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ENVIRONMENTAL CONSULTING

SITE VERIFICATION REPORT FOR THE PROPOSED UPGRADE OF OAKHURST BRIDGE AND ASSOCIATED INFRASTRUCTURE ON REMAINDER OF ERF 2224, HOUT BAY, WESTERN CAPE.

Date: SEPTEMBER 2022

SEC REFERENCE: 070845

DEA&DP REFERENCE: N/A

1.Introduction & Legislative Context

The applicant, Oakhurst Lifestyle Estate (Pty) Ltd, proposes to upgrade an existing bridge on Remainder of Erf 2224, Hout Bay. The proposed site for the upgrade is located within Ward 74 of the City of Cape Town Metropolitan, at the following GPS coordinates: 34°1'19.47"S; 18°22'42.67"E. Please refer to **Figure 1** below to view the locality of the site. The existing structure crosses the Bokkemanskloof watercourse and associated delineated wetland (**Figure 1**). Please see the table below describing the structures to be constructed:

Table 1. Dimensions of the existing and proposed bridge structure and associated infrastructure

Structure and Associated Infrastructure Description	Length	Width	Height	Area (m^2)
Existing structure	**3.65m**	**8.12m**	**2.5m**	**~30m^2**
Proposed expansion and associated infrastructure	**10m**	**5.5m**	**3.19m**	**~55m^2**
Proposed approach roads located within the delineated wetland buffer	**121m**	**5.5m**	**N/A**	**~665m^2**

The following building quantities are proposed for the upgrade of the bridge and associate infrastructure:

1. **Bridge quantities**
   - 1.1. Excavation: ~300m^3
   - 1.2. Backfill: ~100m^3
   - 1.3. Concrete: ~85m^3

2. **Road and bulk earthworks**
   - 2.1. Topsoil strip to spoil: ~500m^3
   - 2.2. Fill: ~1 750m^3
   - 2.3. Imported layer work: ~350m^3

The proposed construction methodology for the proposed upgrade of the Oakhurst bridge will comprise of the following:

- The existing bridge structure will be decommissioned.
- There is limited vegetation within the watercourse that is to be cleared due to the presence of the existing bridge structure. Only necessary clearing and grubbing of the site for access and construction of the works will be undertaken.
- Heavy machinery (e.g. TLB) will be used to excavate the soil. This will be at the position of the abutments. Bedding material will then be compacted into this excavation, rebar, and formwork will be placed on this bedding material in preparation for the concrete base slab to be cast.
- A piling rig will be used to insert piles at these excavated sites for the abutments. Foundation rebar will be tied to these piles.
- Ready-mixed concrete will be brought to the site and used to cast the base slab to attach to these piles.
- Formwork will then be used to form the shape of the abutments and ready-mixed concrete will be poured to form these abutments.
- Wing walls downstream and upstream on either side of the Bokkemanskloof river. Compacted backfill will be placed between the walls;
- Once the abutments have been cast there will be no further major works within the watercourse.
- The contractor will then install staging for the deck and place the deck rebar.
- Ready-mixed concrete will be brought to the site again and used to cast the bridge deck.
- Wing walls will also be cast, and selected material will then be used to backfill behind the wing walls. This material will then also be used to form the shape of each approach.

- Erosion mitigation measures, including but not limited to gabion baskets, will be constructed for additional protection at the crossing point where/if required.
- Finally, rehabilitation / re-vegetation of all areas affected by the upgrade and construction activities will be undertaken using intensive, indigenous grass sod planting or hydroseeding with a suitable indigenous grass seed mix, characteristic of the Peninsula Granite Fynbos vegetation type (i.e., vegetation type pertinent to the proposed site).

