



Independent Report Review - Technical Note

Aqua Park, Cosmeston Lakes

For

Vale of Glamorgan Council

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1. Introduction

1.1 Background

1.1.1 Thomson Environmental Consultants Ltd were instructed by Vale of Glamorgan (VoG) Council (the client) to undertake an independent review of this document: Breeding Bird Survey Including Cetti's Warbler, Cosmeston Lakes, Proposed Aqua Park, Vale of Glamorgan (September 2025) ("the report"). The report outlines the survey methods and results of breeding bird surveys undertaken during 2025 at Cosmeston Lakes Country Park (CLCP). Surveys were conducted prior to and during the installation and operation of the aqua park.

1.1.2 The report states it was provided in response to advice from Natural Resources Wales (NRW) requesting it ahead of installation and operation of the proposed Aqua Park at the eastern lake.

1.1.3 The report also states that Assent was granted on 23rd May 2025 for the temporary installation of the Aqua Park under Section 28H of the Wildlife and Countryside Act 1981, as amended (WCA). It is reported that this assent was subject to the following note from NRW:

*NRW advise that prior to the installation of the Aqua Park a suitably qualified ecologist should undertake a nesting bird survey. Cetti's warbler (*Cettia cetti*) are known to nest in close proximity to the proposal. Cetti's Warbler are listed on Schedule 1 on the Wildlife and Countryside Act (as amended, 1981). It is an offence to disturb these species during the breeding season without a valid licence.*

Details of appropriate mitigation (following the step-wise approach) for any likely significant effects identified should be provided along with appropriate enhancements. In some instances, mitigation may need to take the form of curtailment or redirection of activities during particular times of year. Where buffer distances are required or need to be considered then reference should be made to Goodship & Furness 2022 or alternative published references for species not listed within Goodship & Furness 2022.

1.1.4 The report provides results of further surveys undertaken since NRW's comments on 17th June 2025. Responses to NRW's comments are also included in the report. The comments raised concerns regarding the survey methods and results evaluation provided within the initial report, which has not been provided by the client for review.

1.1.5 Key conclusions of the report include:

- "From an ecological and legal standpoint, the Aqua Park's operation was compatible with the continued breeding of Cetti's Warbler on site".
- "Moorhen and coot bred early in the season; however, no late-nesting success was recorded for either species after mid-July. The reasons for this are unclear and may relate to natural seasonal patterns, predation, or disturbance, but cannot be conclusively linked to Aqua Park operations.
- "Waterfowl such as Mute Swans and Canada Geese were absent from the East Lake during the late season surveys, although Mute Swans were present in the East Lake at other times. Tufted Duck were also absent during the 2025 surveys. These apparent changes could be influenced by a range of environmental factors and cannot be conclusively linked to Aqua Park operations."

- “Overall, the available dataset indicates that breeding by key species occurred successfully during the Aqua Park’s operational trial. Bird use of the site is broadly equivalent to the 2022 baseline dataset available for the site.”

1.1.6 No further background regarding the project has been provided, therefore all information regarding the project has been taken from the report (except a supporting report by Acer Ecology (2025), located on the planning portal) and has not been independently verified by the client.

1.1.7 The Site of Special Scientific Interest (SSSI) citation is not readily available online and not been provided by the client. However, the full designation is provided within a separate report by Acer Ecology, issued to the same client to inform the planning application with which the reviewed report is concerned (Acer Ecology, 2025). The report by Acer Ecology addresses this special feature and the potential impacts on the SSSI as a result of the proposals.

1.2 The Brief

1.2.1 The following was instructed on 15 October 2025 by Stephen Pickering of the client (taken from our cost estimate):

“We will undertake an independent review of the provided Breeding Bird Survey report. The review will aim to provide an impartial, third-party assessment to provide additional assurance that appropriate due diligence has been carried out. A technical note will be produced, providing a professional overview of the report’s findings, with particular attention to whether the concerns regarding biodiversity and legislative compliance, relating only to breeding birds, have been adequately addressed. Where insufficient information is presented within the report to allow the full scope to be fulfilled, this will be highlighted.”

1.2.2 This review does not specifically cover aspects related to the SSSI designation. In addition, the report includes several appendices, including a Noise Impact Assessment Report. It is beyond the scope of our professional sphere of competence to pass comment on the methods, results or discussion regarding noise data collection or interpretation.

1.3 Limitations

1.3.1 This review is of a single report provided by the client. Full project background has not been provided.

1.3.2 Where insufficient information is presented within the report to allow the full scope to be fulfilled, this has been highlighted.

