SINGERS ECOLOGICAL

29 OCTOBER 2026

TO: HAYDEN BEATON (SUMMERSET)

FROM: NICHOLAS SINGERS (SINGERS ECOLOGICAL)

SUBJECT: PEER REVIEW OF THE ECOLOGICAL ASSESSMENT FOR THE OTAIHANGA RETIREMENT VILLAGE DEVELOPMENT BY BLUEGREEN ECOLOGY

CC: CC NAME

Peer review

I was engaged by Summerset Villages (Paraparaumu) Limited (**Summerset**) to provide a peer review of the Otaihanga Retirement Village Ecological Assessment prepared by BlueGreen Ecology (**BlueGreen Assessment**) in support of an application to develop and operate a comprehensive care retirement village at 65 and 73 Ratanui Road, Otaihanga (**Project Area**), under the Fast-track Approvals Act 2024. This peer review considers the methodology, ecological values, assessment of effects and proposed management measures set out in the BlueGreen Assessment, together with the ecological observations made on the site.

Experience and qualifications

My full name is Nicholas James Drysdale Singers. I am an ecologist at my own ecology consultancy, Nicholas Singers Ecological Solutions Ltd trading as Singers Ecological.

I hold a Bachelor of Science majoring in Plant Health and Ecology and a Master of Science in Ecology both gained at Massey University. I undertook my M.Sc thesis on dune wetlands within the Foxton Ecological District. I have also undertaken a large number of wetland ecological surveys in this ecological district and many more throughout the country. The Foxton Ecological District is the largest duneland in New Zealand, which spans from Paekakariki to Hāwera. My MSc study provided an expert understanding of the creation and development of the Foxton Ecological District's dune wetlands which is relevant to the ecological understanding of the Project Area.

I have 29 years' experience as an ecologist, specialising in plant ecology, wetland ecology, conservation management and assessments of ecological effects.

Code of conduct

I confirm that I have prepared this review in accordance with the Code of Conduct for Expert Witnesses contained in the Environment Court Practiced Note 2023 and I will abide by the requirements of that Code of Conduct.

Methodology and assessment

The author of the BlueGreen Assessment, Dr Keesing undertook a detailed desktop review to understand:

- The environment, land history and changes,
- Ecological values of the general vicinity and the ecological district, using relevant databases,
- Historic imagery, and
- Planning documents to put the areas of interest into context.

Multiple surveys and site visits were undertaken to understand seasonal patterns of vegetation, wetland hydrology and gain a more fulsome understanding of ecological values.

The author has an expert understanding of the wetland definitions under the National Policy Statement for Freshwater Management 2020 (NPSFM) and the wetland delineation method (Clarkson et al. 2013). All potential wetlands and the highly modified watercourse were identified in site visits on multiple occasions, and the vegetation, soils and hydrology were adequately characterised. The land use at the time of survey was grazed farmland and the pasture exclusion component of the NPSFM was applied where appropriate.

For each wetland the plant species composition and percentage cover to determine the rapid test, prevalence test, and dominance test have been recorded. In areas of doubt, soil pits were used where necessary to investigate the presence of hydric soil features. All surveyed areas were photographed, and the information was summarised in the BlueGreen Assessment.

In respect of freshwater values, the length of the highly modified stream was walked when dry, and fish and invertebrate surveys were taken when it was flowing.

With regard to fauna, I have read the Draft Lizard Management Plan (Boffa Miskell 2026). I agree with the assessment that a bat survey is not required based on bats not being known to be in the general area and the habitat for them is limited.

The assessment of effects follows the EIANZ (2018) method, which I consider to be appropriate.

