

REVIEW OF THE ECOLOGICAL SPECIALIST REPORTS: PROPOSED PHASE 1 EXTENSION OF HOUMOED AVENUE (SUNNYDALE, NOORDHOEK)

DEADP 16/3/3/1/A6/45/2027/19, dd 22 November 2019

INTRODUCTION

This review considers the ecological correctness of an Environmental Authorisation (EA)¹ issued to permit the construction of a road, to be built on fill placed in and along the edge of a large urban wetland. The applicant, as well as the commenting and authorising authorities, have been informed *inter alia* by two specialist reports (freshwater ecosystems and fauna) that deem the ecological impacts of the proposed road to be low and of minimal consequence after mitigation. This review finds otherwise, viz. that the information placed before the decision-makers is deplorably insufficient, and that the authorisation will simply condone the otherwise entirely-avoidable degradation of a large area of hitherto largely-undisturbed wetland. Furthermore that the decision, while ostensibly upholding commitments to social justice inequities, is contrary to national, regional and local policy on environmental protection in general and for wetlands in particular.

The focus of the application is the Sunnydale Wetland (aka the 'Pick 'n Pay' Reedbeds) which lies between the southern boundary of Lake Michelle and the northern edge of Sunnydale. The wetland forms an east-west aligned band of reeds, approximately 200-250 m in north-south width. It is along the southern bank of the wetland that Houmoed Avenue is to be extended south-westwards over a distance of some seven hundred meters. Currently the wetland is relatively undisturbed by human activity and the insertion of the road constitutes a greenfield development. The construction of the twenty meter wide road, designed to carry 1000 vehicles per hour at peak periods, along the entire southern edge of the wetland, will demonstrably and irretrievably destroy the extant tranquility and isolation of this wetland node.

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ABOUT THIS REVIEWER

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MATERIALS REVIEWED

Two specialist reports, these being the Freshwater Ecosystems Impact Assessment Report (Freshwater Consulting cc, July 2018 revision, authored by 'Ollis') and the Faunal Impact Study (3Foxes Biodiversity Solutions, July 2018 revision, authored by 'Todd') were reviewed (these are cited by author name hereunder). Additional relevant information was gleaned *inter alia* from the Traffic Study and Noise Impact Assessments. All of the aforementioned reports were sourced from the website of Chand Environmental Consultants ('Chand'), the EAP managing the application process. A third specialist report, arising from an earlier (2002) assessment of the same application, was made available during the initial review process and information therefrom is included in this version.²

OVERVIEW OF THE PROPOSED ROAD EXTENSION

The application for an EA is for the creation of a new section of road (Houmoed Avenue Extension) placed against the southern edge of the Sunnydale Wetland located between Sunnydale and Lake Michelle. The road platform will be at least twenty

² Assessment of the potential impacts of the proposed extension of Hou Moed (sic) Avenue on the Noordhoek Wetlands. Report prepared for the South Peninsula Authority, City of Cape Town by G Ractliffe, Freshwater Consulting Group. October 2002 (hereafter the 'Ractliffe Report').

meters in width and will require fill to be placed in the wetland. The road is designed for a capacity of 1000 vehicles per hour, a level that will be reached within a very short time after construction (Table 4.4: Link analysis, Traffic Study). The wetland environment and surrounds will thus be transformed from no vehicular disturbance to a state of thousands of vehicles per day.

ROAD EFFECT

Roads present a stark clash between ecological and public infrastructures. The principal road ecology consideration for evaluating the impacts associated with a new road devolves to the magnitude of the 'road effect', i.e. the spatial extent of various impacts, singly or in combination, arising from traffic movement. These impacts range from water and soil pollution (via runoff from the road surface contaminated with deposited or leaked trace metals and oils), and/or air pollution (from exhaust gasses); traffic noise (ranging from a variety of engine noises (motorbikes, cars, taxis, trucks and busses) to sub-bass sound pressure from vehicle sound systems); alteration in lighting patterns from street lighting; vibration (which can affect a range of organisms from earthworms to snakes and some bird species); light disturbance from car headlights at night; sunlight reflecting off windows and shiny vehicle surfaces, particularly as the sun is setting; distribution of seeds carried and deposited by vehicles; alteration of roadside vegetation to disturbance-tolerant species as a result of road verge management; habitat fragmentation and human disturbance from pedestrian movement, including a very common increase in animal poaching and/or the risk of fires in the roadside environment as a result of easy access to the wetland edge. Poaching in Cape Flats wetlands is rife and associated with the access provided by roads.