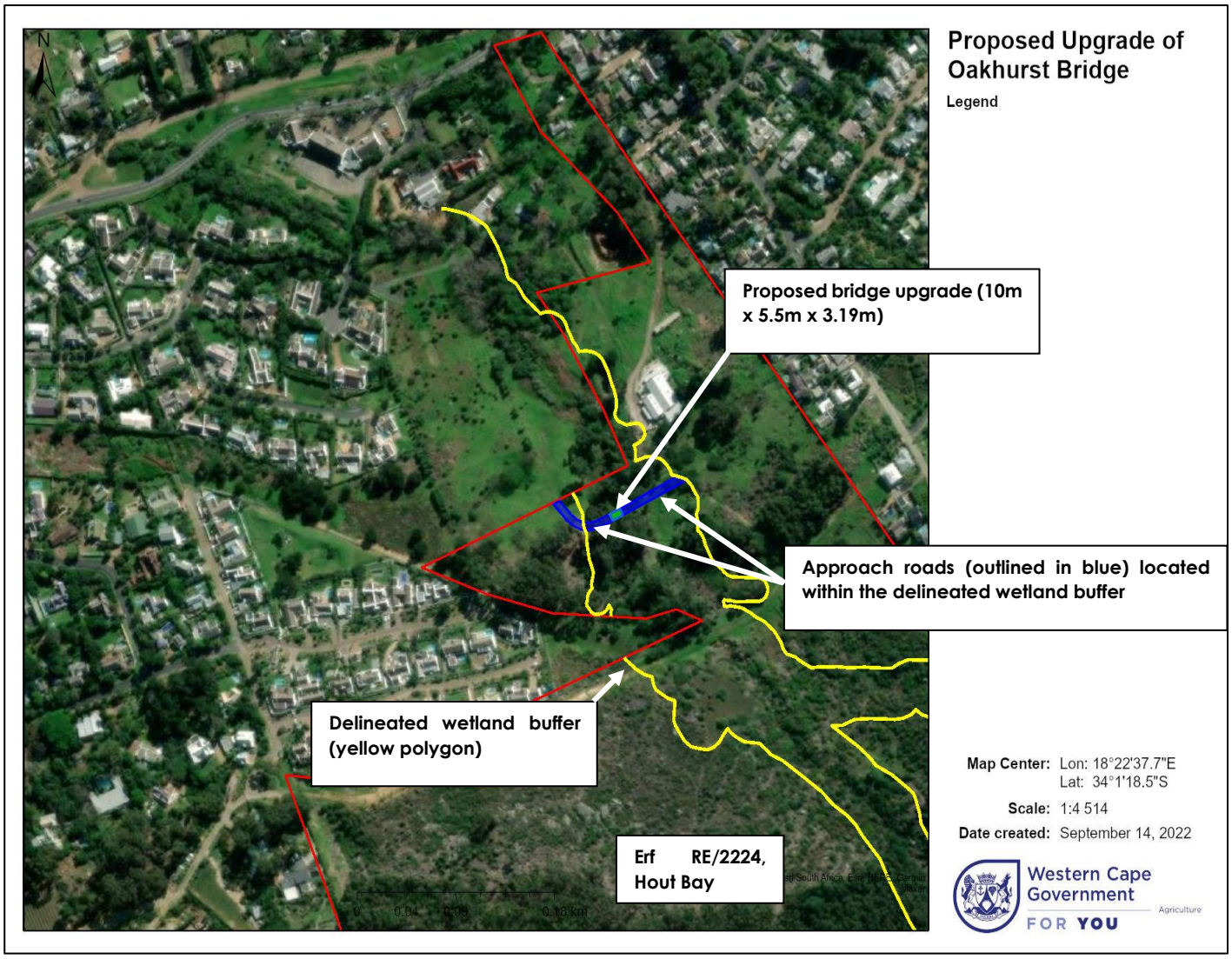

Figure 1: Location of Erf RE/2224, Hout Bay, City of Cape Town (Source: Cape Farm Mapper, 2022).

The proposed development triggers the following Listed Activity, which is listed in terms of 2014 EIA Regulations, as amended, published under the National Environmental Management Act, Act No. 107 of 1998 (NEMA), and therefore requires an application for Environmental Authorisation:

- **<u>Listing Notice 1: Activity 19:</u>**
  The infilling or depositing of any material of more than10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;

- **<u>Listing Notice 1: Activity 31</u>:**
  The decommissioning of existing facilities, structures or infrastructure for - (v) any activity regardless the time the activity was commenced with, where such activity: (a) is similarly listed to an activity in (i)[,] or (ii)[, or (iii)] above; and (b) is still in operation or development is still in progress

- **Listing Notice 3: Activity 4**:
  The development of a road wider than 4 metres with a reserve less than 13,5 metres. i. Western Cape; iii. Inside urban areas: (aa) Areas zoned for conservation use;

- **Listing Notice 3: Activity 12**:
  The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. i. Western Cape; i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;

Sillito Environmental Consulting (Pty) Ltd (SEC) has been appointed to undertake the Basic Assessment (BA) Process with the aim of receiving an Environmental Authorisation in terms of the 2014 EIA Regulations, as amended, published under the National Environmental Management Act (NEMA).

Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended, states that a Screening Report is required to accompany any application for Environmental Authorisation. In this regard, the National web-based Screening Tool must be generated and submitted with every application.

The Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in Terms of Sections 24(5)(a) and (h) and 44 of the NEMA, dated 20th March 2020 and 30 October 2020, prescribes the general requirements for undertaking **site sensitivity verification and provides protocols for the assessment and minimum report content for environmental themes.**

These Procedures explain that prior to commencing with a specialist assessment the current use of land and the environmental sensitivity of the site identified by the National Screening Tool must be confirmed by undertaking a site sensitivity verification and the outcome of the site sensitivity verification must be recorded in the form of a report. This report, therefore, meets the requirements of the site sensitivity verification report outlined in the Procedures.

