Appendix G2: Botanical Specialist Assessment Report

Botanical Impact Assessment for the proposed dualling of a section of the R43 from Vermont to Onrus, Overstrand Municipality, Western Cape Province

Report by Dr David J. McDonald
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Report prepared for SLR Consulting (South Africa) Pty Ltd

March 2020; amended 20 January 2021

National Legislation and Regulations governing this report

This is a 'specialist report' and is compiled in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014, as amended.

Appointment of Specialist

David J. McDonald of Bergwind Botanical Surveys & Tours CC was appointed by SLR Consulting (South Africa) Pty Ltd, to undertake an impact assessment of the areas of the proposed road upgrade (dualling) of a section of the R43 between Vermont and Onrus, Overstrand Municipality, Western Cape Province.

Details of Specialist

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Expertise

Dr David J. McDonald:

- Qualifications: BSc. Hons. (Botany), MSc (Botany) and PhD (Botany)
- Botanical ecologist with over 40 years' experience in the field of Vegetation Science.
- Founded Bergwind Botanical Surveys & Tours CC in 2006
- Has conducted over 400 specialist botanical / ecological studies.
- Has published numerous scientific papers and attended numerous conferences both nationally and internationally (details available on request)

Curriculum Vitae – Appendix 3

Independence

The views expressed in the document are the objective, independent views of Dr McDonald and the study was carried out under the aegis of, Bergwind Botanical Surveys and Tours CC. Neither Dr McDonald nor Bergwind Botanical Surveys and Tours CC have any business, personal, commercial or other interest in the proposed development apart from fair remuneration for the work performed.

Conditions relating to this report

The content of this report is based on the author's best scientific and professional knowledge as well as available information. Bergwind Botanical Surveys & Tours CC, its staff and appointed associates, reserve the right to modify the report in any way deemed fit should new, relevant or previously unavailable or undisclosed information become known to the author from on-going research or further work in this field, or pertaining to this investigation.

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of the report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must refer to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

Declaration of independence:

I David Jury McDonald, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I:

- in terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or
- in terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the specialist:

Bergwind Botanical Surveys & Tours CC

Name of company:

Date: 15 March 2020; amended 25 October 2020 and 20 January 2021

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1. Introduction

The R43 is the main route from the N2 at Bot River to Hermanus and beyond along the coastal foreland. It carries high volumes of traffic originating from Cape Town and towns along the route to destinations such as Vermont, Onrus, Hermanus, Stanford, Gansbaai and Pearly Beach. This is particularly so over weekends and during holiday periods.

To address the traffic congestion problem of motorists approaching Hermanus from the west, dualling of the section of road between the intersection at the turnoff to Vermont (Vermont Avenue OP04007; km 23.60) to the intersection at the turnoff to the Hemel-en-Aarde Valley (MR00269; km 27.13) is proposed. Resealing of the section of the R43 from the Hemel-en-Aarde Valley (Main Road) intersection to the Mountain Road intersection is proposed.

This report provides a description of the vegetation found only on the north side of the road within the road reserve and immediately adjacent private property, since the upgrade will target this zone for a distance of 3.52 km. The report places the vegetation in a regional context from a conservation perspective and the investigation follows published guidelines for evaluating potential impacts on the natural vegetation as they pertain to the study area (Brownlie 2005; Cadman, 2016). The requirements and recommendations of Cape Nature and the Botanical Society of South Africa for assessment of biodiversity of proposed development sites have also been considered.

2. Scope of Works

- Dualling the existing single carriageway road to an Urban Class E(ii) cross section and widen the existing road reserve from approximately 30 m to approximately 40 – 45 m;
- Provision of dedicated turning lanes at various of the main accesses;
- Provision and relocation of access roads to Amana, Berghof Estate and Kidbrooke Place;
- Relocation of various services and moving and existing 10 m services servitude adjacent to the new road reserve; and
- Dualling of the Onrus Bridge over the Onrus River.

3. Terms of Reference

- Provide a broad, baseline description of the vegetation of the study area, placing it in a regional context. Reference should also be made to any bioregional maps of the area.

- Describe the vegetation communities and associated conservation value/sensitivity of the study area and identify any areas of specific concern (e.g. high sensitivity and/or conservation status).

- Provide specific information relating to the vegetation in the study area, with reference to any species of special concern and their conservation status, which can be used as baseline information for the assessment of potential impacts of the proposed project.

- Identify, describe and assess the impacts of the proposed activities on the vegetation.

- Recommend appropriate, practicable mitigation measures that will reduce all major (significant) impacts or enhance potential benefits, if any.

3. Study Area

3.1 Location

The study area lies within the existing road reserve on the north side of the R43 from km 23.60 to km 29.46. Where necessary land on the north side of the road reserve will be expropriated to accommodate the dualled road. In addition, new and entrances to Amana, Berghof Estate and Kidbrooke Place will be constructed. From km 27.13 to km 29.46 the road will be resealed but would not require widening, therefore there would be no impacts on the vegetation in the road reserve.

Reference should be made to Figures 1 and 2 that show the proposed section of the R43 road to be dualled and resealed. In addition, Figures 3 and 4 show the location of the proposed Amana Road, and link road between Berghof Estate and Kidbrooke Place, and the new entrance to Kidbrooke Place.

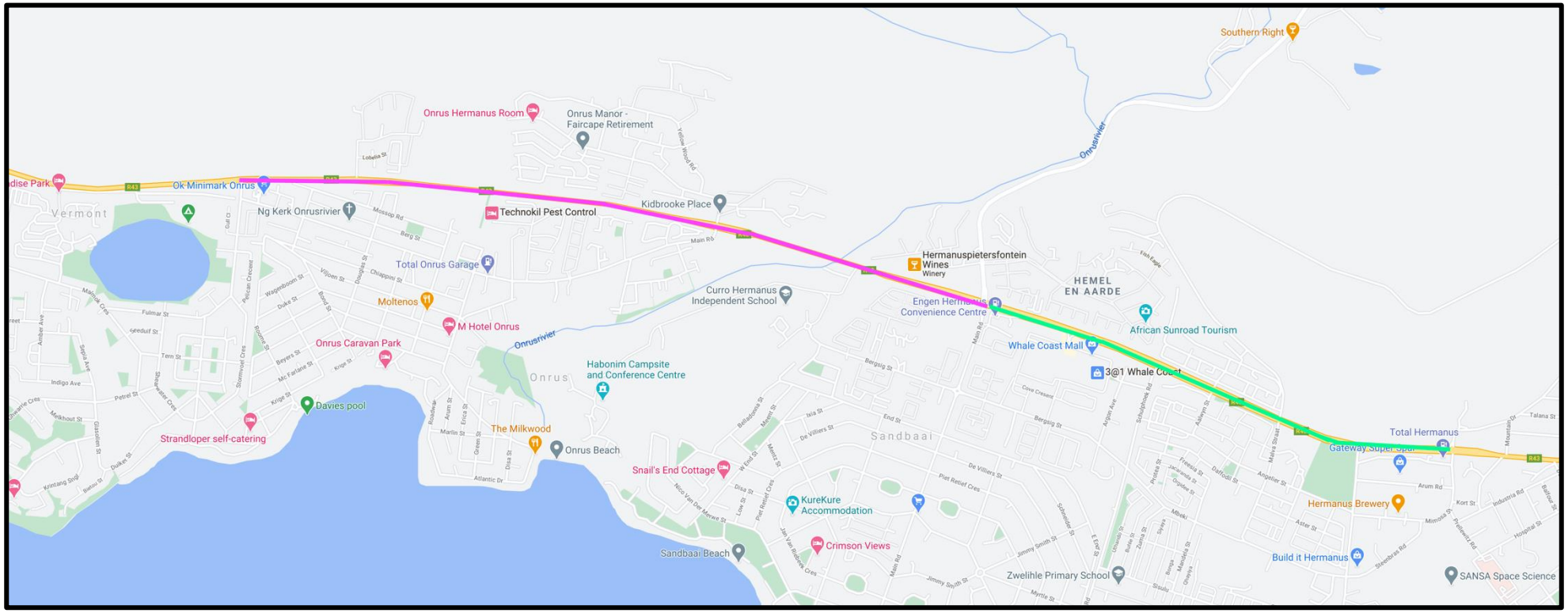


Figure 1. Locality map indicating the section of the R43 (pink line) proposed for upgrading by dualling on the north side and the section proposed for resealing indicated by the green line.

Figure 2. Aerial image (Google Earth ™) indicating the section of the R43 proposed for dualling (pink line), with mostly developed areas on either side and the section for resealing indicated by the green line.