Road noise is a particularly noxious, ecologically-disruptive component of the road effect. In animals it can, *inter alia*, affect hearing, increase stress hormone levels and disrupt breeding communications. The noise generated by an average vehicle generates a noise level of 68 dBA 15 meters from the road edge - within the range of sound that cause physiological damage and stress. High sound pressure levels persist over longer distances, resulting in a spatially extensive zone of impact. Traffic

from roads is considered to be the "*most pervasive source of anthropogenic noise*".³ While culverts present an option to allow animal passage beneath roads, these same structures can also act as amplifiers of traffic noise that discourages biota from attempting to use them. They have also been found to be associated with poaching where the culverts are used to position snares.

The aforementioned factors result in a veritable Pandora's Box of acute and chronic impacts which, over time, progressively degrade the wetland environment over increasing asymmetric distances from the road edge, ranging from 50 m for soil pollutants, to 1500 m or more for breeding bird densities and/or animal avoidance of the roadside areas. A busy road can thus progressively 'sterilise' a very wide area on either side. In general terms, wetland species diversity has been shown to be negatively-correlated with roads for up to 2 km from the roadside. Negative road impacts on aquatic animals have been demonstrated within 1.5 km of ponds and wetlands for turtles, and within 2 km for amphibians. *Importantly, road effect impacts are not immediate, rather they are progressive and can take 30-40 years to materialise fully.*⁴

The impact of roads on the natural environment, especially within a greenfield scenario, should be treated with especial caution and "*impact statements concerning roads which disregard disturbance and other long-distance effects on the fauna should be rejected*".⁵ Research has revealed that "*short term environmental assessments of road construction measures on wetland biodiversity... are likely to substantially underestimate the real effects*".⁶ The magnitude of ecological effects of traffic disturbance is considered to outweigh direct deaths due to vehicle collisions (see hereunder).

³ Langen et al (2015) Road Effects on Habitat Quality for Small Animals. Chapter 4 in Roads and Ecological Infrastructure: Concepts and Applications for Small Mammals (Andrews et al., eds). Johns Hopkins University Press. Baltimore.

⁴ Data from *Assessing and Managing the Ecological Impacts of Paved Roads*, National Academy of Sciences (2005); Findlay and Bourdages (2001) Response time of wetland biodiversity to road construction on adjacent lands. *Conservation Biology* 14:86-94; Forman and Alexander (1998) Roads and their major ecological effects. *Annual Review of Ecology and Systematics* 29:207-231; Trombulak and Frissell (2000) *Conservation Biology* 14:18-30.

⁵ Van der Zande et al (1980) The impact of roads on the densities of four bird species in an open field habitat - evidence of a long distance effect. *ScienceDirect*.

⁶ Findlay and Bourdages (2001) *ibid*.

OTHER IMPACTS

In addition to the suite of constantly alternating and highly variable disturbances associated with the insertion of a new road, the road itself presents a range of direct impacts such as loss of wetland area (physical occlusion), the introduction of fill which may bring with it the seeds of alien or undesirable plant species, alterations to drainage patterns, hydraulic occlusion of groundwater flows due to road compaction and the weight of the road platform, as well as forming a linear barrier.

Allied to the aforementioned road effect are animal mortalities arising from vehicles, the leading direct cause of vertebrate mortalities on land - and wherein roads near wetlands and ponds present the highest rates of roadkill.⁷ In this regard it must be borne in mind that roadkill mortalities disproportionately affect the population structure of the affected species — for example in the case of amphibians, mature females and toadlets are killed in greater numbers relative to the total population.

THIS REVIEW

With the foregoing in mind, this review has examined how the two specialist reports evaluated the proposed road and reached their conclusions, based on a substantive appreciation of the contemporary ecological importance and functioning of the wetland, the latter seen within the context of its landscape and hydraulic settings. This analysis then provides an indication of the information presented to the EA decision makers.