2. Themes & Environmental Sensitivity Identified by Screening Tool

The table below indicates the level of sensitivity of each of the themes identified in the National Web-based Screening Tool Report:

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Agriculture Theme		X		
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme	X			
Civil Aviation Theme			X	
Defence Theme			X	
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

3. Specialist Studies Identified by Screening Tool

The following Specialist Assessments have been identified by the Screening Tool:

1. Landscape/Visual Impact Assessment
2. Archaeological and Cultural Heritage Impact Assessment
3. Paleontological Impact Assessment
4. Terrestrial Biodiversity Impact Assessment
5. Aquatic Biodiversity Assessment
6. Hydrology Assessment
7. Socio-economic Assessment
8. Plant Species Assessment
9. Animal Species Assessment

4. Determination of Site Sensitivity by EAP

As per the Western Cape Biodiversity Spatial Plan (WCBSP) the management guideline determines the ecological state or condition in which a parcel of land or freshwater feature should be maintained. The management objectives are determined for a range of variety of land uses i.e., Protected Areas, Critical Biodiversity Areas as well as Ecological Support Areas. The site is located within the Peninsula Granite Fynbos, a critically endangered vegetation type. The site is not located within a CBA or ESA. Specialist studies were previously undertaken for the previously authorised Oakhurst Residential Development (Original EA: E12/2/4/1-A5/235-2058/10; Amendment EA Ref: 14/3/1/1/A6/36/0535/21). It must be noted that this proposal is for the upgrade to an existing bridge structure, previously constructed within the Bokkemanskloof River. According to the previous botanical assessment, no plant species of conservational concern (SCC) were recorded on Erf RE/2224 except for a single *Leucospermum conocarpodendron* individual approximately 415m south of

the proposed site for development. As per the Botanical Specialist, little natural vegetation is present on Erf RE/2224 whereby the habitat has been degraded by mechanical disturbances, soil and rubble stockpiling, long term grazing by livestock, alien invasive plant species encroachment, and eutrophication in some areas.

As per the previously conducted Freshwater Impact Assessment, the Bokkemanskloof River (a tributary of the Disa River) bisects the site from south to north of Erf RE/2224 and adjacent erven, namely Erven 8343 and RE/8295. The Bokkemanskloof watercourse has eroded a deep channel in previous parts of Erf RE/2224 and adjacent erven. The Present Ecological State (PES) of the Bokkemanskloof River was considered to have a good instream condition (Category B/C) in upper reaches and moderately impacted (Category C) in riparian areas. The River is considered to have Moderate-to-High ecological importance and sensitivity.

5. Motivation by the EAP Agreeing or Disputing the Specialist Assessments Identified in Screening Tool Report, as well as the Sensitivity Ratings for the Various Themes Identified

No	Theme	DEA Sensitivity	Agree / Disagree	Proposed Sensitivity	Motivation
1	Agriculture Theme	High Sensitivity	Disagree	Insignificant Sensitivity	This proposal is for the upgrade of an existing bridge, located within the Bokkemanskloof River. As per the CoCT Municipal Planning Amendment By-Law, 2016, the site is zoned as Single Residential Zoning 1: Conventional Housing (SR1) and therefore, is not zoned/designated for agricultural use (i.e. zoned as Agriculture). Moreover, agricultural activities within close proximity to watercourses have been reported to negatively impact the hydrogeochemical and biological features of such watercourses. For example, the release of nutrients into watercourses may result in eutrophication – negatively impacting the hydrogeochemical aspects of watercourses, as well as the growth and survival of fauna and flora[1,2]. Given the above, it is envisaged that agricultural activities on this site is not deemed to be ideal in terms of the zoning and environmental impacts.
2	Animal Species Theme	Medium Sensitivity	Agree	Medium Sensitivity	The DEA Screening Tool classified the proposed site for bridge upgrade as "Medium" Sensitivity based on *Amietophrynus pantherinus* and *Conocephalus peringueyi* (Peringuey's Meadow Katydid). A Western Leopard Toad (*Amietophrynus pantherinus*) habitat assessment was previously conducted by NCC in 2014. According to the findings of this study, Western Leopard Toads were present in certain areas of the site. As per the report, the site is extensively transformed from its natural state being directly modified by surrounding developments as well as alien invasive plant species encroachment (namely Port Jackson - *Acacia saligna*, *Lantana camara,* and *Eucalyptus* spp.). Direct impacts are typically associated with changes in land cover (resulting in the loss of natural areas) and edge effects, whereas indirect impacts are associated with the generation of waste and its management by surrounding developments (McDonald *et al*., 2020)[3]. Edge effects have diverse impacts on biodiversity and ecological functioning (Razafindratsima *et al*., 2018)[4], which may have contributed to the level of disturbance identified by NCC during their study. The presence of the previously constructed bridge also contributes to a disturbance factor. Such effects contribute to a disturbance factor, which is likely to have previously impacted wild animals within the study area. Therefore, based on the presence of Western Leopard Toads in 2014, it is envisaged that the site will have a 'Medium Animal Species theme sensitivity. A herpetology assessment, addressing the presence of Western Leopard Toads, will be conducted.
3	Aquatic Biodiversity Theme	Very High Sensitivity	Disagree	High Sensitivity	A wetland delineation and confirmation of wetland buffer was undertaken in 2021. The proposed upgrade of the bridge (and associated infrastructure) will be located within this buffer (Figure 1). A Western Leopard Toad (*Amietophrynus pantherinus*) habitat assessment was previously conducted