Additional Landform and Wetland Context

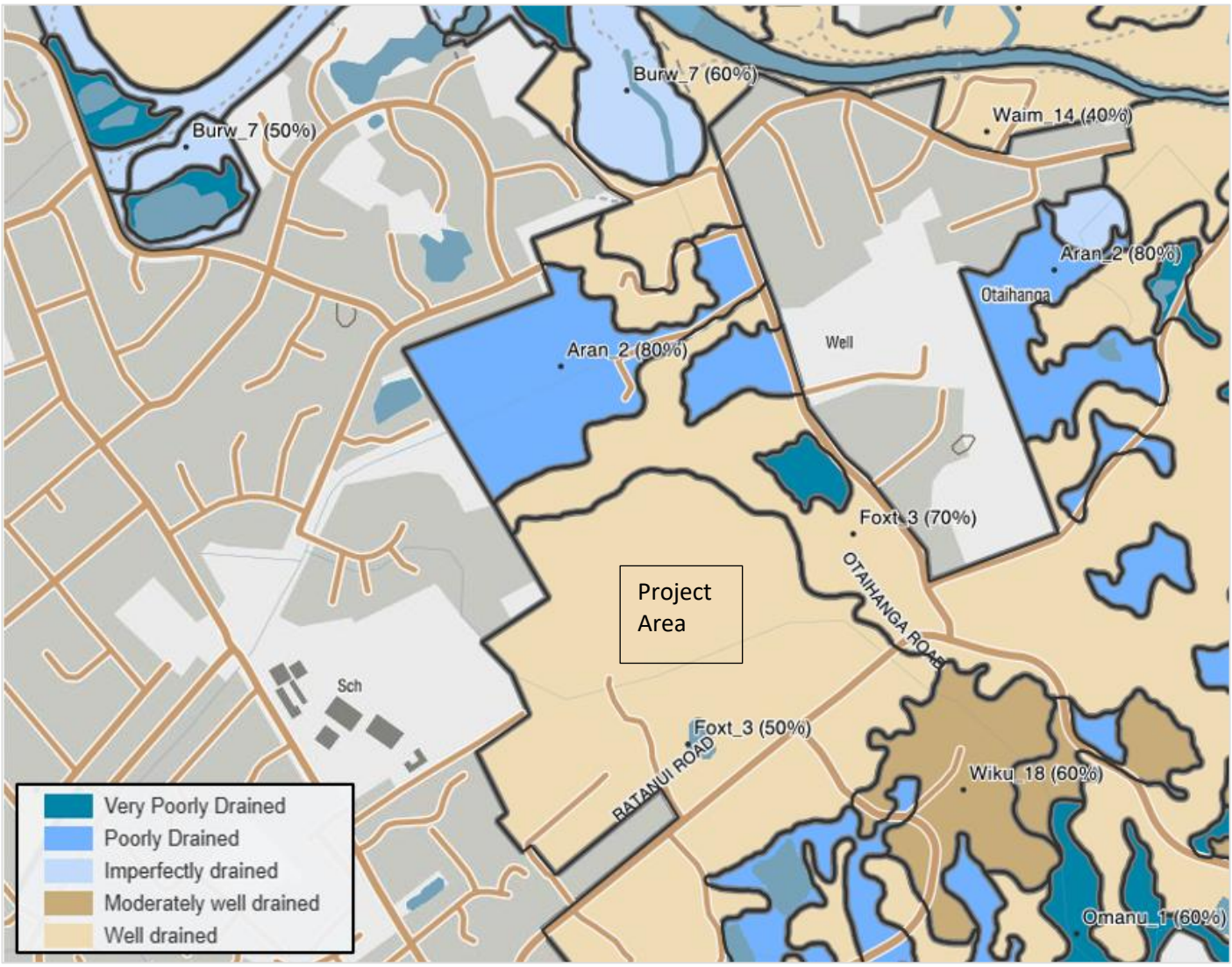
This section provides an overview of the locations and processes which create wetlands in the Foxton Ecological District. I have included this because it provides context with respect to the Project Area. In the Foxton Ecological District most wetlands develop in two distinct ways.

- In hollows created by moving dunes which blow inland parallel to the prevailing wind. These create parabolic or crescent-moon shaped features. The hollows behind the moving dune become wetlands that are typically similarly shaped to the moving dunes. These can sequentially aggregate to form dune plains. New wetlands in moving dune landforms are known as dune slacks. These are ephemeral wetlands and older and larger areas are known as dune deflation hollows.
- At the junction of a major dune building phase and where the sand dunes meet older landforms, small to large dune lakes form with their associated wetlands. These areas are typically permanently wet.

In the lee of Kāpiti Island at Paraparaumu these characteristic parabolic landforms are less pronounced because the land is more sheltered from the prevailing westerly wind. This is also why an isthmus or incipient tombolo is developing towards Kapiti Island.

When investigating the landforms, soils and locations of wetlands and terrestrial land in the Otaihanga Road area, soil data shows that the Project Area is located on a dune landform oriented parallel to the coastline. The online S-map (Figure 2) identifies the entire Project Area as a sandy recent soil (Foxton), which is a dune soil. This is informative in that most of the site is dune but scale matters. Adjacent to this dune landform are larger areas of former wetland.

Figure 1: S-map of the Otaihanga Project Area, showing the Project Area is located on a light brown polygon which is the well-drained sandy recent soil (RS) (Foxton Soil). Eastwards are dark brown polygons which are older dunes with a sandy brown soil (BST) (Waikuku) which are moderately well drained. The blue polygons indicate historic areas which were seasonally or permanently wet. Light blue is a sandy gley soil (GST) (Aranui) which are poorly drained and formerly would have been dominated by kahikatea, pukatea forest. The dark blue areas are acid humic organic soils (OHA) which are very poorly drained and indicate historic or current (larger) permanently saturated wetlands.



