the Agulhas Current. *Journal of Marine Research*. **35**: 731-753.
- Pearce, A.F. (1978) Seasonal variations of temperature and salinity on the northern Natal continental shelf. *South African Geography Journal*, **60**: 135-143.
- Peddemors, V.M. (1999) Delphinids of southern africa. A review of their distribution, status and life history. *J. Cetacean Res. Manage.* **1(2)** :157-166.
- Ross, G.J.B. (1984) The smaller cetaceans of the east coast of southern Africa. *Ann. Cape. Prov. Mus. (nat. Hist.)*, **15 (2)**.
- Schumann, E.H. (1986) The bottom boundary layer inshore of the Agulhas Current in Natal in August 1975. *South African Journal of Marine Science*, **4**: 93-102.
- Schumann, E.H. (1998) The coastal ocean off southeast Africa, including Madagascar coastal segment (15, W). In: The Sea, Vol.11. Robinson, A.R. & K. Brink, (eds). John Wiley & Sons, Inc.

- Shannon, L.V. (1985) The Benguela Ecosystem. Part 1. Evolution of the Benguela, physical features and processes. *Oceanogr. Mar. Biol. Ann. Rev.* **23** : 105-182.
- Sink, K., Atwood, C. (2008) Guidelines for Offshore Marine Protected Areas in South Africa. <http://www.sanbi.org/sites/default/files/documents/documents/biodiversity9.pdf>.
- Sink, K., Lombard, M., Grantham, H., Attwood, C., Leslie, R., Samaai, T., Kerwath, S., Fairweather, T., van der Lingen, C. (2010) Systematic Biodiversity Planning to identify a potential offshore Marine Protected Area network for South Africa. SANBI Draft Report, pp48.
- Statistics South Africa (StatsSA) (2002) Census 2001. StatsSA, Pretoria.
- Statistics South Africa (StatsSA) (2008) Community Survey 2007. StatsSA, Pretoria.
- Statistics South Africa (StatsSA) (2012) Census 2011. StatsSA, Pretoria.
- Turpie, J.K. (1995) Prioritizing South African estuaries for conservation: A practical example using waterbirds. *Biol. Cons.*, 74: 175-185.
- Turpie, J.K., Adams, J.B., Joubert, A., Harrison, T.D., Colloty, B.M., Maree, R.C., Whitfield, A.K., Wooldridge, T.H., Lamberth, S.J., Taljaard, S. and Van Niekerk, L. (2002) Assessment of the conservation priority status of South African estuaries for use in management and water allocation. *Water SA* 28: 2: 191–206.
- Turpie, J. and Clark, B. (2007) The Health Status, Conservation Importance and Economic Value of Temperate South African Estuaries and Development of a Regional Conservation Plan. Report to C.A.P.E. Regional Estuarine Management Programme.
- Umgeni Waters Water Resources Status Report – August 2015
- Underhill, L.G., Cooper, J. (1982) Counts of waterbirds at coastal wetlands in southern Africa. 1978 to 1981. Unpublished MS. PFIAO.
- UNEP-WCMC. (2011) Isimangaliso Wetland park KwaZulu-Natal, South Africa. <http://www.unep-wcmc.org/medialibrary/2011/06/29/oefed969/iSimangaliso.pdf>.
- Van der Elst, R. (1988) Shelf ichthyofauna of Natal. In: Coastal ocean sciences of Natal, South Africa (Ed. Schumann, E.H.). Springer-Verlag, Berlin: 209-225.
- Van Zyl, H.W., de Wit, M.P. & Leiman, A. (2005) Guideline for involving economists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 G. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.
- Whitfield, A.K. (2000) Available Scientific Information on Individual South African Estuarine Systems. WRC Report No. 577/3/00. 139 pp.
- Wilkinson, S., Japp, D.W. (2010) Proposed 2D Seismic Survey within Blocks 2931c, 2931d, 2932a and 2932c (East Coast, South Africa). Specialist Study on the Impact on the Fishing Industry. pp19.
- Wooldridge, T., Dye, A.H., McLachlan, A. (1981) The ecology of sandy beaches in Transkei. *S. Afr. J. Zool.* **16**: 210-218.