[1] Withers, P.J., Neal, C., Jarvie, H.P. and Doody, D.G., 2014. Agriculture and eutrophication: where do we go from here?. *Sustainability*, *6*(9), pp.5853-5875.
[2] Mader, A.E., Eslamian, S., Turton, A. R. 2020. Biological Remediation Using Wetland Systems: A Hydro-Geochemical Perspective. Nova Publishers.
[3] McDonald, R.I., Mansur, A.V., Ascensão, F., Crossman, K., Elmqvist, T., Gonzalez, A., Güneralp, B., Haase, D., Hamann, M., Hillel, O. and Huang, K., 2020. Research gaps in knowledge of the impact of urban growth on biodiversity. *Nature Sustainability*, 3(1), pp.16-24.
[4] Razafindratsima, O.H., Brown, K.A., Carvalho, F., Johnson, S.E., Wright, P.C. and Dunham, A.E., 2018. Edge effects on components of diversity and above-ground biomass in a tropical rainforest. *Journal of Applied Ecology*, *55*(2), pp.977-985.

					by NCC in 2014. According to the findings of this study, Western Leopard Toads were present in certain areas of the site. As per the report, the site is extensively transformed from its natural state being directly modified by surrounding developments as well as alien invasive plant species encroachment (namely Port Jackson - *Acacia saligna*, *Lantana camara,* and *Eucalyptus* spp.). Direct impacts are typically associated with changes in land cover (resulting in the loss of natural areas) and edge effects, whereas indirect impacts are associated with the generation of waste and its management by surrounding developments (McDonald *et al*., 2020)[5]. Edge effects have diverse impacts on biodiversity and ecological functioning (Razafindratsima *et al*., 2018)[6], which may have contributed to the level of disturbance identified by NCC during their study. The presence of the previously constructed bridge also contributes to a disturbance factor. Such effects contribute to a disturbance factor, which is likely to have previously impacted wild animals within the study area. Therefore, based on the presence of Western Leopard Toads in 2014, it is envisaged that the site will have a 'Medium Animal Species Theme sensitivity. A herpetology assessment, addressing the presence of Western Leopard Toads, will be conducted. A Freshwater Assessment was previously undertaken by Dr. Barbara Gale of Aqua Catch cc in April 2008, updated by Ms. Toni Belcher in 2010 with addendums in 2014, a wetland delineation was carried out by The Biodiversity Company in 2021, and a Letter of Confirmation of the delineated wetland buffer was compiled by Ms. Toni Belcher in 2021. As per the Freshwater Assessment, the upper to middle reaches of the Bokkemanskloof River were considered to have a good instream condition whereas the riparian zones were considered to be moderately impacted. The ecological importance and sensitivity of the river was considered to be moderate to high. The Freshwater Impact Assessment will be revised.
4	Archaeological and Cultural Heritage Theme	Very High Sensitivity	Disagree	Very Low Sensitivity	The proposed area for upgrade has been previously transformed (i.e., previously constructed bridge). A Heritage Impact Assessment was conducted in June 2005. Based on the heritage report, the concrete bridge was not of any heritage significance. In accordance with the relevant legislation, HWC assessed the report and made recommendations in their "Record of Decision" dated 22 January 2008 which supported the findings of the specialist heritage assessment. As per the SAHRIS Paleosensitivity Map, the site is located within a low paleontological sensitive area (https://sahris.sahra.org.za/map/palaeo). According to Section 38(1) of the National Heritage Resources Act, NHRA (Act No. 25 of 1999), a Heritage Impact Assessment is required when: - the construction of a road exceeds 300m in length - construction of a bridge exceeds 50m in length - any development exceeding 5 000m^2 in extent. Therefore, based on the factors highlighted above, it is envisaged that the proposed site for the bridge upgrade will have a very low sensitivity. Mitigation measures (e.g., Chance Find Protocol) will be proposed and included as a condition in the EMPr.