- **Importance of the need to protect wetlands**

Conspicuously absent from both the Ollis and Todd reports is any statement referring to the generally-acknowledged importance of wetland protection. The South African National Biodiversity Assessment (2018) reveals that wetlands, along with estuaries "*are the most threatened and least protected ecosystems in South Africa*". This fact, considered together with the ecological and functional importance of the Sunnydale

⁷ Forman and Alexander (1998) *ibid.*

wetland (as detailed hereunder) highlights the need for wetland protection to have been central to this EA process.

At a local level, various key reports such as the 2018 City of Cape Town Biodiversity Report, attest to the threatened and degraded status of lowland ecosystems⁸ in and around Cape Town — of which the Noordhoek wetlands provide a seminal example. Urban expansion and development are singled out as the culprits. The 2017 City of Cape Town Environmental Strategy Report highlights the degradation of the natural environment and its progressive loss of ability to sustain ecosystem services - and hence human well-being.

A recent enquiry by this authors' office to the Department of Water and Sanitation revealed that a total of just 15 Water Use Licences have been issued in applications where wetlands were involved — reflecting the rarity of such approvals.

According to the South Peninsula Spatial District Plan (2012), the Noordhoek Wetlands are a Core 1 "green areas" requiring of special conservation considerations and protections.

- **Neither report places the wetland within the context of its position in the catchment and its functional hydraulic role**

The Ollis report makes reference to hydrology, yet apart from an indirect reference to the 1999 Van Wieringen geohydrology report, does not cite any hydrological reports and fails to identify the 1999 KFD Wilkinson Engineering Report⁹ - which dealt exclusively with the catchment hydrology and hydraulics — and which formed part of the seven report series for the 1999 Noordhoek Wetland Management Plan.¹⁰ The Todd report questions whether the wetland (the 'vlei') is of natural origin, yet fails to undertake the simplest of literature searches necessary to inform this query. The latter

⁸ Holmes et al (2012) Can Cape Town's unique biodiversity be saved? Balancing conservation imperatives and development needs. *Ecology and Society* 17:28.

⁹ Noordhoek Wetlands Management Plan: Engineering Report. KFD Wilkinson Consulting Engineers. April 1999.

¹⁰ All of these reports are available from the offices of the South Peninsula Administration of the City of Cape Town.

would have, centrally, found the 1985 CSIR Report¹¹ on the Wildevoelvlei/Noordhoek area — a document which provides a plethora of abiotic and biotic baseline information about the local area and its aquatic environments in particular. A variety of other local EIA reports, such as for the Lake Michelle western outfall proposal and the Lake Michelle saltmarsh wetland, also provide a wealth of locally-relevant data, including species lists.

The specialist reports should have shown that the 50 hectare Sunnydale wetland constitutes a centrally-important node in both the Papkuilsvlei and Wildevoelvlei catchments, each approximately 1500 ha in area. The Sunnydale Wetland catchment is 480 ha in area, and drains via the Sunnydale wetland into Lake Michelle and thence to the Papkuilsvlei. The Sunnydale wetland thus plays a crucial role in flood retention and water quality enhancement for waters arising off an urbanised environment and which drain ultimately to a spatially-extensive wetland system.

- **Primary data collection & present day 'status quo' condition of the wetland**

Both specialists devoted a total of just two days for 'site visits'. Both of the faunal report visits were made during the winter of 2017. Mention is made of wetland delineation using, for example, soil augering, and of 'active searching for evidence of fauna' and logging of amphibian calls, yet no findings/results are provided. There is no delineation map, no coordinates for soil samples and no core logs describing the soil strata. There are no lists of species found, where they were found and in what numbers, no details of the search methods/protocols and/or time/effort invested per species observed, are provided, no evidence from, for example, scatological screenings or of where specific bird species were seen and when, etc. The Ollis report refers to "vegetation components of wetland condition", yet provides no details of vegetation transects or grids examined, or what these wetland condition indicators might be? Notwithstanding the absence of (reported) new primary information, in his report Todd suggests that lots of species are likely to occur in and around the wetland.

¹¹ Heinecken TJE (1985) Report No 27: Wildevoelvlei/Noordhoek (CW28) CSIR Research Report 426. CSIR, Stellenbosch.