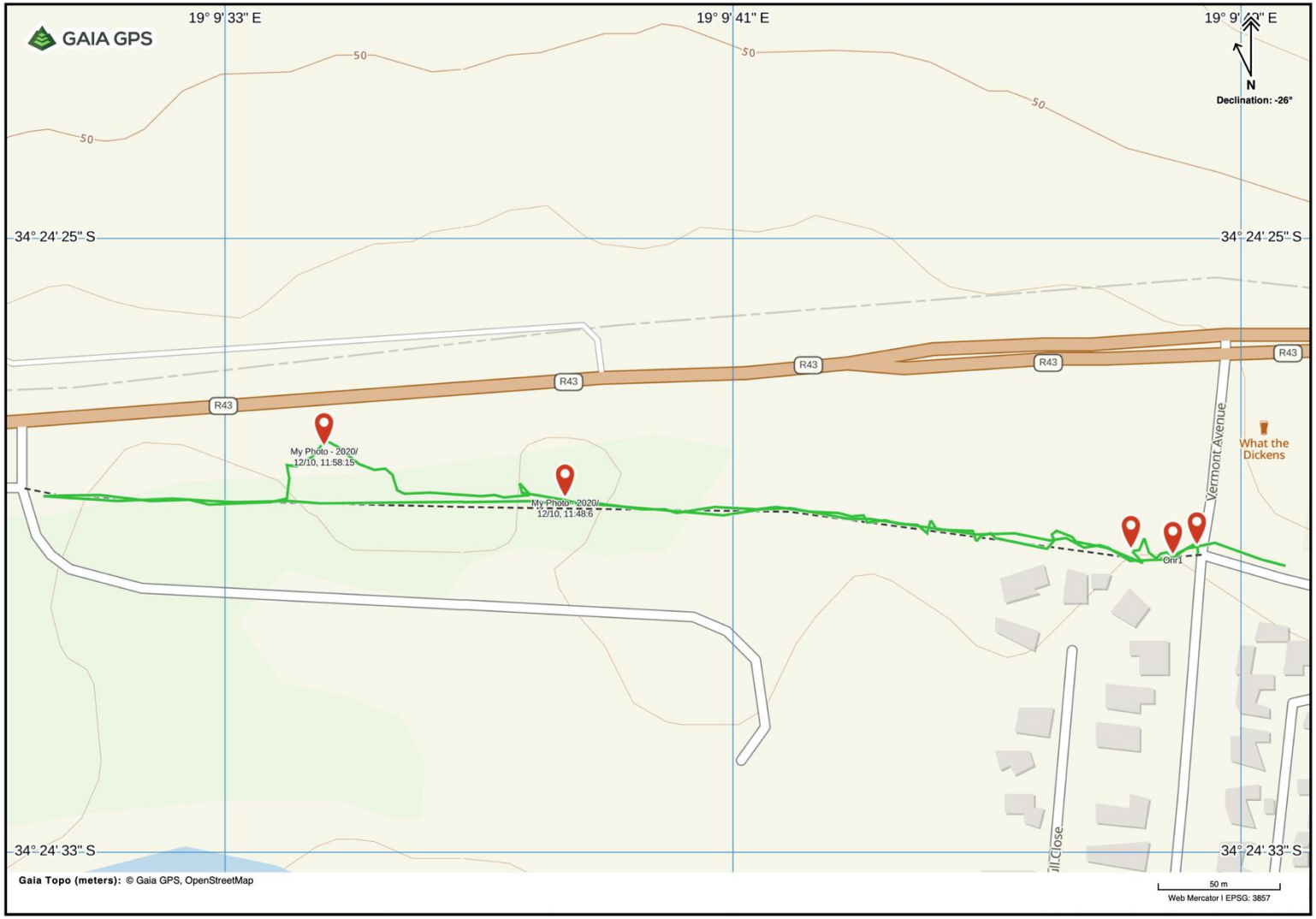


Figure 3. Topographic map from Gaia GPS ™ showing the route and survey track (green) of the proposed Amana Road.

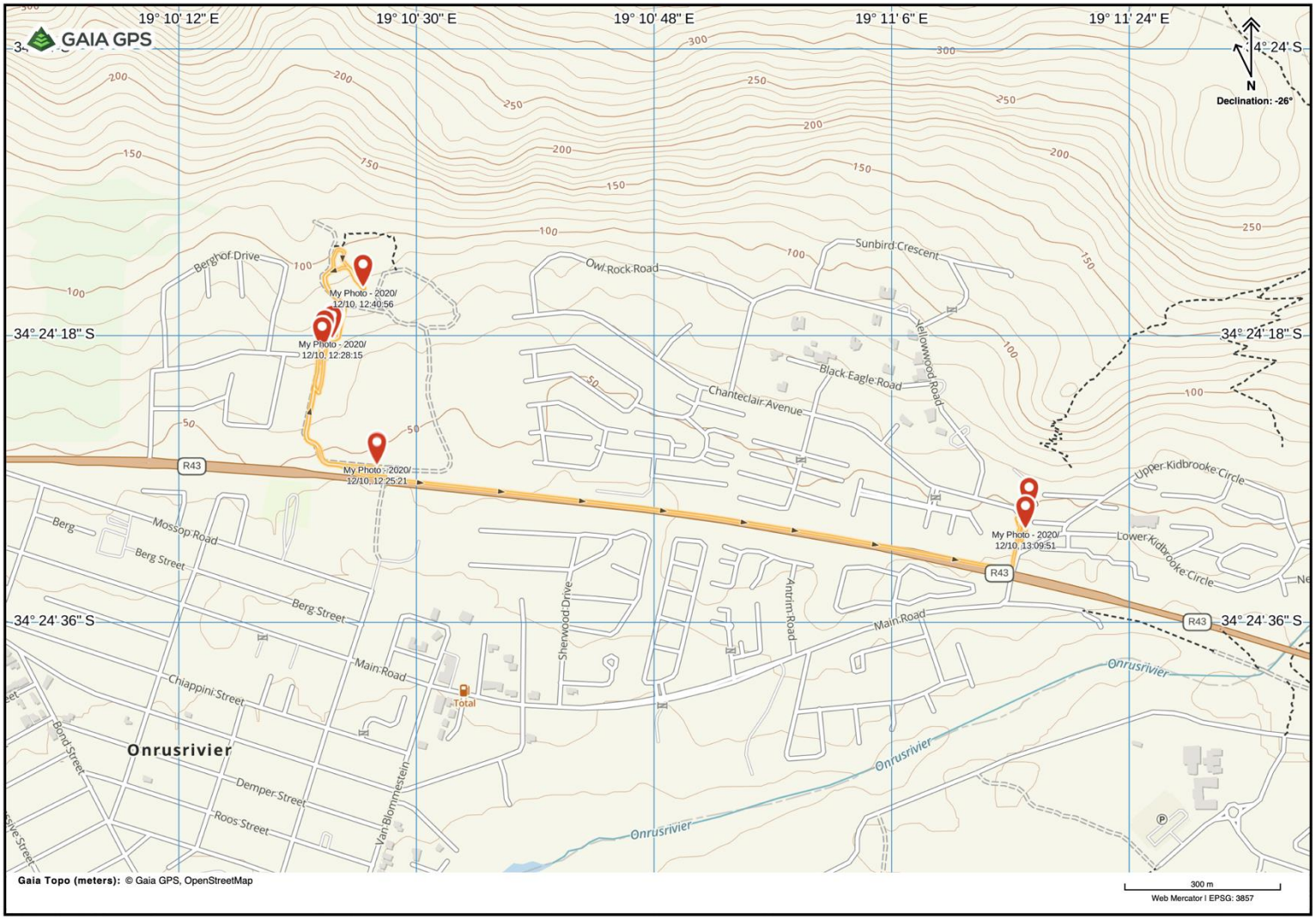


Figure 4. Topographic map from Gaia GPS ™ showing survey track (orange) followed to investigate the Berghof—Kidbrooke Place link and the reconstruction of the Kidbrooke Place entrance and link road from Chanteclair Avenue to the east part of Kidbrooke Place.

3.2 Geology, Topography and Soils

The entire road route is underlain by quartzitic sandstone of the Table Mountain Group, Cape Supergroup (Figure 5) Group. This is the parent material of the sandy soils found along the route, including the proposed Amana Road, and roads at Berghof and Kidbrooke Place.

The topography is relatively flat since the existing road has been constructed at the toe of the mountain slope at an altitude of approximately 40 m above mean sea level.

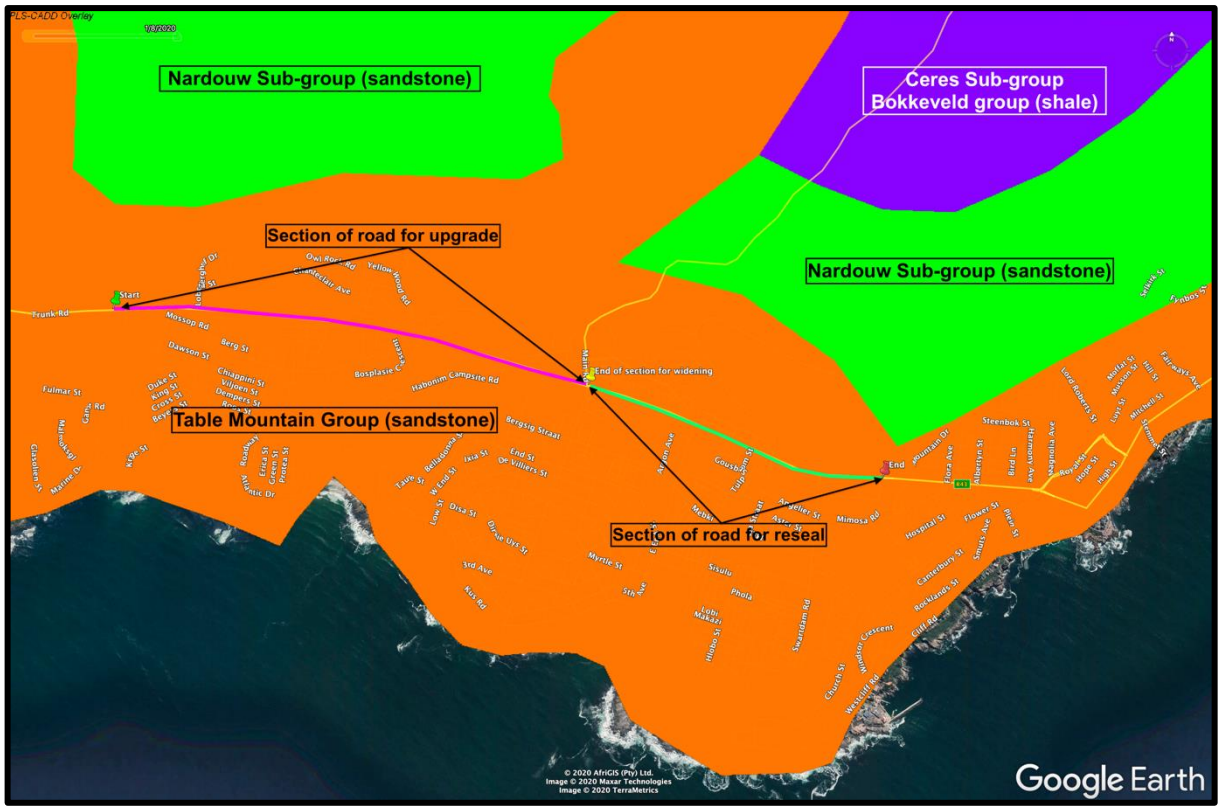


Figure 5. Geological map of the area where the R43 would be upgraded (pink line) and section to be resealed (green line). Amana Road and Kidbrooke Place are not shown but they fall within the area of Table Mountain Group Sandstone.

3.3 Climate

Mean annual precipitation (MAP) for Hangklip Sand Fynbos is 751 mm and for Overberg Sandstone Fynbos, 585 mm (Figure 6) (Rebelo *et al.* 2006 in Mucina & Rutherford, 2006). The difference is attributed to the general closer proximity of Hangklip Sand Fynbos to the coast. The summers are generally hot and dry, and the winters cool to cold. Rain falls mainly in the winter hence the climate being classified as a Mediterranean-type climate. South-east

winds prevail in summer that can result in rain since they are onshore, however, most precipitation occurs when the offshore northwesterly winds blow in winter.