[5] McDonald, R.I., Mansur, A.V., Ascensão, F., Crossman, K., Elmqvist, T., Gonzalez, A., Güneralp, B., Haase, D., Hamann, M., Hillel, O. and Huang, K., 2020. Research gaps in knowledge of the impact of urban growth on biodiversity. *Nature Sustainability*, 3(1), pp.16-24.

[6] Razafindratsima, O.H., Brown, K.A., Carvalho, F., Johnson, S.E., Wright, P.C. and Dunham, A.E., 2018. Edge effects on components of diversity and above-ground biomass in a tropical rainforest. *Journal of Applied Ecology*, *55*(2), pp.977-985.

5	Civil Aviation Theme	Medium Sensitivity	Disagree	Insignificant Sensitivity	The Civil Aviation Theme was rated as having a "Medium" sensitivity due to the site being located within 5km of an air traffic control or navigation site and between 15 and 35km from a civil aviation radar and major civil aviation aerodrome. However, the previously constructed bridge is an existing structure and thus, an existing impact that is not expected to significantly change based on the type of application (i.e., upgrade of an existing bridge). The proposed upgrade of the existing structure would have similar impacts and thus, it is envisaged that the site will have an 'insignificant' Civil Aviation Theme sensitivity rating.
6	Defence Theme	Medium Sensitivity	Disagree	Insignificant Sensitivity	The Defence theme was rated as having a "Medium" sensitivity due to the proximity of the site to a military and defence site. However, the previously constructed bridge is an existing structure. The proposed upgrade of the existing structure would have similar impacts and thus, it is envisaged that the site will have an 'insignificant' Defence Theme sensitivity rating and is unlikely to impact any defence-related aspects.
7	Plant Species Theme	Low Sensitivity	Disagree	Very Low Sensitivity	The site is located within the Peninsula Granite Fynbos, a critically endangered vegetation type. The site is not located within a CBA or ESA. Specialist studies were conducted for the previously authorised Oakhurst Residential Development (Original EA: E12/2/4/1-A5/235-2058/10; Amendment EA Ref: 14/3/1/1/A6/36/0535/21). It must be noted that this proposal is for the upgrade to an existing bridge structure, previously constructed within the Bokkemanskloof River. According to the previous botanical assessment, no plant species of conservational concern (SCC) were recorded on Erf RE/2224 except for a single *Leucospermum conocarpodendron* individual located approximately 415m south of the proposed site for the bridge upgrade. As per the Botanical Specialist, little natural vegetation is present on Erf RE/2224 whereby the habitat has been degraded by mechanical disturbances, soil and rubble stockpiling, long term grazing by livestock, alien invasive plant species encroachment, and eutrophication in some areas. Please note that a Freshwater Study will be conducted. The Freshwater Study will comment on vegetation present within the watercourse and associated with the location of the proposed bridge to be upgraded. It is therefore envisaged that the site has a "very low" plant species theme sensitivity rating.
8	Terrestrial Biodiversity Theme	Very High Sensitivity	Disagree	High	The proposed site for the bridge upgrade was classified as "Very High" based on the site being located within a critically endangered ecosystem (i.e., Peninsula Granite Fynbos). However, the previously constructed bridge is an existing structure whereby the proposed upgrade of the bridge is expected to have similar impacts. According to the previous botanical assessment, no plant species of conservational concern (SCC) were recorded on Erf RE/2224 except for a single *Leucospermum conocarpodendron* individual located approximately 415m south of the proposed site for the bridge upgrade. As per the Botanical Specialist, little natural vegetation is present on Erf RE/2224 whereby the habitat has been degraded by mechanical disturbances, soil and rubble stockpiling, long term grazing by livestock, alien invasive plant species encroachment, and eutrophication in some areas. The DEA Screening Tool classified the proposed site for bridge upgrade as "Medium" Animal Species Sensitivity based on the likely occurrence of *Amietophrynus pantherinus* and *Conocephalus peringueyi* (Peringuey's Meadow Katydid) in the area. A Western Leopard Toad (*Amietophrynus pantherinus*) habitat assessment was previously conducted by NCC in 2014. According to the findings of this study, Western Leopard Toads were present in certain areas. As per the report, the site is extensively transformed from its natural state being directly modified by surrounding developments