Neither specialist appears to have made any approaches to, for example, local sources of information such as bird watchers (e.g. the Cape Bird Club) who might have relevant contemporary information. Equally there is no mention of data sourced from TOADNUTS.

The Ollis report takes pains to detail the many limitations thereof - but then counters this with the statement that "sufficient data was available from previous studies". This statement pales in objective relevance when seen against the key reports not identified (as above), plus that the report only cites two reports which could arguably provide any locally-relevant information. Ollis also cites the Todd report, which was ostensibly only placed at his disposal after he had completed and submitted his first (unrevised) draft report. Ollis also cites a previous report prepared by a staffer of his own company for a previous application for this same road construction (Ractliffe 2002) - this report ostensibly quite important to the conclusions reached during 2018, especially as it makes reference to the observed presence of Red Data species. The relevance of this report to the present assessment is addressed hereunder.

Despite a wealth of reporting, mapping and photographic evidence, Ollis maintains that "no imagery or other information about the size and characteristics of the wetland in its pristine state are available today..." and that "...a number of assumptions were made about the 'presumed natural reference state". In point of fact, there is more than sufficient evidence to show that the Sunnydale Wetland has, for decades, been a slightly-brackish reedbed interspersed with hummocks of indigenous terrestrial vegetation, becoming increasingly palustrine within a drainage system that is fundamentally endorheic and intermittently exhorheic. Of central importance to the assessment, however, is that the wetland in question forms part of an urban-impacted, eco-hydrologically interconnected whole, for which the ecological nature and importance of remains largely unknown. This fact is not emphasised or communicated to the decision maker in either of the reports reviewed.

Neither specialist engaged with the quality of the fill needed to be placed in the wetland in order to create the road platform and the threat posed to the wetland should the materials contain any forms of contaminants. There was also no consideration of the

impact of the road platform (weight, compaction) on shallow groundwater flows into the wetland from the south and southeast.

In summary, it is thus unclear how the author could be "reasonably confident in our assessment of the [P]resent [E]cological [S]tatus of the wetland..."? This aspect is addressed further hereunder. In essence, both specialists rely on species lists of what might occur in the local area, without any concrete confirmation of any species other than the Western Leopard Toad. These lists of presumptive species (there are lots of species which *might be present* — the Noordhoek wetlands are singularly understudied, yet the area has revealed unknowns such as the rare diving beetle)¹² infer considerable wetland importance and should be updated based on rigorously-gathered primary contemporary information and data. This is further exemplified by the more recent and confirmed discovery of the highly-endangered Cape Platanna at Lake Michelle.

Given the apparently glaring lack of information necessary to expand their assessments from desktop assumptions, neither specialist gave heed to the precautionary principle and neither called for a more detailed, spatially- and temporally-comprehensive assessment, possibly at EIA level.

- **Incorrect identification/characterisation of wetland areas**

The Ollis report identifies three categories of wetland "assessment units" - these being permanent wetlands (the ponds), seasonal wetland (the greater area of emergent reedbed) and a third type - also "seasonal to intermittent". All of these descriptions beg for a more exacting and accurate description:

The emergent reedbed area lies over the unconfined shallow aquifer that characterises the Noordhoek coastal plain. The bed of this zone lies below 4 m MSL (the eastern wetland portion overflows into Lake Michelle at this invert level) with

¹² Bilton et al (2015) *Capelatus prykei* gen. et sp.n (Coleoptera: Dytiscidae: Copelatinae) - a phylogenetically isolated diving beetle from the Western Cape of South Africa. *Systematic Entomology* DOI: 10.1111/syen.12128; Pryke and Samways (2009) Conservation of the insect assemblages of the Cape Peninsula biodiversity hotspot. *J. Insect Conserv.* 13:627-641.

groundwater always quite near the surface. This zone remains sufficiently saline to prevent *Typha* from encroaching other than proximal to the freshwater 'ponds'.

The so-called seasonal zone is deemed to be the fringe where most of the urban runoff enters into the wetland via a number of stormwater outlets, and where groundwater may emerge sub-laterally from the toe of the wetland bank. It may be more accurate, however, to consider this edge zone as a remnant transitional area - typical of the interface between upland areas with milkwoods and adjacent wetlands - i.e. such as a transition between Strandveld and Sandplain fynbos. If this characterisation is correct, then this edge habitat may have very important implications for maintaining biodiversity. It is also this fringe habitat that would be almost entirely obliterated by the road construction.