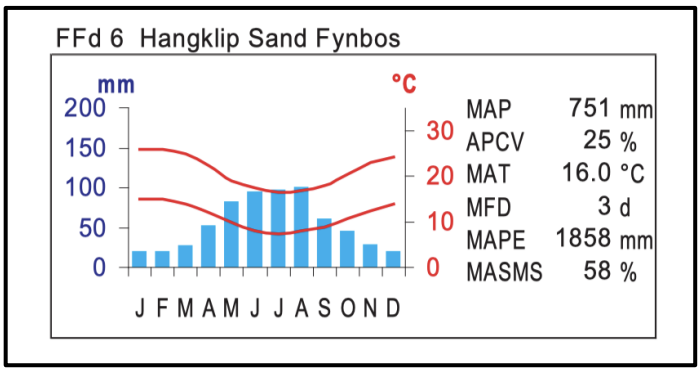
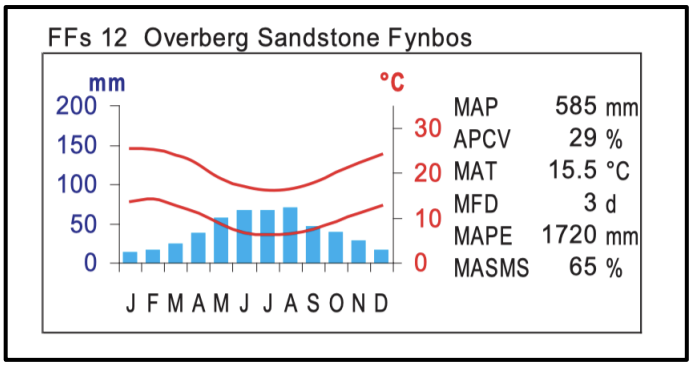


Figure 6a. Climate diagram for Hangklip Sand Fynbos and **6b**. Overberg Sandstone Fynbos (from Rebelo *et al.* 2006 in Rutherford & Mucina, 2006) showing MAP – Mean Annual Precipitation; ACPV = Annual Precipitation Coefficient of Variance; MAT = Mean Annual Temperature; MFD = Mean Frost Days; MAPE = Mean Annual Potential Evaporation; MASMA = Mean Annual Soil Moisture Stress.

6a.



6b.

4. Evaluation Method

The study area was visited on 8 January 2020, at the height of summer and again on 10 December 2020. In normal circumstances this would raise questions as to the validity of the study (seasonal constraints). However, since the habitat is disturbed and the vegetation secondary in nature, although indigenous, the number of species that may have been missed (due to seasonality) or that may be threatened are believed to be very small.

The route and waypoints were recorded on GAIA GPS on an Apple iPhone XR as well as on a Garmin GPSmap 66s handheld device. During the survey, notes together with a photographic record (with photos geo-tags) were compiled on the roadside vegetation. A total of 16 sample waypoints were recorded on the north side of the R43. Additional sample points were recorded for the proposed Amana Road and the roads at Berghof and Kidbrooke Place.

5. Limitations and Assumptions

The season of the survey on both occasions was mid-summer, so the surveys were based on perennial species and a low-level limitation was the lack and / or lack of visibility of annual and geophytic species. The shrubs were in good condition and indeed certain species were flowering which may have not been the case in winter or spring. The grasses and other herbaceous plants were generally dry. It could be argued that the season placed a high limitation on the survey but given the plants that were found, the author considers the level of confidence to be moderate to high.

The brief was to survey the vegetation in the road-reserve north of the R43. The areas inside the boundary fences of private property were not investigated (a limitation). The areas of the proposed new roads and redeveloped areas around the intersections were initially considered (first field survey) but not given high-priority attention (minor limitation). The latter areas were therefor revisited in December 2020 to augment the available information.

It was assumed that that vegetation outside (northeast of) the road reserve of the R43, on private property was disturbed or at least changed from the natural condition, even to the point of complete transformation in some places. The assumption was also made that the vegetation that **was sampled** is representative of almost the entire route and it can safely be said (with moderate to high confidence) that no different or sensitive vegetation is found in areas that were not specifically sampled.

6. The Vegetation

6.1 General description

The vegetation of the Fynbos Biome was described by Rebelo *et al.* (2006) and included in the Vegetation of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006). The vegetation, including that of the Fynbos Biome, was mapped by Mucina, Rutherford and Powrie (2005) (VEGMAP) and subsequently (SANBI, 2012, 2018) . According to this classification and mapping, the R43 traverses a zone of Hangklip Sand Fynbos and a minor zone of Overberg Sandstone Fynbos (Figure 7).

Hangklip Sand Fynbos is a sclerophyllous shrubland consisting of typical low to mid-high fynbos shrubs and graminoids, particularly Restionaceae and is often not easily distinguished from allied sandstone fynbos shrubland since many of the species are shared. Indeed, along

the surveyed route, the distinction between Hangklip Sand Fynbos and Overberg Sandstone Fynbos described by Rebelo *et al.* (2006), as moderately tall, dense restioid, ericoid-leaved and proteoid shrublands was not determined due to the historical disturbance in the road reserve.

An important point to note is that the prominent tussock restio, *Thamnochortus insignis*, that is common virtually throughout the road corridor surveyed as well as along the proposed Amana Road route, is not native to the area. Originally it occurred only in the Albertinia area (Southern Cape) but due to the use of *Thamnochortus insignis* for thatching, the seed has been dropped along roads in the Southwestern Cape and this species has naturalized outside of its original distribution range. It is now characteristic of road corridor vegetation from the Cape Peninsula eastwards to Knysna. Its presence, therefore, along the section of the R43 as surveyed and along the Amana Road route indicates a secondary fynbos plant community that contains a mix of species and that does not fall neatly into the definition of any one vegetation type.

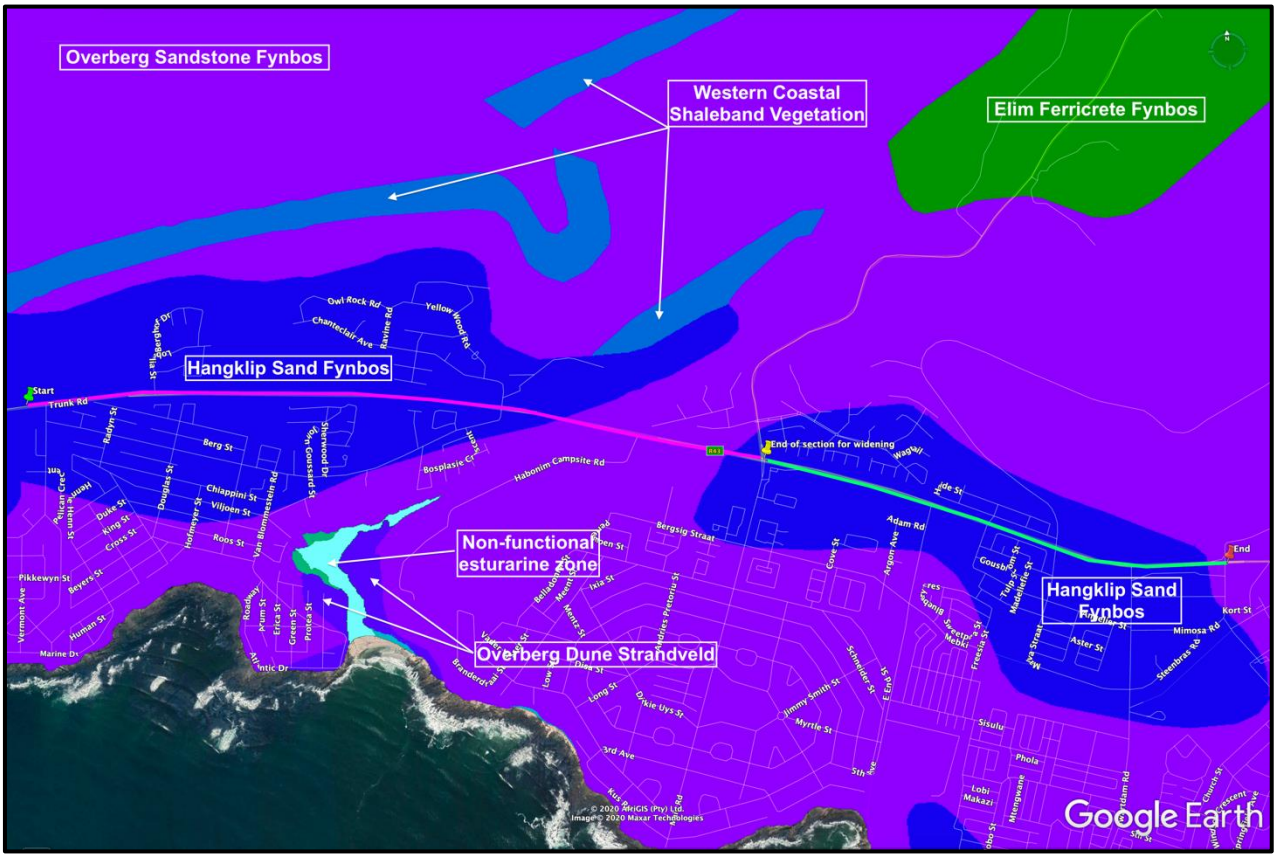


Figure 7. Portion of the *Vegetation Map of South Africa, Lesotho, and Swaziland* (Mucina, Rutherford & Powrie 2005; SANBI, 2012; 2018). The pink line represents the section of the R43 that was surveyed for widening and the blue line indicates the section of road that will be resealed. Amana Road and Kidbrooke Place fall within Hangklip Sand fynbos but are not shown.

6.2 The vegetation alongside the R43 between Vermont and Onrus, along the proposed Amana Road, along the proposed road linking Berghof with Kidbrooke Place and at the proposed new road section off Chanteclair Road at the entrance to Kidbrooke Place.

The vegetation recorded in the two surveys is described in tables 1—4 with notes and photographs taken at the respective waypoints.

Table 1. The vegetation found at each of the waypoints on the north side of the R43 road is described by using field notes and photographs.