At a finer scale, this dune consists of multiple dune hummocks and small interspersed hollows. At the Project Area level a more detailed and finer assessment of the landforms and ecological features is required. The soil map is useful context because it provides evidence that the dominant landform in the Project Area is dune and contains no large wetland features mapped at a 1:30,000 to 1:50,000 scale.

Results

The BlueGreen Assessment sufficiently describes the terrestrial, wetland and freshwater values of the Site. I am satisfied that there are no terrestrial values of significance.

Figure 3 of the BlueGreen Assessment shows all potential wetlands and hollows in dunes. Many of these are very small being only 4-5 m across. Features 14 and 15 along with the series of features in a line (7, 8, 19 and 20) are where I would expect small dune hollow wetlands to occur. These latter four would have been wetter prior to the construction of the highly modified stream which intersects the Project Area. Features 11, 12, 13 and 17 are anomalous and could have been manmade hollows to provide water for stock, prior to provision of circulated stock drinking water troughs. Alternatively, some of these could be cattle holes, which are scrapes for sand bathing on damp soil. I have seen similar features on other farms in the Foxton Ecological District. The author surveyed all potential hollow and pond areas irrespective of origin and has conservatively concluded that all contain wetland species. He has also included two which owners said were man-made based on being present on early aerial images. On recent aerial images the land south of site 2 (which is a pond) appears to show an area of spoil from excavation. This suggests that some human development of this has occurred. Potentially this was a wetland hollow which was excavated deeper, so evaluating it as a natural wetland is conservative and appropriate.

Data for each wetland is not included in the BlueGreen Assessment; however, the photos taken provide evidence of that most of the identified potential wetland features contain a dominance of exotic species, consisting mostly of water pepper, which is a common annual weed that occurs on farmland. The only indigenous species found was *Juncus edgariae* which is a very common rush on farmland. Water pepper is often found in areas that are intermittently wet or pugged by stock plant. It is listed as a facultative wetland species on the basis that it most often occurs in wetlands. I consider a more accurate classification for this species is facultative (occurring in 50% wetland; 50% dryland). (NB: I intend to lodge a submission to the Landcare wetland team that administers this list on this point). Irrespective of this, water pepper is not an obligate wetland plant and where it occurs in wetlands completes its lifecycle often when intermittent wetlands are dry.

The highly modified stream is assessed as of low quality, which is a fair assessment given it is often dry and its catchment is within residential areas, areas of farmland and is accessible to stock.

No threatened species were found. I do not expect any to be present given the habitats present.

Ecological Value Assessment

The author has undertaken a thorough assessment of the EIANZ (2018) ecological value criteria and describes the logic for the scoring for the wetlands and highly modified stream.

For the wetlands I do not disagree with his conclusion scoring Representativeness, Diversity and Pattern and Ecological Context criteria as very low.

An argument does however exist that because wetlands are rare in the Wellington Region with 2.8% remaining, and so are critically threatened, all wetlands should be given a high score for Rarity and Distinctiveness. The author makes the

case that natural wetlands with a dominance of native species are rare, whilst wetlands with a dominance of exotic wetland plants are not. I do not disagree with this opinion.

There is however no data within the Wellington Region to quantify this position. Elsewhere in the country in developed farming landscapes, I have mapped wetlands (Singers 2024a). I have also undertaken this same process for large scale developments such as the Cambridge to Piarere expressway (Singers 2024b), where I was the author of the assessment of effects (for terrestrial and wetland vegetation). With the data obtained from these two projects, I analysed the remaining extent of native dominant, mixed native:exotic mosaic and exotic dominant wetlands. In both examples exotic dominant wetlands occupied over 90% of the wetlands mapped. Consequently, I would expect the same to be true at least on farmland in the Foxton Ecological District or also in the Wellington Region, recognising, however, there are some large areas of natural wetland vegetation protected. Further, there is a limit on size to what has been mapped. Very few small wetlands are included in these spatial datasets. It is my experience that small wetlands like these on farmland are almost always exotic dominant.

These features on the Otaihanga site are somewhat anomalous too, because they are very small, do not have wetland soils and, excluding the ponds (which could have been manmade or deepened) and are very ephemeral. For reference I have undertaken soil pits in dune slacks and deflation hollows, less than 1 km inland of the Whangaehu River mouth as part of a peer review of the Ratana wastewater discharge consent (Singers 2023). This Project Area had a similar landform of shallow hummocks and hollows. In the wetlands raw sandy soils occurred with very little topsoil and these had clear iron staining caused by water saturation. Whereas the higher elevation soils on drier dune plains were similar to Figures shown in section 3.3.1. with no obvious iron staining. This experience and the soil evidence included indicates that these features are not permanently wet and if intermittently wet on occasions, the duration of being wet is very short.