The ponds are in fact old irrigation sumps/dams, where the groundwater was deliberately exposed - they hark from the 1950s when allotment farming was practiced in the wetland before it became too wet for this purpose. The ponds are currently located at the terminus of stormwater drains discharging into the wetland, providing sufficient 'perennial' supply of water during the drier seasons.¹³

The third category of "assessment units" refers to erven 3661-3663, properties which lie south of the road alignment on the Sunnydale platform at an elevation of 6 m MSL — i.e. two meters above the Sunnydale wetland bed. There have never been any natural wetlands on any of these three erven. Rather, in 1999/2000, constructed wetland SUDS modules were installed on erven 3661 and 3662 to treat the runoff from the roofs and parking areas of the adjacent Long Beach Mall. A temporary retention pond was contemporaneously created on erf 3663 until such time as the SUDs modules could be commissioned — creating a depression that has yet to be backfilled. This third category of assessment unit is, therefore, entirely lacking in any relevance to the road assessment.

- **Questionable rating of Present Ecological Status and Ecological Categories**

¹³ Mr Mike van Wieringen, pers. comm.

In Table 3 of his report, Ollis allocates scores to four aspects (hydrology, geomorphology, vegetation and water quality) of the three wetland types he previously identified. The reasoning followed is largely opaque and details of the presumed impairments entirely lacking. For example, for Unit 2 (the greater area of reedbed wetland) he ranks the hydrology — which has been largely unchanged for 50 years as '60%', and the vegetation, equally unchanged for perhaps longer, as '39%'. Furthermore, without any evidence of an appreciation of water quality, for example based on generic values for urban catchment runoff vs the monitored quality of water flowing into Lake Michelle, he similarly allocates an '38%' score.

Equally awkward is his assigning of scores to the constructed wetland modules on erven 3661 and 3662, and apparently to the yet to be in-filled temporary pond on 3663. For the modules the hydrology (the runoff from the parking and roofs) is exactly what the SUDS device was designed and engineered to process, yet it is allocated '60%'; the 'geomorphology' which, in this instance is entirely artificial as a result of creating the wetland bed media, is allocated the highest score of all (85%); the vegetation — planted to specification, receives a '43%', and water quality (minimally-contaminated roof and parking runoff), '48%'.

In light of the above, this section of the Ollis report provides negligible interpretive value that would otherwise inform an Environmental Authorisation.

Despite the presumed impairments, neither specialist renders any opinion as to how the Sunnydale wetland might fare under the 'No Go' road scenario or, indeed, with mitigation of the factors considered to be extant impairing functions.

- **Conservation importance of the Sunnydale Wetland**

In his report, Ollis includes Table 2 - containing criteria used to determine conservation importance. From his interpretations, Ollis concludes that the wetland is of Moderate to High importance. This interpretation is based entirely on speculation and assumption of what biota might reside in or be dependent on the wetland. With respect to the criteria for High Importance, Ollis omits to score the obvious high functional

importance of the wetland (see the catchment areas mentioned above) - providing nutrient and flood attenuation for both the downstream Lake Michelle and the Papkuilsvlei, as that it is of a *significant size* - and thus must provide significant potential habitat. While many environments in the City are irretrievably fragmented, this particular wetland system is almost unique in its quite extensive ecohydrological connectivity that transitions a variety of habitats and system types. Here it should be noted that Ollis replaces '*significant size*' in his Table 2 with '*reasonable size*' in his analysis ('*reasonable*' not appearing in the Table). He also crucially omits to qualify any of the Table 2 criteria with the fact that informed responses are/were not possible due to the lack of confirmatory information (for example keystone species which *might be present*). In truth, therefore, the wetland importance is likely to be considerably higher than Ollis concludes.

- **Consideration of the 'road effect'**

While Ollis does allude to the road effect, Todd places it more centrally in his report and anticipates high traffic volumes at times, as well as high noise generation. Neither specialist, however, refers to the Traffic Study or to the Noise Impact Assessment. These are glaring omissions, as these reports provide the basis for discerning the magnitude of the road effect and the failure to do so constitutes a major flaw in the assessment process.