Waypoint	Descriptive Notes	Illustration
VOD0001 S 34° 24’ 25.74” E 19° 09’ 47.21”	This location is just before the intersection at Vermont Avenue, on the west side. A strip of natural vegetation about 4 m wide is present and then further upslope a firebreak has been cleared. The species listed below were recorded on the top of the road cutting in the road reserve. The cut-slope itself has revegetated but the vegetation is degraded and is dominated by *Acacia saligna**, the grass *Tribolium uniolae* and *Metalasia densa*. The exotic grasses Lagurus ovatus and Cortederia selloana (Pampas grass) were found on the cut-slope edge. Species present include: *Acacia cyclops**, *Anthospermum aethiopicum*, *Aspalathus* sp. (low & sprawling), *Athanasia trifurcata*, *Briza minor*, *Berkheya rigidus*, *Berzelia* sp., *Bobartia indica*, *Calobota* sp., *Centranthus* ruber*, *Cliffortia juniperifolia*, *Cullumia* sp., *Ehrharta* sp., *Elytropappus rhinocerotis*, *Eragrostis curvula*, *Erica brachialis*, *Ficinia filiformis*, *Ficinia* sp., *Gnidia squarrosa*, *Hyparrhenia hirta*, *Lanaria lanata*, *Leptospermum laevigatum**, *Leucadendron xanthoconus*, *Lobelia coronopifolia*, *Lobelia pinifolia*, *Lobostemon* sp., *Metalasia erubescens*, *Mimetes cucullatus* and *Oedera capensis, Olea* sp., *Oncosiphon fruticosus*, *Osteospermum moniliferum*, *Osyris compressa*, *Passerina corymbosa*, *Pelargonium cucullatum*, *Pentameris macrocalycina, Phylica* cf. *ericoides*, *Pinus radiata* (young sapling), *Plantago lanceolata, Protea repens*, *Psoralea pinnata*, *Pennisetum clandestinum*, *Searsia cf. lucida*, *Selago* sp. (white),*Senecio* sp., *Tetragonia fruticosa*, *Taraxacum officinale**, *Thanmnochortus insignis*, *Themeda triandra*, *Tribolium uniolae*, *Verbascum thaspus** and *Willdenowia sulcata*	 View of the cutting at the Vermont Avenue intersection.  *Erica brachialis*  The top of the cutting in the road reserve.

VOD0002 S 34° 24’ 25.68” E 19° 10’ 05.52”	This waypoint was recorded at the TR02801 24.00 km marker board. This is on the flat section between the embankment to the west at VOD0001 and the entrance to Berghof in the east. The vegetation is the same community on white sandy soil. The road verge is weedy and dominated by the grass *Hyparrhenia hirta* and exotic weed *Plantago lanceolata**. Species record include, *Acacia saligna* (seedling)*, *Anthospermum aethiopicum, Athanasia trifurcata*, *Avena fatua**, *Cliffortia juniperifolia, Disparago ericoides, Eragrostis curvula, Erica discolor, Leucadendron xanthoconus, Metalasia* sp., *Osteospermum moniliferum, Pelargonium capitatum*, *Thamnochortus insignis.*	  
VOD0003 S 34° 24’ 26.05” E 19° 10’ 12.95”	Alongside Berghof the vegetation is indigenous but with alien *Acacia saligna** invading. The plant community is the same as that described above but with *Metalasia densa* dominant. Areas in the road reserve have been cleared at some point and now the *Thamnochortus insignis* seedlings are re-establishing.	

		 
VOD0004 S 34° 24’ 26.53” E 19° 10’ 16.77”	At this location outside Berghof, the dense stand of *Thamnochortus insignis* has ousted most other plants.	
VOD0005 S 34° 24’ 26.47” E 19° 10’ 19.44”	The same plant community as describe above is found here but with a few large shrubs of *Phylica buxifolia*. *Searsia lucida* also occurs and young sapling of *Pinus radiata** are present. The abundance of the shrub *Anthospermum aethiopicum* indicates a high level of disturbance and degradation of the plant community.	

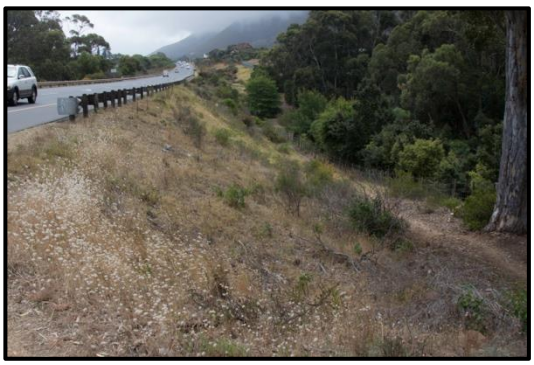
		
VOD0006 S 34° 24’ 26.71” E 19° 10’ 21.58”	At this location is a dense stand of low to mid-high *Erica* sp. (not in flower and not identified) that is dominant. Companion species include, *Anthospermum aethiopicum, Carpobrotus edulis*, *Cliffortia juniperifolia*, *Ehrharta villosa*, *Eragrostis curvula*, *Geranium incanum*, *Helichrysum cymosum*, *Helichrysum pandurifolium*, *Hyparrhenia hirta*, *Lagurus ovatus*, *Passerina corymbosa, Pelargonium capitatum, Plantago lanceolata*, Searsia lucida, Stoebe plumosa, Struthiola myrsinites* and *Tarchonanthus littoralis.*	 
VOD0007 S 34° 24’ 26.85” E 19° 10’ 26.45”	*Degraded fynbos occurs at this location, dominated by Metalasia densa. Other species recorded include,* *Anthospermum aethiopicum (common),* *Thamnochortus insignis (only a few poorly developed individuals) Acacia saligna*, Athanasia trifurcata, Helichrysum pandurifolium, Hyparrhenia hirta (on edge of road verge), Lagurus ovatus, Passerina corymbosa, Pelargonium capitatum and Senecio* cf. *rigidus.*	

		 
VOD0008 S 34° 24’ 28.26” E 19° 10’ 10.13”	This waypoint was recorded outside Onrus Manor. The same plant community occurs here as that described above but it has been cleared. The *Thamnochortus insignis* has been brush-cut but is now resprouting. The result is that the veld is ‘young’ and species-poor. Species recorded include *Acacia saligna*, Anthospermum aethiopicum, Disparago ericoides, Leucadendron xanthoconus, Metalasia densa, Osteospermum moniliferum* and *Passerina corymbosa.*	 

VOD0009 S 34° 24’ 29.24” E 19° 10’ 55.36”	Tall, mature and dense *Thamnochortus insignis* is found in the road reserve here, with a few shrubs of *Osteospermum moniliferum** and a few *Pinus radiata** saplings. Over the fence (on private property) is a dense stand of woody invasive species comprising *Acacia saligna*, Eucalyptus conferuminata** (spider-gum), *Leptospermum laevigatum** (Australian myrtle) and *Pinus radiata*.	 
VOD0010 S 34° 24’ 31.08” E 19° 11’ 04.96”	This waypoint is at the signboard to Onrusrivier and Onrusrivier North. *Thamnochortus insignis* occurs in a mature linear stand along the edge of the mowed road verge. The vegetation between the fence and the row of *T. insignis* is dominated by *Helichrysum* sp. Other species include, *Anthospermum aethiopicum, Berzelia lanuginosa, Leonotus leonurus*, *Passerina corymbosa and a handful of sedge species (unidentified).*	 

VOD0011 S 34° 24’ 32.05” E 19° 11’ 11.53”	This location is near Chanteclair Avenue intersection. The vegetation consists of the same community with abundant *Thamnochortus insignis*. Invasive *Leptospermum laevigatum** is common and *Acacia saligna** is present. This area has a drainage ditch to a culvert at the intersection and *Cliffortia juniperifolia*, *Hypericum revolutum** and *Stenotaphrum secundatum* (buffalo grass). Erica	 
VOD0012 S 34° 24’ 33.99” E 19° 11’ 19.99”	This waypoint was recorded outside Kidbrooke Place. Alongside the tarmac is a highly disturbed verge and then a concrete drainage ditch. On the estate side of the ditch is a moderately steep embankment with secondary fynbos vegetation. In the road reserve *Thamnochortus insignis* is dominant. The fynbos is very dense but with low sensitivity. Other species include *Acacia saligna**, *Cliffortia juniperifolia*, *Gnidia squarrosa, Hypericum revolutum**, *Lagurus ovatus**, *Metalasia densa*, *Osteospermum moniliferum*, *Passerina corymbosa*, *Protea neriifolia*, *Protea repens* and *Struthiola* sp. *Eucalyptus ficifolia, Pinus radiata* and *Leucadendron xanthoconus* form a dense stand on the private property adjacent to this waypoint. At the 26.0 km marker is a dense, mature stand of *Hypericum revolutum**. This species is invasive and must be removed.	 

		
VOD0013 S 34° 24’ 34.87” E 19° 11’ 25.03”	A patch of invasive *Nephrolepis cordifolia* subsp. *cordifolia** is found on the embankment at this location. *Thamnochortus insignis* forms a dense stand on the upper part of the slope along the fence. In addition, another stand of invasive *Hypericum revolutum* is located here and should be removed. Other species recorded here include *Aristea capitata, Helichrysum* sp., *Hypericum revolutum**, *Kiggelaria africana*, *Leptospermum laevigatum**, *Metrosideros excelsa** (New Zealand Christmas Tree – invasive!), *Nephrolepis cordifolia** and *Passerina corymbosa.*	  

VOD0014 S 34° 24’ 36.31” E 19° 11’ 31.28”	This waypoint is outside Kidbrooke Place. The embankment above the concrete drain has a stand of *Pennisetum macrourum* (riverbed grass) with *Conyza scabrida* and *Hypericum revolutum**. Immediately adjacent is a dense stand of Kikuyu grass (*Pennisetum clandestinum*) with *Pelargonium cucullatum, Helichrysum cymosum, Helichrysum pandurifolium, Conyza scabrida* and *Carpobrotus edulis* amongst the Kikuyu grass. A stand of fynbos dominated by Salvia africana-caerulea is also found here. Towards the Onrus River bridge are small stands of *Thamnochortus insignis* interspersed with invasive Kikuyu grass. *Pelargonium cucullatum* and *Lagurus ovatus* occur in the vegetation matrix.	  
VOD0015 S 34° 24’ 38.78” E 19° 11’ 41.94”	The east side of the Onrus River bridge is highly disturbed and invaded by alien invasive plants. From the bridge eastwards, the embankment is vegetated with dense *Thamnochortus insignis* with the same companion species as mentioned above but with invasive *Cortederia selloana* (Pampas grass) present.	

		
VOD0016 S 34° 24' 40.37" E 19° 11' 48.20"	This waypoint is east of the Onrus River at the point from which there is no more natural or semi-natural vegetation as far as the intersection.	