					and the alien invasive plant species encroachment (namely Port Jackson - *Acacia saligna*, *Lantana camara,* and *Eucalyptus* spp.). Direct impacts are typically associated with developments resulting in land cover changes (and consequent loss of natural areas) and edge effects, whereas indirect impacts include impacts associated with the generation of waste and its management by surrounding developments (McDonald *et al*., 2020)[7]. Edge effects have diverse impacts on biodiversity and ecological functioning (Razafindratsima *et al*., 2018)[8], which may have contributed to the level of disturbance identified by NCC during their study. The presence of the previously constructed bridge also contributes to a disturbance factor. Such effects contribute to a disturbance factor, which is likely to have previously impacted wild animals within the study area. A Freshwater Assessment was previously undertaken by Dr. Barbara Gale of Aqua Catch cc in April 2008, updated by Ms. Toni Belcher in 2010 with addendums in 2014, a wetland delineation was carried out by The Biodiversity Company in 2021, and a Letter of Confirmation of the delineated wetland buffer was compiled by Ms. Toni Belcher in 2021. As per the Freshwater Assessment, the upper to middle reaches of the Bokkemanskloof River is deemed to be in a good condition instream whereas the riparian zones were considered to be moderately impacted. The ecological importance and sensitivity of the river were considered to be moderate to high. A Freshwater Impact Assessment and Herpetology Assessment will be conducted.

[7] McDonald, R.I., Mansur, A.V., Ascensão, F., Crossman, K., Elmqvist, T., Gonzalez, A., Güneralp, B., Haase, D., Hamann, M., Hillel, O. and Huang, K., 2020. Research gaps in knowledge of the impact of urban growth on biodiversity. *Nature Sustainability*, 3(1), pp.16-24.

[8] Razafindratsima, O.H., Brown, K.A., Carvalho, F., Johnson, S.E., Wright, P.C. and Dunham, A.E., 2018. Edge effects on components of diversity and above-ground biomass in a tropical rainforest. *Journal of Applied Ecology*, *55*(2), pp.977-985.

a) <u>The following specialist studies, as identified by the Screening Tool Report, will not be carried out:</u>

1. Landscape / Visual Impact Assessment

This proposal is for the upgrade of an existing bridge, located within the Bokkemanskloof River. Thus, there is an existing visual impact associated with the proposed bridge to be upgraded. Moreover, it is expected that the proposed bridge will have similar visual impacts relative to the existing bridge.

Therefore, a Landscape / Visual Impact Assessment will **<u>not</u>** be required.

2. Archaeological and Cultural Heritage Impact Assessment

The proposed area for upgrade has been previously transformed (i.e., previously constructed bridge).

A Heritage Impact Assessment was conducted in June 2005. Based on the heritage report, the concrete bridge was not of any heritage significance. In accordance with the relevant legislation, HWC assessed the report and made recommendations in their "Record of Decision" dated 22 January 2008 which supported the findings of the specialist heritage assessment. As per the SAHRIS Paleosensitivity Map, the site is located within a low paleontological sensitive area (https://sahris.sahra.org.za/map/palaeo). According to Section 38(1) of the National Heritage Resources Act, NHRA (Act No. 25 of 1999), a Heritage Impact Assessment is required when:

- the construction of a road exceeds 300m in length
- construction of a bridge exceeds 50m in length
- any development exceeding 5 000m^2 in extent.

Therefore, based on the factors highlighted above, it is envisaged that the proposed site for the bridge upgrade will have a very low sensitivity. Mitigation measures (e.g., Chance Find Protocol) will be proposed and included as a condition in the EMPr. Therefore, an Archaeological and Cultural Heritage Impact Assessment will **<u>not</u>** be required.

3. Palaeontology Impact Assessment

This proposal is for the upgrade of an existing bridge. As per the SAHRIS Paleontological Online Map Tool (https://sahris.sahra.org.za/map/palaeo), the proposed site is situated within an area of low paleontological significance. Due to the location within the SAHRIS Paleontological Map and previous transformation/ disturbances, the proposed development is highly unlikely to impact any paleontological resource.

Thus, it is envisaged that a Palaeontology Impact Assessment will **<u>not</u>** be required.

4. Hydrology Assessment

Based on the responses outlined above, as well as the nature of the proposed activity (i.e., upgrade of an existing bridge), it is envisaged that a Hydrology Assessment will **<u>not</u>** be required. However, a Freshwater Impact Assessment will be conducted and will comment on hydrological-related features.

5. Socio-Economic Assessment

The proposed site for the upgrade of the existing bridge is located within a property owned by Oakhurst Lifestyle Estate (landowner). The proposed upgrade will improve the safety and reliability of access across the Bokkemanskloof River. This is a positive impact. Thus, it is envisaged that a Socio-Economic Assessment will **<u>not</u>** be required.