The Traffic Study reveals that the road will rapidly approach its design capacity within a few years after commissioning. At peak periods, cars placed end to end would fill both lanes of the road, and daily use will amount to thousands of vehicles passing the wetland. This will be a substantial and potentially ecologically-devastating change from an environment that has hitherto remained virtually entirely free of any traffic movement *whatsoever*.

Section 4.3.6 of the Noise Impact Assessment reveals that road noise will often *exceed maximum rating levels* and result in complaints from Sunnyside residents. *This will occur during peak and off-peak hours.* So much so that the report recommends that a wall be built between the southern lane of the road and the

residential properties. The fact that such a wall will magnify sound pressure northwards into the wetland is not mentioned.

Neither Ollis nor Todd appear to have picked up on these issues and what they might mean in terms of sound pressure exerted northwards into the wetland. Ollis, however, asserts that 'it is not possible to mitigate noise' - which is a surprising claim given the host of options that might be considered¹⁴, not least not building the road in the first place. Furthermore he rates traffic disturbance as "Low" (Very Low with mitigation) - yet no mitigation detail is offered and these ratings are clearly at odds with the findings of the traffic and noise studies. While road effect will clearly be the major impact, both specialists appear to consider only the loss of permanent wetland as the major cumulative impact. This is further argued on the basis that it will take up just 3% of the wetland, notwithstanding the type of habitat lost and the direct edge effects of indeterminate magnitude. This analysis presents a biased interpretation of the likely realities.

Oddly, Todd observes that "although the road will form a hard boundary along the edge of the wetland, *this is not very different from the current situation...*" — a statement which begs understanding, especially given that the proposed road will completely and utterly alter the *status quo* — converting a quiet area with no traffic at the wetland edge, to an urban road with peak traffic usage and excessive noise generation. Todd in fact, contrarily, acknowledges that the area is currently undisturbed and quiet and that the road will "significantly increase the exposure, noise and disturbance levels...".

Furthermore, Todd also concludes that the road will pose a "significant pollution risk", result in a "major impact on fauna [from] disturbance from vehicles and people", "vehicle-related mortality of fauna, especially vulnerable species such as snakes and amphibians" and 'increase cumulative impacts on natural habitats in the area". Additionally, he finds that " the presence of the road will also potentially increase access to the wetland and increase human impacts as a result".

¹⁴ e.g. Parris (2015) Ecological Impacts of Road Noise and Options for Mitigation. Chapter 19 In: Handbook of Road Ecology (Van der Rhee et al, eds). John Wiley and Sons (Oxford).

Despite this, he goes on to deem these impacts (again, absent the information from the Traffic and Noise reports), as being of minor consequence.

- **Omission of the information contained in the Ractliffe Report**

The Ractliffe Report, prepared for essentially the same application 17 years (2002) previously, confronts several of the concerns raised in this review. It also provides vital contextual and descriptive information and background knowledge which remains as central to the current application as it did before, *inter alia*:

In the opening Section 1.4, the Ractliffe Report notes the vast spatial loss of South African wetlands and that "...those that remain are among South Africa's most threatened natural areas".

In Section 2.1, providing a general description of the Noordhoek Wetland Area, Ractliffe provided details of several studies undertaken between 1991 and 1999 - studies which "[describe the wetlands]... geology, geo- and surface hydrology, botanical and ecological functioning and conservation status, as well as a host of management proposals". The nature of various aspects of the foregoing are then summarised. In Section 2.2 is described how the urbanisation of the local catchments has altered the hydrological regime. Also provided are details of the sub-strata gleaned from various boreholes reported as having been drilled along the proposed road alignment. In Section 3.1 Ractliffe points to the value of the Pick 'n Pay reedbeds (aka the Sunnydale wetland) as a buffer to the Cape Peninsula National Park.