Table 2. Vegetation along the proposed Amana Road.

Waypoints	Descriptive Notes	Illustrations
ONR1 S 34º 25' 33.87" E 19º 19'11.9"	Only a single representative waypoint was recorded along the proposed Amana Road route. The vegetation is well-developed, dense, mid-high to tall fynbos shrubland on brown sandy soil. A footpath runs along the proposed route and there are traces of a previously tarred road. Below is a composite but not exhaustive list of the plant species recorded along the designated route. *Acacia saligna*, Agapanthus africanus, Anthospermum aethiopicum, Aspalathus* sp. (no flowers), *Athanasia crithmifolia, Athanasia trifurcata, Avena fatua*, Berzelia lanuginosa, Briza minor*, Carpobrotus edulis, Cassytha ciliolata, Cliffortia juniperifolia, Cliffortia ruscifolia, Ehrharta* sp., *Elegia tectorum, Elytropappus rhinocerotis, Erepsia* sp., *Erica* sp. (no flowers), *Euryops virgineus, Gnidia juniperifolia, Helichrysum pandurifolium, Helichrysum cymosum, Hyparrhenia hirta, Lagurus ovatus*, Leonotus*	 

	leonurus, Leptospermum laevigatum, Leucadendron* sp., *Metalasia densa, Osteospermum moniliferum, Passerina corymbosa, Pelargonium cucullatum, Plantago lanceolata*, Raphanus raphanistrum*, Schinus terebinthifolia*, Searsia lucida, Searsia* sp. *Senecio rigidus*, *Setaria* sp., *Spartium junceum**, *Stenotaphrum secundatum, Stoebe plumosa, Stoebe spiralis, Struthiola ciliata, Taraxacum officinale**, *Thamnochortus insignis* and *Trifolium angustifolium**.	 

Table 3. Terrain of the proposed Berghof – Kidbrooke Place link road.

Waypoints	Notes	Illustrations
ONR2 S34º 24’ 18.15” E19º 10’ 23.76”	The proposed link road between Berghof (Lobelia Street) and Kidbrooke Place (Chanteclair Avenue) would be aligned through the former landfill site. Immediately adjacent to Berghof, there is remnant fynbos that has been heavily degraded by trees having grown there and subsequently being felled. The physical effects of the invasive trees as well as the removal of the trees has resulted in vegetation with poor condition. Further east, the area is completely transformed and mostly vegetated with exotic *Eucalyptus cladocalyx* (sugar gum) and *Eucalyptus conferuminata* (spider gum) as well as other invasive plant species such as *Pinus halepensis* (Aleppo Pine), *Hakea drupacea* (sweet-scented hakea) and *Acacia* spp. Owing to its generally transformed state the terrain of the proposed link road route has very low botanical sensitivity.	 

Table 4. Vegetation alongside the fence of and reconstruction of the entrance to Kidbrooke Place where the new entrance and road would be built.

Waypoints	Notes	Illustrations
ONR3 S34º 24’ 18.15” E19º 10’ 23.76”	This waypoint was recorded on Chanteclair Avenue where the new entrance to Kidbrooke Place is proposed. The vegetation is disturbed Hangklip Sand Fynbos on white sandy soil. Species recorded in the road reserve alongside Kidbrooke Place include *Acacia longifolia*, Acacia saligna**, *Carpobrotus edulis*, *Ceratonia siliqua (carob)**, *Cliffortia juniperifolia*, *Eucalyptus sp.** , *Lampranthus aureus*, *Leptospermum laevigatum**, *Metalasia densa*, *Osteospermum moniliferum*, *Pinus halepensis**, *Stoebe plumosa* and *Thamnochortus insignis.*	   

7. Conservation Status

Road reserves are often important corridors for conservation since they can form links of natural or semi-natural zones between areas of undisturbed habitat to ensure ecological connectivity. Such linkages provide vital connections between larger areas of habitat that have not been disturbed or completely transformed. In the case of the section of the R43 road between Vermont Avenue and Hemel-en-Aarde Road, however, the road reserve has been disturbed to a greater or lesser extent. It is also surrounded by suburbia and although it harbours indigenous plant species, its ecological functionality and value as a biodiversity corridor is assumed to be low.

The Hangklip Sand Fynbos (Endangered A1) that originally occurred is largely altered as is the Critically Endangered (D1) Overberg Sandstone Fynbos (Government Gazette, 2011). In the road reserve in this case, what may appear to be intact fynbos is in fact secondary vegetation that has developed after road-building and periodic maintenance by Overstrand Municipality and the proprietors of the adjacent residential estates. The latter, in some places e.g., outside Kidbrooke Place have cleared the fynbos in the road reserve.

For the above reasons, the classification of the habitat along the R43 (study section) in the Western Cape Biodiversity Spatial Plan [WCBSP] (CapeNature, 2017; Pence, 2017; Pool-Stanvliet, 2017) indicates no Critical Biodiversity Area 1 (CBA1) units or CBA2 units as well as no Ecological Support Areas 1 (ESA1). Only the Onrus River has been classified as Ecological Support Area 2 (ESA2) (Figure 8).

The conclusion drawn from field observations as well as the WCBSP is that the road corridor in question has low to very low sensitivity and low conservation value. In addition, no plant species of conservation concern (threatened Red List species) were recorded.

With respect to the proposed Amana Road, the vegetation where it would be aligned is secondary fynbos vegetation and is not mapped as a CBA or ESA (Figure 9). Although the fynbos at this site is aesthetically appealing, and has numerous species, it is not sensitive.

The area of the disused landfill where the Berghof—Kidbrooke Place link road would be built has very low botanical sensitivity and the classification of this area as mainly ESA1 but partly CBA1 and CBA2 is questionable. There is little chance that this area could ever be rehabilitated.

The Kidbrooke Place entrance has low botanical sensitivity and is not mapped as a CBA or ESA (Figure 9).

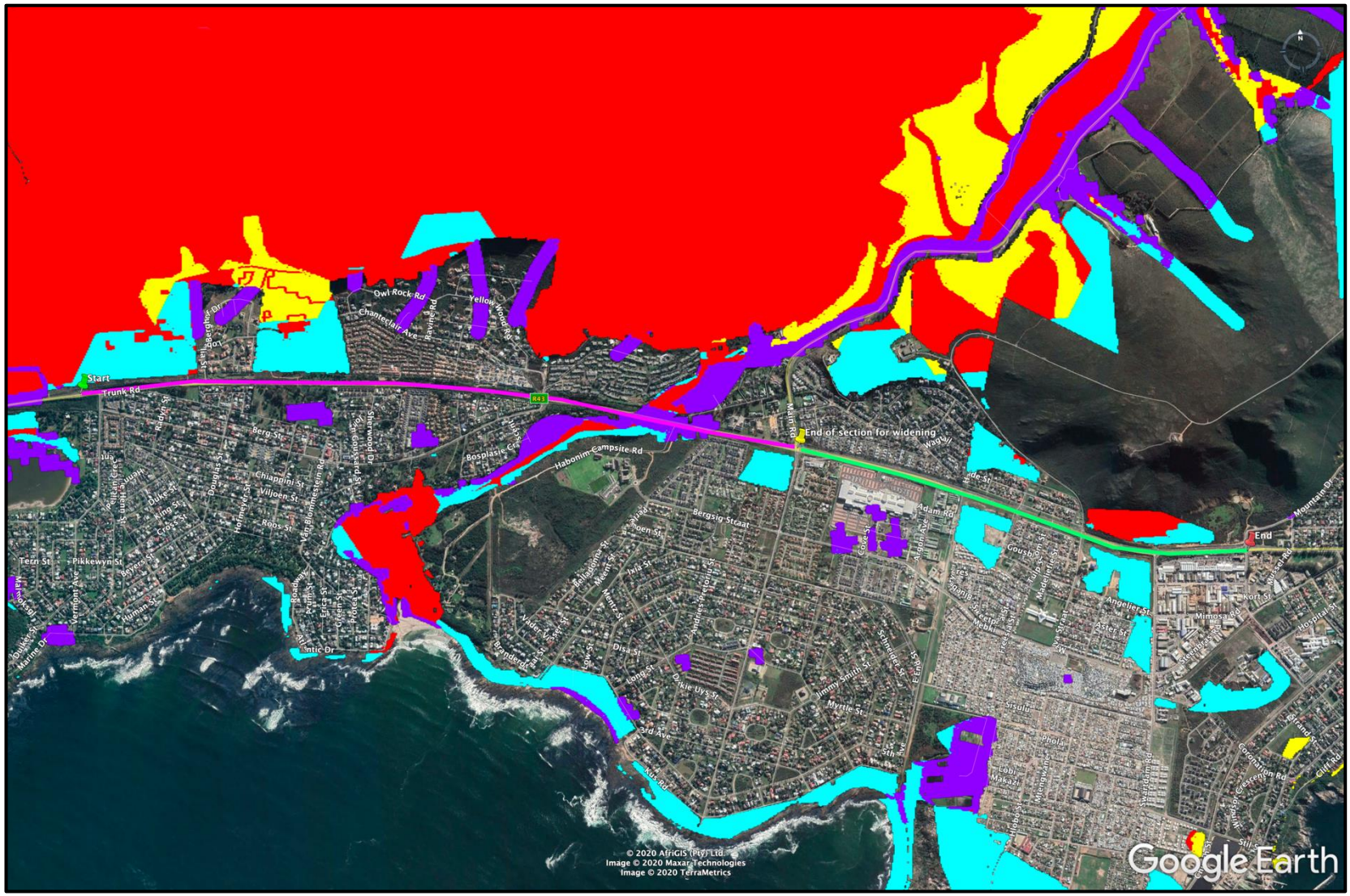


Figure 8. Google Earth ™ aerial image with Critical Biodiversity Areas map [WCBSP] superimposed for the area from Vermont Avenue in the west (start) and Hemel-en-Aarde in the east at the end of the survey route being the end of the section that would be widened (pink line). The green line represents the section that would be resealed. The red-shaded areas are CBA1 and the yellow-shaded areas CBA2; the light-blue areas are ESA1 and the purple areas are ESA2.

