

3. BIODIVERSITY

3(b) - PROTOCOL FOR THE ASSESSMENT AND REPORTING OF ENVIRONMENTAL IMPACTS ON AQUATIC BIODIVERSITY

1. SCOPE

This protocol provides the criteria for the assessment and reporting of impacts on aquatic biodiversity for activities requiring environmental authorisation. The assessment requirements of this protocol are associated with a level of environmental sensitivity determined by the national web based environmental screening tool. For aquatic biodiversity the requirements are for landscapes or sites which support various levels of biodiversity. The relevant aquatic biodiversity data in the national web based environmental screening tool has been provided by the South African National Biodiversity Institute¹. If any part of the proposed development falls within an area of “very high” sensitivity, the requirements prescribed for such sensitivity apply.

The national web based environmental screening tool can be accessed at: <https://screening.environment.gov.za/screeningtool>

2. REQUIREMENTS FOR THE ASSESSMENT AND REPORTING OF IMPACTS

Requirements for the assessment and reporting of impacts of development on aquatic biodiversity are set out in Table 1 below, and correlate to the sensitivity ratings contained in the national web based environmental screening tool. Prior to beginning the assessment, the current land use and the potential environmental sensitivity of the site as identified by the national web based environmental screening tool must be confirmed by undertaking an Initial Site Sensitivity Verification.

- 2.1 The Initial Site Sensitivity Verification must be undertaken by an environmental assessment practitioner or a registered specialist with expertise in the relevant environmental theme being considered.
- 2.2 The Initial Site Sensitivity Verification must be undertaken through the use of:
 - (a) a desk top analysis, using satellite imagery; and
 - (b) a preliminary on-site inspection to identify if there are any discrepancies with the current use of land and environmental status quo versus the environmental sensitivity as identified on the national web based environmental screening tool, such as new developments, infrastructure, indigenous/pristine vegetation, etc.
- 2.3 The outcome of the Initial Site Sensitivity Verification must be recorded in the form of a report that-
 - (a) confirms or disputes the current use of the land and environmental sensitivity as identified by the national web based environmental screening tool;
 - (b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and
 - (c) is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.

¹ The biodiversity dataset has been provided by the South African Biodiversity Institute. For details of the dataset, click on the options button to the right of the various biodiversity layers within the national web based environmental screening tool, in the Aquatic Biodiversity theme to view the metadata.

3. REQUIREMENTS FOR ENVIRONMENTAL ASSESSMENT

TABLE 1: REQUIREMENTS FOR THE ASSESSMENT AND REPORTING OF IMPACTS ON AQUATIC BIODIVERSITY FOR ACTIVITIES REQUIRING ENVIRONMENTAL AUTHORISATION

<p>VERY HIGH SENSITIVITY RATING – For aquatic biodiversity features</p>	<p>1 General Information</p> <p>1.1 An applicant intending to undertake an activity identified in the Scope of this Protocol on a site identified as being of “very high sensitivity” for aquatic biodiversity on the national web based environmental screening tool must submit an Aquatic Biodiversity Impact Assessment.</p> <p>1.2 However, where the information gathered from the Initial Site Sensitivity Verification identified in section 2.1 of this Protocol or the specialist assessment differs from the designation of “very high” aquatic biodiversity sensitivity from the national web based environmental screening tool, and it is found to be of a “low” sensitivity, an aquatic biodiversity impact assessment is not required.</p> <p>1.3 Should paragraph 1.2 apply, an Aquatic Biodiversity Compliance Statement is to be provided. An Environmental Assessment Practitioner or a suitably qualified and SACNASP registered specialist, as appropriate, must append to the Aquatic Biodiversity Compliance Statement a motivation and evidence (e.g. photographs) of the changed Aquatic Biodiversity sensitivity.</p> <p>2 The Aquatic Biodiversity Impact Assessment</p> <p>2.1 The assessment must be undertaken by a suitably qualified and SACNASP registered specialist, within the preferred development site and on the preferred development² footprint.</p> <p>2.2 Description of the preferred development site - The following aspects as a minimum must be considered in the baseline description:</p> <p>2.2.1 A description of the aquatic biodiversity and ecosystems on the site, including:</p> <ol style="list-style-type: none"> a. Aquatic ecosystem types; b. Presence of aquatic species and composition of aquatic species communities, their habitat, distribution and movement patterns; <p>2.2.2 Threat status, according to the national web based environmental screening tool of the species and ecosystems, including Listed Ecosystems, as well as locally important habitat types identified;</p> <p>2.2.3 National and Provincial priority status of the aquatic ecosystem (i.e. is this a wetland or river Freshwater Ecosystem Priority Area (FEPA), a FEPA sub catchment, a Strategic Water Source Area (SWSA), a priority estuary, whether or not they are free-flowing rivers, wetland clusters, etc., a CBA or an ESA; including for all a description of the criteria for their given status; and</p>
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² Development footprint means the area within the site on which the development will take place and includes all ancillary developments for example roads and power lines which require vegetation clearance or which will be disturbed and for which the application has been submitted.