1.3.3 Should further project information or amended designs be provided or submitted to the planning portal we may need to update our response accordingly.

1.3.4 Within Appendix 3, in response to NRW’s comments, the authors refer to the Aqua Park’s ‘operational trial period’. Based on mention within the conclusions, it has been interpreted that the ‘trial period’ referred to is the 2025 installation and operation of the Aqua Park and that the report comprises “findings from this monitoring exercise... compiled and submitted to NRW at the end of the trial period, along with recommendations for any further measures, should the Aqua Park be proposed for subsequent seasons.”

2. Review

2.1 Zone of Influence

2.1.1 The report shows the location from which the potential impacts of installation and operation emanated, although figures present the exact location differently (see 2.3.3). Therefore, distances between nests and disturbance source are ambiguous, making appraisal challenging.

2.2 Timing of Operations

2.2.1 It is stated that “disturbance may result from noise, visual presence, or proximity, public access or recreational activities near nest sites.” This would include the installation of the Aqua Park. However, it is unclear precisely when the Aqua Park was installed or when it became operational. Due to this, it is not possible for the bird survey data to be interpreted clearly in relation to the installation and operation of the Aqua Park.

2.3 Baseline Data

Habitat Assessment

2.3.1 The report does not include any habitat assessment with regards to nesting birds. This prevents the reader from understanding key information about the site and its suitability to support nesting birds, including those of conservation concern and/or listed on Schedule 1 of the WCA.

Nesting Bird Survey

2.3.2 Advice from NRW was that a ‘nesting bird survey’ should be conducted. This would generally indicate use of targeted methods within 24 hours prior to activities with the potential to affect nesting birds, within the zone of influence, and potentially include more ‘invasive’ nest finding efforts (under an appropriate survey licence, where necessary), if required. However, the report does not state whether a nesting bird survey was carried out, reporting only on a ‘breeding bird survey’.

2.3.3 An active coot (*Fulica atra*) nest is recorded on ‘Plan 4: Bird Survey 6th June 2025’, but it does not accurately plot the nest location. As the Aqua Park location is shown inconsistently between ‘Plan 1: Proposed Seasonal Aqua Park Location’ and ‘Plan 2: Cetti’s Warbler Territory with Buffer Zones’, it is not clear from the report whether the Aqua Park interfaced with this active coot nest during installation, or whether the nest was still active at the time of installation (due to the fact that precise installation dates are unclear).

Breeding Bird Survey

2.3.4 The survey results are potentially confounded by the installation and operation of the Aqua Park. To reliably inform the potential effect of the increased noise and human presence at the site, at least a full season of breeding bird surveys would have been required to establish the baseline breeding bird assemblage throughout the breeding season.

2.3.5 Targeted breeding survey visits for Cetti's warbler (*Cettia cetti*) were undertaken between 30 May and 13 August 2025. The authors acknowledge, and NRW have raised, that the absence of early breeding season survey data, when territorial singing peaks, is a limitation to the study. We concur; the survey period coincides with the late season drop-off in detectability of Cetti's warbler during July and August (BTO, 2025). This reduces confidence in the number and location of territories recorded, and is considered a significant limitation to the study.

Desk Study Data

2.3.6 Available data from Glamorgan bird club have been used to inform the study, providing background context and some level of reassurance that early season and mid to late season detection of Cetti's warbler may not be appreciably different (at least not during 2022, the year from which records are provided). Cetti's warbler is a largely sedentary species (Araujo et al, 2016) which may utilise less optimal habitat if population density continues to increase (Robinson et al, 2007; BTO, 2025). Alongside changes in habitat, it is therefore logical that territory and nest locations may differ year on year at the site. More recent data from Glamorgan Bird Club (or other relevant sources, as available) would therefore be valuable to aid assessment of changes in the number of breeding pairs recorded at CLCP in more recent years.

2.3.7 The evaluation and conclusions regarding Cetti's warbler rely heavily on data gathered during 2022 by Glamorgan Bird Club, which are referred to as "baseline surveys". Without detailed methods of the surveys during which these data were gathered, or specific locations of singing males or active nest(s), it is not robust to place such importance on them.

2.4 Technical Methods and Data Appraisal

2.4.1 Common Bird Census (CBC) methods (1992) are cited within the report, in relation to both targeted Cetti's warbler surveys and general breeding bird surveys. More recent guidance from Gilbert et al. (1998) is also listed within the references but not cited in the methods section, making it unclear whether this specific method for monitoring of Cetti's warbler was followed.