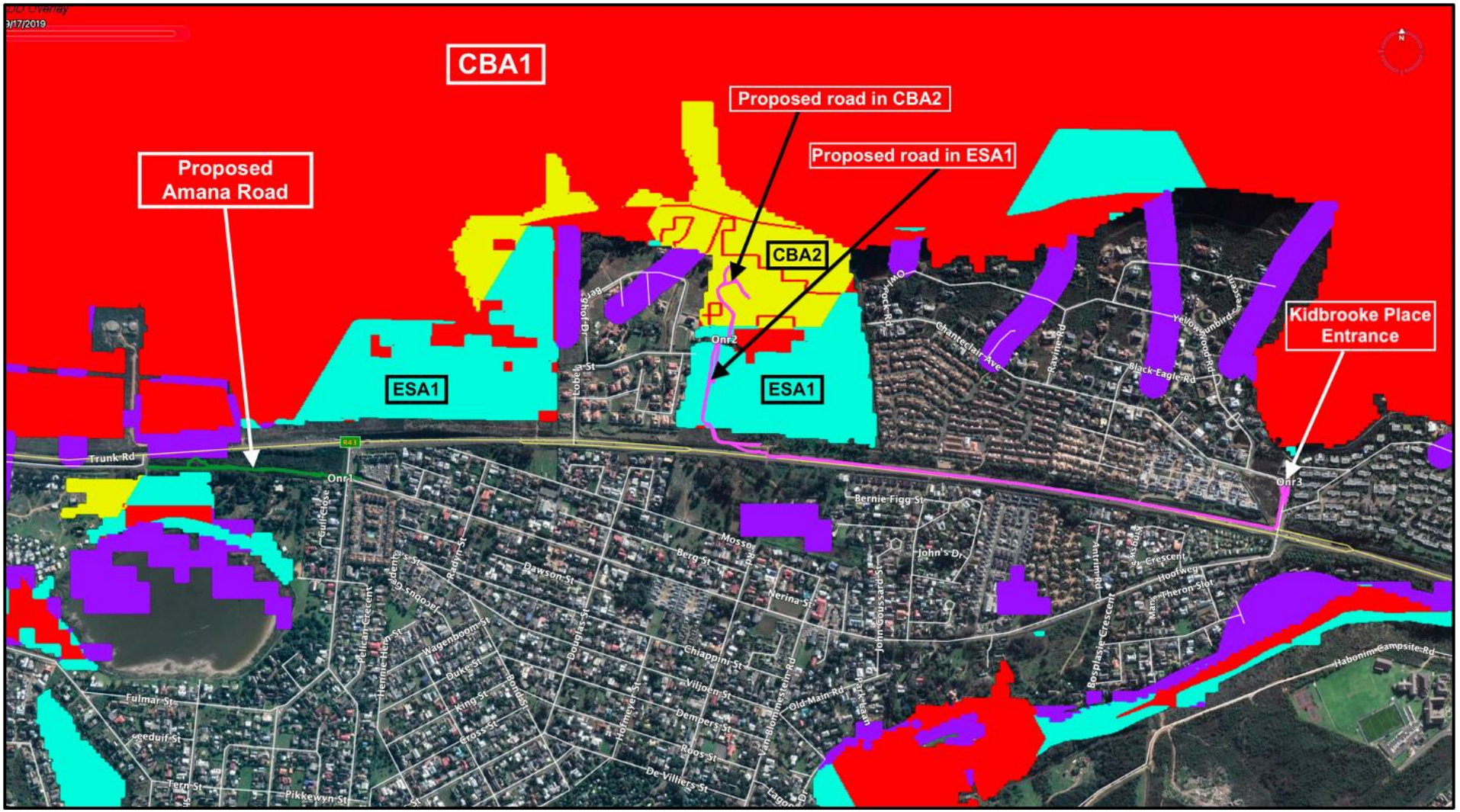


Figure 9**.** Magnified Google Earth ™ aerial image with Critical Biodiversity Areas map [WCBSP] superimposed for the area from the proposed Amana Road (Vermont Avenue) in the west (start) and entrance to Kidbrooke Place in the east. The green line represents the Amana Road route, and the pink line represents the survey route for the survey of the Berghof – Kidbrooke Place link road and the entrance to Kidbrooke Place. The red-shaded areas are CBA1 and the yellow-shaded areas, CBA2; the light-blue areas are ESA1 and the purple areas are ESA2.

8. Impact Assessment

As has been described above, the vegetation along the R43 between Vermont Avenue and Hemel-en-Aarde Road is variable and results from roadbuilding, clearing of vegetation and to some extent invasion by alien invasive species. Probably the most significant 'invasive' is the fynbos species *Thamnochortus insignis* that is not strictly a native of the Walker Bay area. Virtually all the vegetation in the road corridor is secondary in nature and nowhere was undisturbed 'pure' Hangklip Sand Fynbos or Overberg Sandstone Fynbos found. The impact of the proposed road dualling will thus not result in any great negative impact.

The proposed Amana Road route is through a patch of fynbos (putative Hangklip Sand Fynbos) although this vegetation is also secondary since there are definite signs to the area having been disturbed in the past. The impact of construction of the new road would be **Medium** to **Low Negative**.

The construction of the link road between Berghof and Chanteclair Avenue, Kidbrooke Place, would not affect any fynbos vegetation of importance. The road would mostly be through an area that is highly transformed and infested with alien invasive trees. The impact would be Low Negative. The proposed redevelopment of the Kidbrooke Place entrance and link road would result in a **Low Negative** impact.

8.1 The 'No Go' scenario

In the case of the 'No Go' scenario, the proposed road upgrade along the R43 would not take place. The roadside vegetation would thus not be affected any more than it is at present due to maintenance i.e. mowing and removal of invasive trees. The habitat in the roadside corridor would thus remain largely unchanged.

8.2 Impacts along the R43

8.2.1 Direct Impacts of the R43 upgrade and reseal.

Direct impacts are those impacts that would be caused specifically by the envisaged road dualling. As far as this study is concerned, the direct impact would be any change to a secondary fynbos plant community, even though it has constituent indigenous species. Owing to the limited variability of the vegetation in the road reserve along the surveyed section, only one impact assessment table is presented (Table 5) that is applicable to the entire study area of the R43.

This is done to simplify the impact assessment and to obviate the need for numerous impact assessment tables that would have the same outcome.

It is anticipated that the road widening and upgrading on the north side of the carriageway of the R43 would mostly have a **Low Negative** impact due to the already highly degraded condition of the road shoulder and road verge and the altered (secondary) nature of the rest of the mix of Hangklip Sand Fynbos and Overberg Sandstone Fynbos vegetation in the road reserve.

The reseal would not have any negative impacts.

Table 5. Impact and Significance – Secondary fynbos vegetation and habitat including plant species at along the R43 (north side) between Vermont Avenue and Hemel-en-Aarde Road due to construction and operational activities.

CRITERIA	'NO GO' ALTERNATIVE	Upgrade (dualling) of R43 between Vermont Avenue and Hemel-en-Aarde Road	
Nature of direct impact (local scale)	**Loss of secondary fynbos vegetation of low conservation value**		
		WITHOUT MITIGATION	WITH MITIGATION
Extent	Local	Local	Local
Duration	Long-term	Long-term	Long-term
Intensity	Low	Low	Low
Probability of occurrence	High	High	High
Confidence	High	High	High
Significance	Low Negative	Low Negative	Low Negative
Nature of Cumulative impact	**Loss of secondary fynbos vegetation of low conservation value**		
Cumulative impact prior to mitigation	N/A N/A	Low negative	Low negative
Degree to which impact can be reversed	Limited		
Degree to which impact may cause irreplaceable loss of resources	Low to Very low		
Degree to which impact can be mitigated	Limited		
Proposed mitigation	None		
Cumulative impact post mitigation	Very low negative		
Significance of cumulative impact (broad scale) after mitigation	Very low negative		

8.2.2 Indirect Impacts

No indirect impacts of the proposed upgrade of the R43 were identified.

8.2.3 Mitigation

- No specific mitigation measures would be required to lower any negative impacts since the impacts would be **Low negative** anyway. However, it is advocated that there should be restorative action of the vegetation within the road reserve to encourage revegetation albeit by a secondary mix of plant species.
- The construction of the dualled road would result in high levels of disturbance of the road reserve. This would be highly beneficial to unwanted alien invasive plants such as *Acacia saligna*, *Leptospermum laevigatum* and *Hypericum revolutum*. The most important mitigation measure would be to monitor the occurrence of these species and to prevent their spread in the road corridor.
- *Pennisetum clandestinum* (Kikuyu grass) was found in a few places. It is important that this grass is removed since it smothers other plants, and fynbos plants encouraged in its place.

8.3 Impacts of the construction and operation of the proposed Amana Road.

8.3.1 Direct Impacts along the proposed Amana Road route.

The impact of the proposed Amana Road is assessed apart from the other elements of the study (Table 6). As noted above, the impact of the construction and operation of the 'new' Amana Road would result in **Medium** to **Low Negative** impacts if mitigation measures are applied. If the road is not built, the *status quo* would persist and have a **Low Negative** impact.

Table 6. Impact and Significance of the construction and operation of the proposed Amana Road.

CRITERIA	'NO GO' ALTERNATIVE	Construction and operation of Amana Road	
Nature of direct impact (local scale)	**Loss of secondary fynbos (Hangklip Sand Fynbos) vegetation along the Amana Road new route**		
		WITHOUT MITIGATION	WITH MITIGATION
Extent	Local	Local	Local
Duration	Long-term	Long-term	Long-term
Intensity	Low	Low	Low
Probability of occurrence	High	High	High
Confidence	High	High	High
Significance	Low Negative	Medium Negative	Low Negative

Nature of Cumulative impact	**Loss of secondary fynbos vegetation of moderate conservation value**		
Cumulative impact prior to mitigation	N/A	Low negative	Very low negative
Degree to which impact can be reversed	Partly reversible		
Degree to which impact may cause irreplaceable loss of resources	Low		
Degree to which impact can be mitigated	Moderate		
Proposed mitigation	1. Work should be limited to the footprint of the road i.e., no vehicle or pedestrian activity outside the demarcated area of the road. 2. No stockpiling of material outside the footprint of the road. 3. Restoration of any areas that are required for construction but not required during the operational phase. 4. All invasive alien plants between the Amana Conference Centre fence and the R43 must be eradicated.		
Cumulative impact post mitigation	Low negative		
Significance of cumulative impact (broad scale) after mitigation	Very low negative		

8.3.2 Indirect Impacts

No indirect impacts of the proposed construction of Amana Road were identified.

8.3.3 Mitigation

The vegetation along the Amana Road route is semi-natural ‘fynbos’ but has a number of alien invasive plants amongst the fynbos. The alien invasive species must be removed from the local area since the development of the road could enhance the spread of these species.