- 2.2.4 A description of the Ecological Importance and Sensitivity of the aquatic ecosystem including:
- The description (spatially, if possible) of the ecosystem processes that operate in relation to the aquatic ecosystems on and immediately adjacent to the site (e.g. movement of surface and subsurface water, recharge, discharge, sediment transport, etc.);
 - The historic ecological condition (reference) as well as Present Ecological State (PES) of rivers (in-stream, riparian and floodplain habitat), wetlands and/or estuaries in terms of possible changes to the channel, flow regime (surface and groundwater).
- 2.3 Identify any alternative development footprints within the preferred development site which would be of a "low" sensitivity as identified by the national web based environmental screening tool and verified through the Initial Site Sensitivity Verification;
- 2.4 Assessment of impacts - a detailed assessment of the potential impact(s) of the proposed development on the following very high sensitivity areas/ features:
- 2.4.1 Is the development consistent with maintaining the priority aquatic ecosystem in its current state and according to the stated goal?
- 2.4.2 Is the development consistent with maintaining the Resource Quality Objectives for the aquatic ecosystems present?
- 2.4.3 How will the development impact on fixed and dynamic ecological processes that operate within or across the site, including:
- Impacts on hydrological functioning at a landscape level and across the site which can arise from changes to flood regimes (e.g. suppression of floods, loss of flood attenuation capacity, unseasonal flooding or destruction of floodplain processes); and
 - Change in the sediment regime (e.g. sand movement, meandering river mouth/estuary, changing flooding or sedimentation patterns) of the aquatic ecosystem and its sub-catchment;
 - The extent of the modification in relation to the overall aquatic ecosystem (i.e. at the source, upstream or downstream portion, in the temporary / seasonal / permanent zone of a wetland, in the riparian zone or within the channel of a watercourse, etc.).
 - Assessment of the risks associated with water use/s and related activities.
- 2.4.4 How will the development impact on the functionality of the aquatic feature, including:
- Base flows (e.g. too little/too much water in terms of characteristics and requirements of system);
 - Quantity of water including change in the hydrological regime or hydroperiod of the aquatic ecosystem (e.g. seasonal to temporary or permanent; impact of over-abstraction or instream or off-stream impoundment of a wetland or river)
 - Change in the hydrogeomorphic typing of the aquatic ecosystem (e.g. change from an unchannelled valley-bottom wetland to a channelled valley-bottom wetland).
 - Quality of water (e.g. due to increased sediment load, contamination by chemical and/or organic effluent, and/or eutrophication)
 - Fragmentation (e.g. road or pipeline crossing a wetland) and loss of ecological connectivity (lateral and longitudinal).

- f. The loss or degradation of all or part of any unique or important features (e.g. waterfalls, springs, oxbow lakes, meandering or braided channels, peat soils, etc.) associated with or within the aquatic ecosystem.

2.4.5 How will the development impact on the functionality of the aquatic feature, including:

- a. water including change in the hydrological regime or hydroperiod of the aquatic ecosystem (e.g. seasonal to temporary or permanent; impact of over-abstraction or instream or off-stream impoundment of a wetland or river)
- b. Change in the hydrogeomorphic typing of the aquatic ecosystem (e.g. change from an unchannelled valley-bottom wetland to a channelled valley-bottom wetland).
- c. Quality of water (e.g. due to increased sediment load, contamination by chemical and/or organic effluent, and/or eutrophication)
- d. Fragmentation (e.g. road or pipeline crossing a wetland) and loss of ecological connectivity (lateral and longitudinal).
- e. The loss or degradation of all or part of any unique or important features (e.g. waterfalls, springs, oxbow lakes, meandering or braided channels, peat soils, etc.) associated with or within the aquatic ecosystem.