6. Plant Species Assessment

The site is located within the Peninsula Granite Fynbos, a critically endangered vegetation type. The site is not located within a CBA or ESA. Specialist studies were conducted for the previously authorised Oakhurst Residential Development (Original EA: E12/2/4/1-A5/235-2058/10; Amendment EA Ref: 14/3/1/1/A6/36/0535/21). It must be noted that this proposal is for the upgrade to an existing bridge

structure, previously constructed within the Bokkemanskloof River. According to the previous botanical assessment, no plant species of conservational concern (SCC) were recorded on Erf RE/2224 except for a single *Leucospermum conocarpodendron* individual located approximately 415m south of the proposed site for the bridge upgrade. As per the Botanical Specialist, little natural vegetation is present on Erf RE/2224 whereby the habitat has been degraded by mechanical disturbances, soil and rubble stockpiling, long term grazing by livestock, alien invasive plant species encroachment, and eutrophication in some areas. Please note that a Freshwater Study will be conducted. The Freshwater Study will comment on vegetation present within the watercourse and associated with the location of the proposed bridge to be upgraded. It is therefore envisaged that the site has a "very low" plant species theme sensitivity rating.

It is therefore envisaged that a Plant Species Assessment will **not** be required.

b) The following specialist studies, as identified by the Screening Tool Report, will / has been carried out:

1. Animal Species Assessment

The DEA Screening Tool classified the proposed site for bridge upgrade as "Medium" Sensitivity based on *Amietophrynus pantherinus* and *Conocephalus peringueyi* (Peringuey's Meadow Katydid). A Western Leopard Toad (*Amietophrynus pantherinus*) habitat assessment was previously conducted by NCC in 2014. According to the findings of this study, Western Leopard Toads were present in certain areas of the site. As per the report, the site is extensively transformed from its natural state being directly modified by surrounding developments as well as alien invasive plant species encroachment (namely Port Jackson - *Acacia saligna*, *Lantana camara,* and *Eucalyptus* spp.). Direct impacts are typically associated with changes in land cover (resulting in the loss of natural areas) and edge effects, whereas indirect impacts are associated with the generation of waste and its management by surrounding developments (McDonald *et al*., 2020)[9]. Edge effects have diverse impacts on biodiversity and ecological functioning (Razafindratsima *et al*., 2018)[10], which may have contributed to the level of disturbance identified by NCC during their study. The presence of the previously constructed bridge also contributes to a disturbance factor. Such effects contribute to a disturbance factor, which is likely to have previously impacted wild animals within the study area. Therefore, based on the presence of Western Leopard Toads in 2014, it is envisaged that the site will have a 'Medium Animal Species theme sensitivity.

Therefore, a herpetology assessment, addressing the presence of Western Leopard Toads, **will be** conducted.

2. Terrestrial Biodiversity Impact Assessment

The proposed site for the bridge upgrade was classified as "Very High" based on the site being located within a critically endangered ecosystem (i.e., Peninsula Granite Fynbos). However, the previously constructed bridge is an existing structure whereby the proposed upgrade of the bridge is expected to have similar impacts. According to the previous botanical assessment, no plant species of conservational concern (SCC) were recorded on Erf RE/2224 except for a single *Leucospermum conocarpodendron* individual located approximately 415m south of the proposed site for the bridge upgrade. As per the Botanical Specialist, little natural vegetation is present on Erf RE/2224 whereby the habitat has been degraded by mechanical disturbances, soil and rubble stockpiling, long term grazing by livestock, alien invasive plant species encroachment, and eutrophication in some areas. The DEA Screening Tool classified the proposed site for bridge upgrade as "Medium" Animal Species Sensitivity based on the likely occurrence of *Amietophrynus pantherinus* and *Conocephalus peringueyi* (Peringuey's Meadow Katydid)

[9] McDonald, R.I., Mansur, A.V., Ascensão, F., Crossman, K., Elmqvist, T., Gonzalez, A., Güneralp, B., Haase, D., Hamann, M., Hillel, O. and Huang, K., 2020. Research gaps in knowledge of the impact of urban growth on biodiversity. *Nature Sustainability*, 3(1), pp.16-24.
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in the area. A Western Leopard Toad (*Amietophrynus pantherinus*) habitat assessment was previously conducted by NCC in 2014. According to the findings of this study, Western Leopard Toads were present in certain areas. As per the report, the site is extensively transformed from its natural state being directly modified by surrounding developments and the alien invasive plant species encroachment (namely Port Jackson - *Acacia saligna*, *Lantana camara,* and *Eucalyptus* spp.). Direct impacts are typically associated with developments resulting in land cover changes (and consequent loss of natural areas) and edge effects, whereas indirect impacts include impacts associated with the generation of waste and its management by surrounding developments (McDonald *et al*., 2020)[11]. Edge effects have diverse impacts on biodiversity and ecological functioning (Razafindratsima *et al*., 2018)[12], which may have contributed to the level of disturbance identified by NCC during their study. The presence of the previously constructed bridge also contributes to a disturbance factor. Such effects contribute to a disturbance factor, which is likely to have previously impacted wild animals within the study area. A Freshwater Assessment was previously undertaken by Dr. Barbara Gale of Aqua Catch cc in April 2008, updated by Ms. Toni Belcher in 2010 with addendums in 2014, a wetland delineation was carried out by The Biodiversity Company in 2021, and a Letter of Confirmation of the delineated wetland buffer was compiled by Ms. Toni Belcher in 2021. As per the Freshwater Assessment, the upper to middle reaches of the Bokkemanskloof River is deemed to be in a good condition instream whereas the riparian zones were considered to be moderately impacted. The ecological importance and sensitivity of the river were considered to be moderate to high. A Freshwater Impact Assessment and Herpetology Assessment will be conducted.