2.4.2 The report states (regarding Cetti's warbler) "given that males of this species may patrol territories up to 450m in length, and multiple females can nest within a single male's territory... the number of active nests present during the season could not be determined with precision." Cetti's warbler territories can also overlap (Gilbert et al., 1998). Despite this, Figure 2 maps Cetti's warbler territory boundary (pink dashed polygon) at well below 50m across its length.

2.4.3 To avoid disturbance to Cetti's warbler, the authors have applied "precautionary distances of 50-100m, applied to similar riparian species, such as reed warbler (*Acrocephalus scirpaceus*) (Bright et al, 2008; Cutts et al, 2009)". These publications have been searched for reference to disturbance of reed warbler, and none were found, leaving it unclear how this disturbance buffer is justified.

2.4.4 British Trust for Ornithology (BTO) species codes have been used to show species, numbers and distributions of species recorded during the general bird surveys. The results figures include species recorded but not behavioural symbology, such as singing. Resultingly, the reader cannot appraise the likelihood whether birds recorded could have been breeding. Combined with the lack of clarity about installation and operational dates, this also prevents appraisal regarding overall effects of the Aqua Park on breeding birds.

2.4.5 Appendix 2 of the report shows NRW's request for all nesting species to be considered. As discussed above, the presentation of data within the report prevents detailed review including whether a greater number of species could breed within the survey area than are reported.

2.4.6 The method used to assess breeding status is also not reported, despite the report referring to 'confirmed', 'probable' and 'non-breeding' statuses. Some species for which suitable habitat is assumed present were recorded on multiple occasions during the survey period, e.g. woodpigeon (*Columba palumbus*) and wren (*Troglodytes troglodytes*). To enable further review of this aspect, full methods of the breeding status classification method used are required.

2.4.7 As an example of the above, Kingfisher (*Alcedo atthis*) was recorded three times during the six general bird surveys. The results present the status of this species within the survey area as 'non-breeding'. However, it is not clear how this conclusion was made. It is acknowledged that this species is listed on Schedule 1 of the WCA, and therefore subject to protection from disturbance while breeding. Justification for non-breeding status of kingfisher during surveys is required to enable assessment of whether legislation may have been breached during installation and operation of the Aqua Park, in relation to this species.

2.5 Evaluation and Conclusions

Known Unknowns

2.5.1 The report states "it is also not possible to confirm whether undetected territories were present earlier in the breeding season". This key limitation to the study has not been sufficiently acknowledged and accounted for within the report. The report goes on to confirm that no evidence of "disturbance to the effect legally defined" was observed. While this may be true, the report does not provide recommendations to address the uncertainty whether potentially undetected territories, possibly closer to the Aqua Park, may have been affected by its installation and/or operation, or whether they could be in future. In summary, 'known unknowns' are acknowledged but not addressed through recommendations for further survey.

Cetti's Warbler

2.5.2 The report states: "In conclusion for Cetti's warbler: no legally significant disturbance was detected. There was no evidence of birds being displaced from their breeding habitat, nor was any disruption of their breeding cycle observed. They successfully bred whilst the Aqua Park was in operation, indicating that the Aqua Park did not prevent or stop their nesting, at least for some individuals". The final five words of this statement infer that the authors are aware other pairs may have been affected but this is not addressed within the report.

2.5.3 It is stated that “the continued presence of an adult (Cetti’s) warbler with its fledglings near the activity strongly implies habituation or at least a lack of sensitivity to that level of disturbance”. However, nesting bird sensitivity to disturbance may be dependent on nesting and fledging stage of some species (Goodship & Furness, 2022). Without further justification, particularly given the ‘known unknowns’ associated with missing early season surveys, this is not considered a sufficient basis on which to draw conclusions regarding Cetti’s warbler disturbance habituation or tolerance within the survey area.

Other Breeding Birds

2.5.4 Evaluation and conclusions regarding other breeding birds concede the study limitations more openly, where the similarities in data interpretation difficulties with Cetti’s warbler are acknowledged. Due to the issues described above, relating to presentation of behavioural data, breeding statuses of recorded species and how these were classified, few species can be discussed in relation to bird breeding success throughout the survey area.