Some features could easily have been man-made as historic stock water drinking ponds and others excavated by cattle for sand bathing. I have visited multiple cattle farms across the Foxton Ecological District and have seen similar features, which like these provide habitat for exotic facultative wetland species.

Despite this, for sensitivity testing purposes, if the rarity score was given high, the overall value would be between low to moderate applying Table 6 of the EIANZ (2018). (NB: Table 6 omits an overall score, when three features score low or very low and one scores high).

I consider this issue to be more a methodological and lack of data issue. I agree that exotic wetlands are reasonably common on farmland. From experience I know that thousands of small (unmapped) examples occur on farmland, so 2.8% remaining extent is not accurate. Rarity aside, I agree with the overall conclusion that they provide negligible ecological and hydrological value.

I also agree that the highly modified stream is of negligible value.

Section 5: Potential Effects and their management

The author has calculated loss of wetland to be approximately 1500m^2. He has used the Mazengarb catchment as the Zone of Influence, and in this area there would be a loss of around 10 to 15%. I agree with the use of the Mazengarb catchment as the Zone of Influence, which is conservative and appropriate.

Using Table 8 of the EIANZ (2018) he has determined this is a moderate level of effect. The overall level is very low under Table 10 of the EIANZ (2018). Note: I recommend for clarity these specific tables be referenced.

I agree with this determination which is a **very low (less than minor) level of effect**.

The NPSFM and the Wellington Regional NRP require no loss of extent of wetlands. The applicant proposes to create two new larger wetlands.

I agree with the author that a Biodiversity Offset Accounting Model (Maseyk et al 2014) calculation is not required. This is because being exotic dominant there is no meaningful attribute to use, apart from perhaps counting the small number of Edgar's rush clumps.

For the C2P expressway project I performed BOAM calculations for exotic wetlands (using plant height as the attribute) and that required a 1 : 1 ratio. As such replacement of 1500 m^2 if all were lost would be fair amount. The report states that this falls to 1260 m^2 because the proposed offset wetland is sited in the same location as some of the existing ones (4, 19, 6, 7 and 8). I agree that these wetlands should not be counted as a loss.

The proposed wetlands amount to 5,480 m^2 which amounts to a ratio of 1 : 3.65. This is a high ratio given that the wetlands lost are exotic dominant of negligible ecological value. The planting design uses appropriate wetland plants which occur in wetlands within the Foxton Ecological District. The design is more diverse than the small amount of Edgar's rush which will be lost and so is 'trading up' . I am unconcerned that it does not include Edgar's rush because this is abundant across farmland in the North Island. Planted in sufficient numbers these should create dense wetland vegetation, which once mature should provide some opportunities for common wetland fauna such as breeding habitat for Paradise shelduck. These wetlands and the highly modified stream will also be buffered by riparian planting.

The proposal will require culverts which short-finned eels will be able to navigate. Given that the highly modified stream is more often dry, the culvert is a negligible effect on this species. Combined the wetland and riparian enhancements provide significantly better habitat. Short-finned eels will likely become permanent occupants of the wetlands given areas of deeper water will be created.

The presence of the southern grass skink within the Project Area does not influence the conclusions or recommendations made for wetlands and the highly modified stream.

Conclusions

I agree with the conclusions made in the assessment, provided the measures recommended are appropriately implemented. These include the creation of wetland habitat, restoration planting and ensuring the culvert design allows fish passage.

I consider however that it would be appropriate to have a consent condition that states the following, which I consider is consistent with the intention of policy 6 of the NPSFM.

The developer will replace and restore wetlands at a ≥ 1 : 1 (loss: gain) ratio on the property and ensure indigenous restoration planting achieves a minimum cover of 80% within 5 years of construction.

I consider even at a 1:1 ratio or 1500 m^2 a net gain would occur because whilst many small and separate exotic wetlands would be lost, one larger wetland restored into indigenous species would be developed. Net gain would therefore increase significantly if 5,480 m^2 was created and restored.

References

EIANZ (2018). Ecological Impact Assessment (EcIA)EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems.

Boffa Miskell (2026). Otaihanga Retirement Village. Draft Lizard Management Plan.

Singers, N.J.D. 2023. Peer review for WSP of the Assessment of Effects for the Ratana wastewater discharge consent.

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Singers, N.J.D. 2024b. SH1: Cambridge to Piarere Long Term Improvements Ecology: Wetlands Assessment Report Prepared for Waka Kotahi NZ Transport Agency