The fynbos within and near the road footprint in not sensitive but areas outside the road reserve should be observed as ‘no go’ areas for vehicles, pedestrians and stockpiling of material. The vegetation not directly affected by the road should remain undisturbed as far as possible.

Any areas that are required for construction but not required during the operational phase should be restored post construction.

8.4 Impacts of the construction and operation of the proposed link road between Berghof and Kidbrooke Place.

8.4.1 Direct Impacts along the proposed link road between Berghof and Kidbrooke Place.

The proposed link road between Berghof and Kidbrooke Place would affect a small area (< 300m^2) of degraded fynbos but further than that it would traverse a highly transformed area. The impact would thus be **Low Negative** (Table 7).

Table 7. Impact and Significance of the construction and operation of the proposed Berghof – Kidbrooke Place link road.

CRITERIA	'NO GO' ALTERNATIVE	Construction and operation of the Berghof – Kidbrooke Place link road.	
Nature of direct impact (local scale)	**Loss of degraded fynbos vegetation and highly transformed terrain along the proposed Berghof**		
		WITHOUT MITIGATION	WITH MITIGATION
Extent	Local	Local	Local
Duration	Long-term	Long-term	Long-term
Intensity	Low	Low	Low
Probability of occurrence	High	High	High
Confidence	High	High	High
Significance	Low Negative	Low Negative	Very Low Negative
Nature of Cumulative impact	**Loss of degraded fynbos vegetation of low conservation value**		
Cumulative impact prior to mitigation	N/A	Low negative	Very low negative
Degree to which impact can be reversed	Not reversible		
Degree to which impact may cause irreplaceable loss of resources	Low		
Degree to which impact can be mitigated	Not required		
Proposed mitigation	None		
Cumulative impact post mitigation	Very low negative		
Significance of cumulative impact (broad scale) after mitigation	Very low negative		

8.4.2 Indirect Impacts

No indirect impacts of the proposed construction of the Berghof – Kidbrooke Place link road were identified.

8.4.3 Mitigation

No mitigation proposed.

8.5 Impacts of the reconstruction of the entrance to Kidbrooke Place and short access road.

8.5.1 Direct Impacts of the reconstruction of the entrance to Kidbrooke Place and construction of a short section of road from Chanteclair Avenue into the eastern part of Kidbrooke Place.

The redevelopment of the entrance to Kidbrooke Place and the short section of road linking Chanteclair Avenue to Kidbrooke Place are treated as one construction project. They together would have a **Low Negative** impact (Table 8).

Table 8. Impact and Significance of the construction and operation of the new Kidbrooke Place entrance and the short section of road linking Chanteclair Avenue into the eastern part of Kidbrooke Place.

CRITERIA	**'NO GO' ALTERNATIVE**	**Construction and operation of the new entrance to Kidbrooke Place and extension of Chanteclair Avenue into Kidbrooke Place.**	
Nature of direct impact (local scale)	**Loss of low-quality fynbos vegetation and transformed terrain around the existing Kidbrooke Place entrance and corridor of land to link Chanteclair Avenue with Kidbrooke Place.**		
		WITHOUT MITIGATION	WITH MITIGATION
Extent	Local	Local	Local
Duration	Long-term	Long-term	Long-term
Intensity	Low	Low	Low
Probability of occurrence	High	High	High
Confidence	High	High	High
Significance	Low Negative	Low Negative	Low Negative
Nature of Cumulative impact	**Loss of low-quality fynbos vegetation, putatively Hangklip Sand Fynbos.**		
Cumulative impact prior to mitigation	N/A	Low negative	Very low negative
Degree to which impact can be reversed	Not reversible		
Degree to which impact may cause irreplaceable loss of resources	Low		

Degree to which impact can be mitigated	Limited
Proposed mitigation	Restoration of fynbos vegetation in areas not affected by construction.
Cumulative impact post mitigation	Very low negative
Significance of cumulative impact (broad scale) after mitigation	Very low negative

8.5.2 Indirect Impacts

No indirect impacts of the proposed reconstruction of the Kidbrooke Place entrance and link between Chanteclair Avenue and Kidbrooke Place were identified.

8.5.3 Mitigation

The only feasible mitigation measure that can be applied is to restore the areas that have been disturbed by construction work but that would not be required post-construction.

8.6 Cumulative Impacts

Owing to the absence of any intact ‘pure’ Hangklip Sand Fynbos and Overberg Sandstone Fynbos in the road reserve along the R43, the road construction activities would not result in any further loss of these endangered vegetation types so cumulative impacts would be negligible. The same would apply for the proposed Amana Road as well as the Berghof—Kidbrooke Place link road and the proposed reconstructed entrance to Kidbrooke Place and the construction of the short link road from Chanteclair Avenue.

9. Conclusions and Recommendations

Only degraded remnants of Hangklip Sand Fynbos and Overberg Sandstone Fynbos occur along the stretch of the R43 earmarked for dualling. Most of the vegetation is secondary and has low to very low sensitivity and low conservation value. There is consequently no botanical constraint that would prevent the proposed construction works to proceed. However, it is recommended that there should be restoration of the road reserve in the post-construction phase to encourage the re-establishment of fynbos vegetation even though the mix of species may not represent any specific type. Much of this restoration is likely to occur passively from seed in the soil but where necessary, grass may be planted as a cover-crop to prevent soil instability and erosion. Wherever alien invasive species occur they must be eradicated, and the vegetation should be encouraged to be fynbos in appearance and general nature even though no specific type would

be represented. This would be visually appealing and would reflect the vernacular vegetation of the area.

With respect to the proposed Amana Road, the impact of the construction can be contained at **Low Negative** if the recommended mitigation measures are applied. Regarding the link road from Berghof to Kidbrooke Place, the impact would be **Low Negative** to **Very Low Negative** and no mitigation is proposed. With the reconstruction of the entrance to Kidbrooke Place and the construction of the short link road from Chanteclair Avenue to the eastern part of Kidbrooke Place, there would be a Low Negative impact and mitigation measures should include the restoration of the areas outside the footprint that would be affected by construction.

Since this main part of this project was undertaken before the promulgation of the "*Procedures for the Assessment and Minimum Criteria for reporting on environmental themes in terms of Section 24 (5) (a) & (h) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), when applying for Environmental Authorisation" ("the Protocols") (Government Notice No. 320 as published in Government Gazette No. 43110 on 20 March 2020)* which came into effect on 9 May 2020, the protocols were not applied. This assessment complies with Appendix 6 of the EIA Regulations, 2014 (as amended).

All elements of the project area supported form a botanical perspective if the proposed mitigation measures are implemented.

10. References

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Report submitted: 21 March 2020; amended on 25 October 2020 and 25 January 2021

Appendix 1: Impact Assessment Methodology – After SLR Consulting

Method of Assessing Impact Significance

The identification and assessment of environmental impacts is a multi-faceted process, using a combination of quantitative and qualitative descriptions and evaluations. It involves applying scientific measurements and professional judgement to determine the significance of environmental impacts associated with the proposed project. The process involves consideration of, *inter alia*: the purpose and need for the project; views and concerns of interested and affected parties (I&APs); social and political norms, and general public interest.

Identification and Description of Impacts

Identified impacts are described in terms of the nature of the impact, compliance with legislation and accepted standards, receptor sensitivity and the significance of the predicted environmental change (before and after mitigation). Mitigation measures may be existing measures or additional measures that were identified through the impact assessment and associated specialist input. The impact rating system considers the confidence level that can be placed on the successful implementation of mitigation.

Evaluation of Impacts and Mitigation Measures

Introduction

Impacts are assessed using SLR's standard convention for assessing the significance of impacts, a summary of which is provided below.
In assigning significance ratings to potential impacts before and after mitigation the approach presented below is to be followed.

1. **Determine the impact consequence rating:** This is a function of the "intensity", "duration" and "extent" of the impact (see Section 0). The consequence ratings for combinations of these three criteria are given in Section 0.

2. **Determine impact significance rating:** The significance of an impact is a function of the consequence of the impact occurring and the probability of occurrence (see Section 0). Significance is determined using the table in Section 0.

3. **Modify significance rating (if necessary):** Significance ratings are based on largely professional judgement and transparent defined criteria. In some instances, therefore, whilst the significance rating of potential impacts might be "low", the importance of these impacts to local communities or individuals might be extremely high. The importance/value which interested and affected parties attach to impacts will be highlighted, and recommendations should be made as to ways of avoiding or

minimising these perceived negative impacts through project design, selection of appropriate alternatives and / or management.

4. **Determine degree of confidence of the significance assessment:** Once the significance of the impact has been determined, the degree of confidence in the assessment will be qualified (see Section 0). Confidence in the prediction is associated with any uncertainties, for example, where information is insufficient to assess the impact.

Criteria for Impact Assessment

The criteria for impact assessment are provided below.

Criteria	Rating	Description
Criteria for ranking of the INTENSITY (SEVERITY) of environmental impacts	**ZERO TO VERY LOW**	Negligible change, disturbance or nuisance. The impact affects the environment in such a way that natural functions and processes are not affected. People / communities are able to adapt with relative ease and maintain pre-impact livelihoods.
	LOW	Minor (Slight) change, disturbance or nuisance. The impact on the environment is not detectable or there is no perceptible change to people's livelihood.
	MEDIUM	Moderate change, disturbance or discomfort. Where the affected environment is altered, but natural functions and processes continue, albeit in a modified way. People/communities are able to adapt with some difficulty and maintain pre-impact livelihoods but only with a degree of support.
	HIGH	Prominent change, disturbance or degradation. Where natural functions or processes are altered to the extent that they will temporarily or permanently cease. Affected people/communities will not be able to adapt to changes or continue to maintain-pre impact livelihoods.
Criteria for ranking the DURATION of impacts	**SHORT TERM**	< 5 years.
	MEDIUM TERM	5 to < 15 years.
	LONG TERM	> 15 years, but where the impact will eventually cease either because of natural processes or by human intervention.
	PERMANENT	Where mitigation either by natural processes or by human intervention will not occur in such a way or in such time span that the impact can be considered transient.
Criteria for ranking the EXTENT / SPATIAL SCALE of impacts	**LOCAL**	Impact is confined to project or study area or part thereof, e.g. limited to the area of interest and its immediate surroundings.
	REGIONAL	Impact is confined to the region, e.g. coast, basin, catchment, municipal region, etc.
	NATIONAL	Impact is confined to the country as a whole, e.g. South Africa, etc.
	INTERNATIONAL	Impact extends beyond the national scale.
Criteria for determining the PROBABILITY of impacts	**IMPROBABLE**	Where the possibility of the impact to materialise is very low either because of design or historic experience, i.e. ≤ 30% chance of occurring.
	POSSIBLE	Where there is a distinct possibility that the impact would occur, i.e. > 30 to ≤ 60% chance of occurring.