2.5.5 Regarding moorhen and coot, which were confirmed breeding, the report reaches a more justifiable conclusion that “It is unclear whether (lack of successful late-season nesting) reflects natural seasonal patterns, predation pressure, environmental factors, or disturbance”. This conclusion regarding waterfowl distribution within the survey area is that “apparent changes could be influenced by a range of environmental or behavioural factors and cannot be conclusively linked to Aqua Park operations”. Conversely, it cannot be concluded that apparent changes were not linked to Aqua Park operations. Further data are required, alongside clarification and justification in line with the above comments.

2.6 Prescribed Mitigation Measures

2.6.1 Appendix 2 of the report details NRW’s requirement for “proposed adaptive mitigation recommendations (if required) for future operation.” The report includes no recommendations for further survey or mitigation. For the following reasons (detailed above within the body of this Technical Note) this omission has the potential to result in a breach of legislation regarding breeding birds:

- Birds (including Schedule 1 species) are likely to nest in different locations between years. This could lead to impacts on breeding birds through destruction or disturbance if appropriate survey and mitigation is not implemented in subsequent years of operation.
- There is no attempt to rectify the lack of early season survey data during subsequent years, despite acknowledging this limitation.

3. Recommendations

3.1.1 It is recommended that the Aqua Park operator, their ecological consultant and NRW agree a baseline survey, monitoring, mitigation and enhancement strategy well in advance of any Aqua Park installation and operation, in the future. This strategy should be informed by a full year of breeding bird surveys, in the absence of potential impacts (i.e. the Aqua Park).

3.1.2 Habitats within the site will inevitably change over time, through management (either active or absent) and succession. Bird populations and distributions at the site will also likely change over time, partly in response to habitat changes. Therefore, at least some elements of the survey, monitoring, mitigation and enhancement strategy should be implemented during each operational year of the Aqua Park. The aim of this would be to ensure that site population and distribution changes (particularly of Schedule 1 species, but also to all nesting birds) do not lead to future breaches in legislation as a result of the Aqua Park.

3.1.3 The strategy should be designed and supported by a suitably qualified ornithologist with sufficient knowledge of the site and familiarity with all species involved. The strategy should include the following:

- Use of habitat assessment and mapping to inform targeted survey effort (including number of visits required).
- Reference to habitats as justification for potential presence / likely absence of species.
- Gathering a dataset including the optimum periods for detecting target species, according to best practice guidelines.
- Adapting survey methods as required, depending on results, and acknowledging that breeding pairs may use different nest sites within and between years, including in response to changes in habitat suitability for nesting.
- Monitoring bird use at the site and implementing control measures as necessary to avoid legislative breaches or negative impacts on breeding birds.
- Increasing nesting and foraging opportunities for Priority species (Bird Survey & Assessment Steering Group, 2025) using CLCP in the long term, alongside suitable management techniques to avoid conflict between the Aqua Park and the local conservation status of breeding birds.

3.1.4 Table 1 (below) provides example measures which could be included within a baseline survey, monitoring, mitigation and enhancement strategy, to be agreed with the client and NRW. The theoretical timeline assumes a full year of breeding bird surveys during 2026 in the absence of the Aqua Park, to inform monitoring, mitigation and enhancement requirements.

Table 1: Example inclusions for survey, monitoring, mitigation and enhancement strategy

Stage and Timing	Example Strategy Elements
Prior to next installation (e.g. baseline surveys during 2026 breeding season)	<p><i>Desk Study</i></p> <ul style="list-style-type: none"> Further data requests from Glamorgan Bird Club (or other relevant sources) for most recent years possible, data review, updating the current report accordingly. <p><i>Disturbance Buffers</i></p> <ul style="list-style-type: none"> Identify and agree a suitable disturbance buffers for all WCA Schedule 1 species for which habitat at the site is suitable for breeding, considering the proposals and baseline disturbance levels. This should be supported by scientific evidence and clearly cited wherever possible, using analogous species if necessary. <p><i>Habitat Assessment</i></p> <ul style="list-style-type: none"> Assess and map areas of suitable habitat within the agreed disturbance distance of all WCA Schedule 1 species with potential to be disturbed by the Aqua Park (the target species). <p><i>Baseline Breeding Bird Surveys</i></p> <ul style="list-style-type: none"> Bird surveys should be designed to enable the value of the site for breeding birds to be evaluated according to Best Practice Guidelines. Baseline surveys in areas of suitable habitat for WCA Schedule 1 species with potential to be disturbed during installation and operation (target species). Map all bird territories present within the survey area. Surveys should be conducted according to best practice guidelines (Bird Survey & Assessment Steering Group, 2025). Extend appropriate number of these visits to include all areas within the survey area presented in the report, to enable appraisal of impacts on birds in general, according to best practice guidelines. Recording and mapping should include behavioural notation and accurate and precise (ideally <5m accuracy) locations of all active nests recorded, for example using GIS. Methods should include species breeding status classification protocol. <p><i>Impact Assessment</i></p> <ul style="list-style-type: none"> An impact assessment report (CIEEM, 2018) should be provided for review by NRW and the client, detailing survey effort, results and assessing the value of the site for breeding birds. Recommendations should be made to ensure that operations do not breach legislation regarding breeding birds and that the value of the site for breeding birds is maintained in the long term. <p><i>Enhancement Plan</i></p> <ul style="list-style-type: none"> If agreed with NRW, an enhancement plan could be created and implemented for habitats within CLCP, outside potential disturbance zones of the Aqua Park, to increase breeding and foraging opportunities for Priority bird species recorded during the surveys, including Cetti's warbler.