Section 2.3 elucidates the conservation importance of the Noordhoek wetlands as follows:

"Notwithstanding the anthropogenic impacts on the wetlands, recent specialist studies of the wetlands *without exception emphasised their importance* in relation to:

- their functional roles (Davies and Gassner 1999), including flood regulation; purification of surface waters; groundwater recharge and discharge; foodchain support, due to high productivity; habitat for fish, fowl, frogs and other wildlife, including endemic and threatened species (Hughes 1999)
- their acting as buffer areas to adjacent terrestrial habitats, and providing corridors for migration of animal life (Grange 1999, Hughes 1999)
- the threats to water quality in the aquifers associated with encroachment of development (Van Wieringen 1999)
- their botanical conservation value (Cowling and Golding 1998, Holmes 1999), including the presence of "special species", threatened habitats (e.g Sandplain fynbos and Wetland [sic]) and the role of wetlands in maintaining biodiversity processes
- their regional importance as a natural corridor linking the northern and southern parts of the Cape Peninsula National Park (Davies and Gassner 1999, Grange 1999)
- their spiritual and aesthetic value and their importance as a tourism feature (Davies and Gassner 1999)

The [above-listed] reports emphasised the integrated nature of the wetland system, and all recommend that the entire wetland area be designated as a conservation area - maintaining (and indeed, reinstating) the connectedness of the diversity of wetland types essential to ensuring their ecological functioning."

With respect to the present condition of the wetland along the proposed road alignment, Ractliffe drew attention to 18 wetland margin species having been noted, including 3 of the 31 "special species" previously identified by Cowling and Golding (1998). Furthermore that "some 57 plant species were identified within-, and along the margins of the broadly proposed route of Hou Moed Avenue [sic].

In Section 3.6, Ractliffe observed that "...the reedbeds themselves *may have value far beyond their functional role in stripping pollutants* - an examination of only a limited section of the wetland suggests that it may well contain patches of more diverse vegetation, particularly in the parts that are seasonally dry."

Further, in Section 5.1.2, "[t]he fauna of the Pick 'n Pay reedbeds has not been investigated in any depth in the scientific studies known or reviewed as part of this study. However, this wetland area affords shelter, provides food and is breeding ground, for many animals, from tiny crustaceans to insects, spiders, amphibians, reptiles, small mammals and birds". This statement is at odds with that made by Todd i.e. "Overall, there are no areas considered to be of very high significance for mammals..." — this conclusion absent any qualification of what constitutes 'very high significance' or what animal groups or populations might exist at lesser levels of significance". As such the statement is misleading.

Overall, the Ractliffe Report displays an acceptable degree of investigational rigour. The road alignment is assessed on a 'stake by stake' distance basis and, for example, locates a total of 16 stormwater drainage culverts flowing northwards into the 'seasonal wetland' zone - a detail absent from the more recent assessments.

As with the present studies, Ractliffe also omitted to deal with the impacts of road effect, even though this was already well established as a component of linear ecological impacts by the time the report was compiled in 2002. While she acknowledged that increased noise would be an outcome, she then mystifyingly equates the (non-quantified by her) future traffic noise as "not significant" when compared with the "present effects of pedestrian traffic and dogs."

In summary, the Ractliffe Report contained a wealth of highly-relevant information essential for placing the wetland in context - information that is absent from the studies reviewed here. This information is also absolutely essential in aiding the decision maker to reach an informed decision. While Chand maintain that the 2018 reports provide the most updated information, this is patently not the case. It is therefore questionable why such a wealth of highly-relevant detail was not included in the freshwater report for the current application?

- **Mitigation recommendations**

Mitigation proposals devolve essentially to underpasses for the Western Leopard Toad proposed by Todd — constructed in the vicinity of the ponds — there is simply no other faunal data presented — and for which mitigation other than ecoducts might be necessary. This creates a false impression as the *overriding consideration is that there has never been a detailed study of this wetland and its biota*. We simply do not know wetland dependent biota currently occur there. The mitigation proposals are vague and devolve to at least ten recommendations for a freshwater ecologist to be involved therein at some point in the future! No substantiation for the efficacy of the proposed underpasses is presented and, in fact, very recent analyses have revealed that there is a very high likelihood that they will not serve the intended purpose.¹⁵ The fact that the efficacy of underpasses for Western Leopard Toads have yet to be trialed anywhere is not mentioned.

Reports that do not provide a rigorous and exhaustive analysis of proposed mitigation efforts cannot, in terms of the principles of the NEMA, inform an environmental authorisation.