Criteria	Rating	Description
	PROBABLE	Where it is most likely that the impact would occur, i.e. > 60 to ≤ 80% chance of occurring.
	DEFINITE	Where the impact would occur regardless of any prevention measures, i.e. > 80% chance of occurring.
Criteria for determining the DEGREE OF CONFIDENCE of the assessment	**LOW**	≤ 35% sure of impact prediction.
	MEDIUM	> 35% and ≤ 70% sure of impact prediction.
	HIGH	> 70% sure of impact prediction.
Criteria for the DEGREE TO WHICH IMPACT CAN BE MITIGATED - the degree to which an impact can be reduced / enhanced	**NONE**	No change in impact after mitigation.
	VERY LOW	Where the significance rating stays the same, but where mitigation will reduce the intensity of the impact.
	LOW	Where the significance rating drops by one level, after mitigation.
	MEDIUM	Where the significance rating drops by two to three levels, after mitigation.
	HIGH	Where the significance rating drops by more than three levels, after mitigation.
Criteria for LOSS OF RESOURCES - the degree to which a resource is permanently affected by the activity, i.e. the degree to which a resource is irreplaceable	**LOW**	Where the activity results in a loss of a particular resource but where the natural, cultural and social functions and processes are not affected.
	MEDIUM	Where the loss of a resource occurs, but natural, cultural and social functions and processes continue, albeit in a modified way.
	HIGH	Where the activity results in an irreplaceable loss of a resource.

Determining Consequence

Consequence attempts to evaluate the importance of a particular impact, and in doing so incorporates extent, duration and intensity. The ratings and description for determining consequence are provided below.

Rating	Description
VERY HIGH	Impacts could be EITHER: of ***high intensity*** at a ***regional level*** and endure in the ***long term***; OR of ***high intensity*** at a ***national level*** in the ***medium term***; OR of ***medium intensity*** at a ***national level*** in the ***long term.***
HIGH	Impacts could be EITHER: of ***high intensity*** at a ***regional level*** and endure in the ***medium term***; OR of ***high intensity*** at a ***national level*** in the ***short term***; OR of ***medium intensity*** at a ***national level*** in the ***medium term;*** OR of ***low intensity*** at a ***national level*** in the ***long term***; OR of ***high intensity*** at a ***local level*** in the ***long term***; OR of ***medium intensity*** at a ***regional level*** in the ***long term.***
MEDIUM	Impacts could be EITHER: of ***high intensity*** at a ***local level*** and endure in the ***medium term***; OR of ***medium intensity*** at a ***regional level*** in the ***medium term***; OR of ***high intensity*** at a ***regional level*** in the ***short term***; OR of ***medium intensity*** at a ***national level*** in the ***short term***; OR of ***medium intensity*** at a ***local level*** in the ***long term***; OR of ***low intensity*** at a ***national level*** in the ***medium term;***

Rating	Description
	OR of ***low intensity*** at a ***regional level*** in the ***long term.***
LOW	Impacts could be EITHER of ***low intensity*** at a ***regional level*** and endure in the ***medium term***; OR of ***low intensity*** at a ***national level*** in the ***short term***; OR of ***high intensity*** at a ***local level*** and endure in the ***short term***; OR of ***medium intensity*** at a ***regional level*** in the ***short term***; OR of ***low intensity*** at a ***local level*** in the ***long term***; OR of ***medium intensity*** at a ***local level*** and endure in the ***medium term.***
VERY LOW	Impacts could be EITHER of ***low intensity*** at a ***local level*** and endure in the ***medium term***; OR of ***low intensity*** at a ***regional level*** and endure in the ***short term***; OR of ***low to medium intensity*** at a ***local level*** and endure in the ***short term.*** OR **Zero to very low intensity** with any combination of extent and duration.

Determining Significance

The consequence rating is considered together with the probability of occurrence in order to determine the overall significance using the table below.

		PROBABILITY			
		IMPROBABLE	**POSSIBLE**	**PROBABLE**	**DEFINITE**
CONSEQUENCE	**VERY LOW**	**INSIGNIFICANT**	**INSIGNIFICANT**	**VERY LOW**	**VERY LOW**
	LOW	**VERY LOW**	**VERY LOW**	**LOW**	**LOW**
	MEDIUM	**LOW**	**LOW**	**MEDIUM**	**MEDIUM**
	HIGH	**MEDIUM**	**MEDIUM**	**HIGH**	**HIGH**
	VERY HIGH	**HIGH**	**HIGH**	**VERY HIGH**	**VERY HIGH**

In certain cases it may not be possible to determine the significance of an impact. In these instances the significance is **UNKNOWN**.

Appendix 2: Botanical Assessment Content Requirements of Specialist Reports, as prescribed by Appendix 6 of GN R326.

Regulation	Content as required by NEMA	Specialist Report Section/Annexure Reference
1 (1) (a)	Details of- (i) The specialist who prepared the report; and	Cover & Page 2
	(ii) The expertise of that specialist to compile a specialist report, including a CV.	Page 2, Appendix 3
1 (1) (b)	A declaration that the specialist is independent in a form as may be specified by the competent authority.	Page 3 & 4
1 (1) (c)	An indication of the scope of, and purpose for which, the report is prepared.	Pages 6 & 7
1 (1)(cA)	An indication of the quality and age of base data used for the specialist report.	Pages 14—27
1 (1)(cB)	A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change.	Pages 14—27
1 (1) (d)	The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment.	Page 13
1 (1) (e)	A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used.	Page 13
1 (1) (f)	Details of an assessment of the specifically identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives.	Pages 31--37
1 (1) (g)	An identification of any areas to be avoided, including buffers.	N/A
1 (1) (h)	A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers.	Pages 8—12, 15, 29, 30
1 (1) (i)	A description of any assumptions made and any uncertainties or gaps in knowledge.	Page 14
1 (1) (j)	A description of the findings and potential implications of such findings on the impact of the proposed activity or activities.	Pages 14--27
1 (1) (k)	Any mitigation measures for inclusion in the EMPr.	Pages 33, 34, 36, 37
1 (1) (l)	Any conditions for inclusion in the environmental authorisation.	None
1 (1) (m)	Any monitoring requirements for inclusion in the EMPr or environmental authorisation	None

Regulation	Content as required by NEMA	Specialist Report Section/Annexure Reference
1 (1) (n)	A reasoned opinion- (i) whether the proposed activity, activities or portions thereof should be authorised; and	Page 39
	(iA) regarding the acceptability of the proposed activity or activities; and	Page 39
	(ii) If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	N/A
1 (1) (o)	A description of any consultation process that was undertaken during the course of preparing the specialist report	N/A
1 (1) (p)	A summary and copies of any comments received during any consultation process and where applicable, all responses thereto	N/A
1 (1) (q)	Any other information requested by the competent authority	N/A

Appendix 3: Curriculum Vitae

Dr David Jury McDonald Pr. Sci. Nat.

Name of Company: Bergwind Botanical Surveys & Tours CC. (Independent consultant)

Work and Home Address: 14 A Thomson Road, Claremont, 7708

Tel: (021) 671-4056 **Mobile:** 082-876-4051 **Fax:** 086-517-3806

E-mail: dave@bergwind.co.za

Website: www.bergwind.co.za

Profession: Botanist / Vegetation Ecologist / Consultant / Tour Guide

Date of Birth: 7 August 1956

Employment history:

- 19 years with National Botanical Institute (now SA National Biodiversity Institute) as researcher in vegetation ecology.
- Five years as Deputy Director / Director Botanical & Communication Programmes of the Botanical Society of South Africa
- Fourteen years as private independent Botanical Specialist consultant (Bergwind Botanical Surveys & Tours CC)

Nationality: South African (ID No. 560807 5018 080)
Languages: English (home language) – speak, read and write
Afrikaans – speak, read and write

Membership in Professional Societies:

- International Association for Impact Assessment (SA)
- South African Council for Natural Scientific Professions (**Ecological Science, Registration No. 400094/06**)
- Field Guides Association of Southern Africa

Key Qualifications:

- Qualified with a M. Sc. (1983) in Botany and a PhD in Botany (Vegetation Ecology) (1995) at the University of Cape Town.
- Research in Cape fynbos ecosystems and more specifically mountain ecosystems.
- From 1995 to 2000 managed the Vegetation Map of South Africa Project (National Botanical Institute).
- Conducted botanical survey work for AfriDev Consultants for the Mohale and Katse Dam projects in Lesotho from 1995 to 2002. A large component of this work was the analysis of data collected by teams of botanists.
- **Director: Botanical & Communication Programmes** of the Botanical Society of South Africa (2000—2005), responsible for communications and publications; involved with conservation advocacy particularly with respect to impacts of development on centres of plant endemism.

- Further tasks involved the day-to-day management of a large non-profit environmental organisation.
- **Independent botanical consultant** (2005 – to present) over 300 projects have been completed related to environmental impact assessments in the Western, Southern and Northern Cape, Karoo and Lesotho. A list of reports (or selected reports for scrutiny) is available on request.

Higher Education

Degrees obtained
and major subjects passed:

B.Sc. (1977), University of Natal, Pietermaritzburg
Botany III
Entomology II (Third year course)

B.Sc. Hons. (1978) University of Natal, Pietermaritzburg
Botany (Ecology /Physiology)

M.Sc. - (Botany), University of Cape Town, 1983.
Thesis title: 'The vegetation of Swartboschkloof, Jonkershoek, Cape Province'.

PhD (Botany), University of Cape Town, 1995.
Thesis title: 'Phytogeography endemism and diversity of the fynbos of the southern Langeberg'.

Certificate of Tourism: Guiding (Culture: Local)
Level: 4 Code: TGC7 (Registered Tour Guide: WC 2969).

Employment Record:

January 2006 – present: Independent specialist botanical consultant and tour guide in own company: **Bergwind Botanical Surveys & Tours CC**
August 2000 - 2005 : Deputy Director, later Director Botanical & Communication Programmes, Botanical Society of South Africa
January 1981 – July 2000 : Research Scientist (Vegetation Ecology) at National Botanical Institute
January 1979—Dec 1980 : National Military Service

Further information is available on my company website: www.bergwind.co.za