Stage and Timing	Example Strategy Elements
<p>Depending on the results of the above, the below may also be required:</p>	
<p>Prior to next installation (e.g. spring, 2027 onwards)</p>	<p><i>Bird Monitoring Surveys</i></p> <ul style="list-style-type: none"> • All bird surveys should be conducted in line with Best Practice Guidance and in accordance with the above (baseline surveys). • Further bird monitoring surveys to inform installation and operation of the Aqua Park based on locations of breeding birds within the current year. • Extend appropriate number of these visits to include all areas within the survey area presented in the report, to enable appraisal of impacts on birds in general, according to best practice guidelines. • Nesting bird surveys of areas impacted by the Aqua Park installation (within 24 hours of installation), where suitable nesting habitat will be affected, to ensure legislation is not breached. This should be informed by the above surveys, including nest finding attempts to locate nests of any WCA Schedule 1 species with potential to be disturbed by the Aqua Park installation or operation. <p><i>Monitoring Interim Reporting</i></p> <ul style="list-style-type: none"> • An interim report should be provided for review by NRW and the client, detailing survey effort, results and any necessary additional recommendations to ensure that operations do not breach legislation regarding breeding birds.
<p>During next installation and operation (e.g. summer, 2027 onwards)</p>	<p><i>Timing</i></p> <ul style="list-style-type: none"> • Installation should not commence without agreement from the client and NRW. <p><i>Bird Surveys</i></p> <ul style="list-style-type: none"> • Monitoring surveys (as described above) should be conducted during the installation and operation, with results from each survey interpreted and evaluated as soon as possible. <p><i>Assessment of Potential Disturbance</i></p> <ul style="list-style-type: none"> • There is a risk that as detectability of some target species is reduced (e.g. Cetti's warbler), disturbance effects are perceived. This may be an artifact of the breeding bird survey methodology. Therefore, professional judgement should be exercised. Where WCA Schedule 1 species disturbance cannot be ruled out through reference to published data (using analogous species where appropriate), nest finding attempts may be required (under an appropriate survey licence) to maximise data precision and enable monitoring. <p><i>Amendments to Operation</i></p> <ul style="list-style-type: none"> • Where necessary, any required amendments to the operation of the Aqua Park should be communicated to the operator, the client and NRW as soon as identified. Amendments will be required if any breaches in legislation are anticipated or recorded regarding breeding birds.

Stage and Timing	Example Strategy Elements
Post operation (e.g. autumn, 2027 onwards)	<p><i>Enhancement Plan Updating</i></p> <ul style="list-style-type: none"> Subject to agreement with NRW, the enhancement plan should be subject to ongoing review depending on the results of monitoring surveys and any perceived impacts on breeding birds from the Aqua Park. Pending success of the strategy and breeding territories identified through further assessment, it may be appropriate for the enhancement plan to include: <ul style="list-style-type: none"> relocating the Aqua Park management of habitats within potential disturbance buffers of WCA Schedule 1 species, in relation to the Aqua park, as unsuitable for breeding* <p>*This should only be considered if sufficient, suitable compensatory breeding habitat is provided elsewhere within the site (above enhancements) to absorb displaced breeding birds. Management of habitat (e.g. vegetation removal) should only be conducted outside the bird breeding season or following a nesting bird survey by a suitably experienced ornithologist, confirming nesting birds will not be impacted.</p>

4. Conclusion

4.1.1 Based on the above, we cannot confidently state that concerns regarding biodiversity and legislative compliance have been adequately addressed.

5. References

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