In this vein, Ollis remarks that if the proposed wetland conduits do not work, they can be reconfigured at a later date! This statement negates the entire concept of proven and workable mitigation — mitigation proposals *must be based on proven and probable efficacy and informed by comprehensive baseline studies*, not some vague 'maybe' possibility, as well as ignoring the difficulties likely to constrain modifying an existing road structure at some point in the future. Similarly, Todd recommends that the efficacy of the proposed underpasses be "monitored for 3-5 seasons" - seemingly also implying that if they prove unsuccessful they can be 'modified' — again casting into doubt the workability of the proposed measures. Three to five seasons, assuming that the proposal as implemented does not work, could tip communities of the Western

¹⁵ Ottburg and van der Grift (2019) Effectiveness of road mitigation for common toads (*Bufo bufo*) in the Netherlands. *Frontiers in Ecology and Evolution*. <https://doi.org/10.3389/fevo.2019.00023>.

Leopard Toad population towards localised extinction - as has been the result at Chapman's Bay Estate.¹⁶

CONCLUSIONS

The Sunnydale wetland has remained in its present condition at least since the 1960s. The wetland environment has been almost entirely secluded from the impacts of human activity for an even longer period. This review deems it highly probable that *the road effect will probably extend to the entire extent of the wetland*, with the construction of the road resulting in the progressive loss of most biota from the wetland, biota whose presence and role in the wetland are currently completely unknown.

In contrast to the freshwater report, the faunal analyst (Todd) has the main issue (road effect) in focus, but then entirely discounts the probable impacts on the basis of superficial and unproven mitigation measures for a single species.

There is a deplorable lack of contemporary primary information for this large, hydrologically-connected aquatic environment and its surrounds, at any level. The road to be constructed will not be a quiet suburban street by-passing a small wetland fragment; rather *it will be a very busy, near-capacity arterial link intersecting a large and integrally-important component of an ecologically-important lowland wetland system*.

The absence of primary abiotic and, importantly, biotic information for the Noordhoek wetland system is not a new situation. It is an unanswered theme that has been repeatedly reiterated in calls for attention to this deficit ever since the 1999 Noordhoek wetland management project was undertaken. The various lists of presumptively-present species, as listed by Todd and as set out in the CSIR report, beg confirmation.

Neither specialist chose to call for a more detailed study commensurate with the probable and negative outcomes of a linear impact through a wetland environment for

¹⁶ Mrs Alison Faraday, TOADNUTS, pers. comm.

which almost no contemporary data exists. Key reports, such as the CSIR baseline document and the KFD Wilkinson Engineering Report describing the Noordhoek wetlands and their appurtenant hydrology, or the various reports cited by Ractliffe, were not identified or explored. As a result, no integrative assessment conclusions can be formulated that would otherwise logically inform the management needs for the wetland. Crucially, information from the Traffic and Noise studies was not factored into the impact assessment —surprisingly so as the point of departure question for any road analysis is 'how busy is this road likely to be?' — a question which neither specialist apparently chose to engage with.

Nowhere do the specialists engage with wetland values should the road *not be built* — and the role of biodiversity as a foundation for human well-being. Neither specialist addressed the rehabilitation potential of the southern wetland edge in the absence of the road.

In light of the above, this review concludes that the information placed before the decision maker was not only grossly insufficient, but also misleading in that impacts of a probable high severity were presented as readily ameliorable through mitigation. The reports fail to contextualise a large area of wetland in terms of the considerations normally afforded to highly-threatened wetland ecosystems. This failure fundamentally and unquestionably constrains the decision maker from fulfilling his/her obligation to act as a steward of the environment in terms of the Public Trust doctrine invoked by s2(4)(o) of the National Environmental Management Act 107 of 1998. The same interpretation applies to the reviewed materials informing an application for a Water Use Licence read with s3 of the National Water Act 36 of 1998.

As such, this review finds that there is no rational connection between the facts presented and the decision to grant the environmental authorisation for Phase 1 of the proposed road extension.

The EA decision appears to lie in the grey area bounded by decision-maker 'error of judgment' and a decision that is 'arbitrary and capricious'. It is this author's opinion