3. Aquatic Biodiversity Impact Assessment

A wetland delineation and confirmation of wetland buffer was undertaken in 2021. The proposed upgrade of the bridge (and associated infrastructure) will be located within this buffer (Figure 1). A Western Leopard Toad (*Amietophrynus pantherinus*) habitat assessment was previously conducted by NCC in 2014. According to the findings of this study, Western Leopard Toads were present in certain areas of the site. As per the report, the site is extensively transformed from its natural state being directly modified by surrounding developments as well as alien invasive plant species encroachment (namely Port Jackson - *Acacia saligna*, *Lantana camara,* and *Eucalyptus* spp.). Direct impacts are typically associated with changes in land cover (resulting in the loss of natural areas) and edge effects, whereas indirect impacts are associated with the generation of waste and its management by surrounding developments (McDonald *et al*., 2020)[13]. Edge effects have diverse impacts on biodiversity and ecological functioning (Razafindratsima *et al*., 2018)[14], which may have contributed to the level of disturbance identified by NCC during their study. The presence of the previously constructed bridge also contributes to a disturbance factor. Such effects contribute to a disturbance factor, which is likely to have previously impacted wild animals within the study area. Therefore, based on the presence of Western Leopard Toads in 2014, it is envisaged that the site will have a 'Medium Animal Species theme sensitivity. A herpetology assessment, addressing the presence of Western Leopard Toads, will be conducted. A Freshwater Assessment was previously undertaken by Dr. Barbara Gale of Aqua Catch cc in April 2008, updated by Ms. Toni Belcher in 2010 with addendums in 2014, a wetland delineation was carried out by The Biodiversity Company in 2021, and a Letter of Confirmation of the delineated wetland buffer was compiled by Ms. Toni Belcher in 2021. As per the Freshwater Assessment, the upper to middle reaches of the Bokkemanskloof River were considered to have a good instream condition whereas the riparian zones were considered to be moderately impacted. The ecological importance and sensitivity of the river were considered to be moderate to high. The Freshwater Impact Assessment will be revised.

[11] McDonald, R.I., Mansur, A.V., Ascensão, F., Crossman, K., Elmqvist, T., Gonzalez, A., Güneralp, B., Haase, D., Hamann, M., Hillel, O. and Huang, K., 2020. Research gaps in knowledge of the impact of urban growth on biodiversity. *Nature Sustainability*, 3(1), pp.16-24.
[12] Razafindratsima, O.H., Brown, K.A., Carvalho, F., Johnson, S.E., Wright, P.C. and Dunham, A.E., 2018. Edge effects on components of diversity and above-ground biomass in a tropical rainforest. *Journal of Applied Ecology*, 55(2), pp.977-985.
[13] McDonald, R.I., Mansur, A.V., Ascensão, F., Crossman, K., Elmqvist, T., Gonzalez, A., Güneralp, B., Haase, D., Hamann, M., Hillel, O. and Huang, K., 2020. Research gaps in knowledge of the impact of urban growth on biodiversity. *Nature Sustainability*, 3(1), pp.16-24.
[14] Razafindratsima, O.H., Brown, K.A., Carvalho, F., Johnson, S.E., Wright, P.C. and Dunham, A.E., 2018. Edge effects on components of diversity and above-ground biomass in a tropical rainforest. *Journal of Applied Ecology*, 55(2), pp.977-985.

6. Conclusion

In conclusion, based on the factors outlined above, the proposed bridge to be upgraded is an existing structure whereby the proposed upgrade is expected to have similar impacts to the existing bridge. The proposed upgrade to the existing bridge will provide safe and reliable access across the Bokkemanskloof River, reducing any impact associated with crossing the watercourse at other points. A Freshwater Impact Assessment and Herpetology Assessment will therefore be conducted.

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