2.4.6 How will the development impact on key ecosystem regulating and supporting services especially:

- a. Flood attenuation;
- b. Streamflow regulation;
- c. Sediment trapping;
- d. Phosphate assimilation;
- e. Nitrate assimilation
- f. Toxicant assimilation;
- g. Erosion control; and
- h. Carbon storage.

2.4.7 How will the development impact community composition (numbers and density of species) and integrity (condition, viability, predator-prey ratios, dispersal rates, etc.) of the faunal and vegetation communities inhabiting the site?

2.4.8 In addition to the above, where applicable, impacts to the frequency of estuary mouth closure should be considered, in relation to:

- a. Size of the estuary;
- b. Availability of sediment;
- c. Wave action in the mouth;
- d. Protection of the mouth;
- e. Beach slope;
- f. Volume of mean annual runoff (MAR);
- g. Extent of saline intrusion (especially relevant to permanently open systems).

2.4.9 A motivation must be provided if there were development footprints identified as per paragraph 2.3 above that were identified as having a "low" biodiversity sensitivity and were not considered appropriate.

3 The findings of the **Aquatic Biodiversity Impact Assessment** must be written up in an Aquatic Biodiversity Impact Assessment Report.

This report must contain as a minimum the following information:

	<p>3.1 Contact details and curriculum vitae of the specialist including SACNASP registration number and field of expertise and their curriculum vitae;</p> <p>3.2 A signed statement of independence by the specialist;</p> <p>3.3 The duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;</p> <p>3.4 The methodology used to undertake the impact assessment and site inspection, including equipment and modelling used, where relevant;</p> <p>3.5 A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;</p> <p>3.6 Areas not suitable for development, to be avoided during construction and operation (where relevant);</p> <p>3.7 Additional environmental impacts expected from the proposed development based on those already evident on the site and a discussion on the cumulative impacts;</p> <p>3.8 A suitable construction and operational buffer for the aquatic ecosystem, using the accepted protocol;</p> <p>3.9 Impact management actions and impact management outcomes proposed by the specialist for inclusion in the EMPr;</p> <p>3.10A motivation where the development footprint identified as per 2.3 were not considered stating reasons why these were not being not considered; and</p> <p>3.11A reasoned opinion, based on the finding of the specialist assessment, regarding the acceptability or not, of the development and if the development should receive approval, and any conditions to which the statement is subjected.</p> <p>4 The findings of the Aquatic Biodiversity Impact Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which must be incorporated into the EMPr. A signed copy of the Assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.</p>
<p>LOW SENSITIVITY RATING – For aquatic biodiversity features</p>	<p>1 General Information</p> <p>1.1 An applicant, intending to undertake an activity identified in the Scope of this Protocol, on a site identified as being of “low sensitivity” for aquatic biodiversity on the national web based environmental screening tool must submit an Aquatic Biodiversity Compliance Statement to the competent authority.</p> <p>1.2 Where the information gathered from the Initial Site Sensitivity Verification differs from that identified as having a “low” aquatic biodiversity sensitivity by the national web based environmental screening tool and it is found to be of a “very high” sensitivity an Aquatic Biodiversity Compliance Statement is not required.</p>

1.3 Should paragraph 1.2 apply, an **Aquatic Biodiversity Impact Assessment** is to be undertaken and a report prepared in accordance with the requirements of an Aquatic Biodiversity Impact Assessment.

2 Aquatic Biodiversity Compliance Statement

2.1 The **Aquatic Biodiversity Compliance Statement**, must be prepared by a suitably qualified specialist in the field of aquatic sciences and must verify:

2.1.1 That the site is of "low" sensitivity for aquatic biodiversity; and

2.1.2 Whether or not the proposed development will have an impact on the aquatic features.

3 The **Aquatic Biodiversity Compliance Statement**, must contain, as a minimum, the following information:

3.1 Contact details and curriculum vitae of the specialist including SACNASP registration number and field of expertise;

3.2 A signed statement of independence by the specialist;

3.3 Baseline profile description of biodiversity and ecosystems, including the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;

3.4 Methodology used to verify the sensitivities of the aquatic biodiversity features on the national web based environmental screening tool;

3.5 Methodology used to undertake the Initial Site Sensitivity Verification and preparation of the Compliance Statement, including equipment and modelling used, where relevant;

3.6 Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr;

3.7 A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations; and

3.8 Any conditions to which the statement is subjected.

4 A signed copy of the full Aquatic Biodiversity Compliance Statement must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.