Trump International Golf Links
SCOTLAND

Professor William Ritchie
Independent Coastal Geomorphologist

Summary Precognition

Golf & Leisure Resort

Menie Estate, Balmedie, Aberdeenshire



Public Inquiry

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SUMMARY PRECOGNITION OF PROFESSOR WILLIAM RITCHIE INDEPENDENT COASTAL GEOMORPHOLOGIST

1.0 INTRODUCTION

My name is Professor William Ritchie. I have appended my detailed professional experience as Appendix A. I have been, and continue to be, engaged in coastal research, mainly in the geomorphology of sand dune systems since the mid 1960s. A significant proportion of this work includes advice on coastal managerial problems.

I authored a chapter in the Beach Report in 1978 for the Countryside Commission for Scotland (Production T12 and re-issued by SNH in 2006), which included Balmedie, Menie, Foveran and Forvie which is used as the baseline for managerial issues for dune and machair coastlines throughout Scotland. In addition, in 1984 I produced recommendations for the NCC for the inclusion of beach and dunes sites in Scotland for the Geological Conservation Review (GCR).

I was a Member of the Gordon District Council Don-Ythan Working Party on coastal land use, and continue to provide geomorphological advice to the major oil and gas companies on all oil and gas pipeline landfalls and their restoration at Cruden Bay and St. Fergus.

In relation to SSSIs, I was a member and, subsequently Chairman, of the Advisory Committee for Sites of Special Scientific Interest as set-up by the Scottish Office to provide advice to SNH.

In relation to the MEMAG proposal, I am presently the permanent Ecological Advisor to the St. Fergus Coastal Environment Committee and the Acting Chairman of SOTEAG (The Shetland Oil Terminal Environmental Advisory Group to the Sullom Voe Association Ltd.)

2.0 HISTORY OF INVOLVEMENT IN THE PROJECT

The original contractual arrangement for geomorphological advice was and continues to be undertaken on an independent basis, based solely on our scientific judgement and that neither consultant was in support of, or in opposition to, the proposed development at Menie Links. The clients and the developer, TIGLS, accepted and have continued to honour this agreement.

3.0 STATEMENT OF GEOMORPHOLOGICAL ADVICE

3.1 Chapter 6 of the Environmental Statement

I co-authored with Professor Alistair Dawson Chapter 6 Geology, Geomorphology and Soils of the Environmental Impact Assessment and some of the Appendices, and have subsequently comments upon possible minor changes to the golf course layout that might reduce direct geomorphological impacts.

One of my key recommendations is the creation of MEMAG, the principle of which is endorsed by Aberdeenshire Council and listed as a planning condition. The Appendix includes a definition of purpose, area of concern, terms of reference, possible membership and committee structure. It will be created:

- to monitor environmental changes
- to advise on good practice managerial responses
- to act as an independent check that developer commitments in relation to the dunes environment will be fulfilled
- to advise on mitigation and minimisation of environmental impacts, and
- to commence work before site work begins and continue to advise throughout the operational life of the development.

3.2 Identification of Key Issues

Apart from limited references in the 1978 Beaches Report and publications by MacTaggart in 1998 and Wright in 2001, no academic papers or reports provide prior information on the geomorphology of the site. Accordingly, the 2006 EIA mapping and interpretation of the area was original, intensive geomorphological research, the conclusions of which remain largely unaltered.

3.3 Key Findings

Specific elements in these geomorphological assessments are as follows:

(i) The coastal dune and beach/ dune interface must not be utilised in any way by the developer, a recommendation required to preserve the integrity of the coastal longshore sediment system within the recognised Aberdeen Bay sediment cell. The Menie Area is currently located in an accretionary zone, which is likely to continue into the future, but cannot be guaranteed.

(ii) As illustrated by production T14, the gap in the coastal dunes to the south-east of the dome, which had some effect on the dynamics of the dome, has closed completely since 2006. The survey in 1978 showed this gap to be much wider, almost 200m, but it never extended downwards to beach level: it was more an extensive de-vegetated area with considerable sand blow landwards. The exact consequence of this closure, which shows every sign of permanence, to the movement of the dome needs further study. Nevertheless, although a contributing factor to mobility, it is likely to have been much less important than the main "rolling advance" of the larger volume of sand within the total mass of the dome.

(iii) We believe that issues of possible climate change, speculation of both sea level changes and possible increased storminess are irrelevant since they are wholly independent variables which will occur whether or not the development proceeds. SEPA's 2007 assessment classified this coastline as having no flooding risk. In so far as these

changes *might* impact on the use of the golf course, any trends would have to be considered within the stated adaptive/soft solution management system as agreed by the developer which can be defined as reacting to change in ways that are measured responses and do not rely on pre-determined, fixed managerial solutions. "Soft" is a brief description of those engineering techniques that eschew fixed, hard, man-made coastal defences but attempt to work with natural forces and materials to achieve more responsive, flexible and mobile solutions.

Moreover, under the policy of no development along the coastal edge and on the primary dune ridge, the golf course management regime would not be permitted to construct any form of coastal protection works along the Menie shoreline.

(iv) Explicit statements have been made to underline the geomorphological differences between the interior dunes and links landforms at South Menie and North Menie, as defined by the SSSI boundary. There has also been acceptance that the SSSI boundary is appropriate and that the area to the north is properly designated as having considerable geomorphic interest for both its landforms and formative processes within the normal guidelines that SNH uses for the definition of an SSSI. In contrast, the South Area can be assessed as having less geomorphic interest. It is stable, mature and essentially non-dynamic. Impact is therefore low to moderate and individual holes will modify existing topography without significant earth moving or topographic modification. Stabilisation of existing bare sand areas is almost negligible as such surfaces are not present in South Menie.

Like North Menie, considerable areas of existing links and dunes will not be altered due to the wide separation between fairways and to the design which normally requires ‘clearance’ for the first drive from tee to fairway. Nevertheless, some reshaping and surface modification will be needed but this is almost entirely within existing low axes and

depressions in the existing topography. There is no reason to reduce the elevation of most higher dunes and ridges.

Other than along the coastline, North Menie SSSI is not connected by active geomorphological processes to South Menie, because the nature of the south to north movement of active features, specifically 'the dome' has left a buffer zone of recolonised, stable deflation and slack surfaces at its southern margin. Similarly, North Menie is not connected by significant transfer of sediment north of the Sandend Burn (the north limit of Menie Estate) and Drums Links, which is also part of Foveran SSSI, other than along the beach by longshore processes.

Menie is part of Foveran SSSI and is estimated to be equal to one third of the total area, which stretches south from the Ythan Estuary. Further north, the Sands of Forvie NNR continues the conservational designations for the north end of Aberdeen Bay. Unlike North Foveran and South Forvie, the sedimentation link with the Ythan Estuary is less important. The remainder of Foveran SSSI contains similar dune landforms at different stages of development, as can be found at Menie. Although not identical, Foveran also has an extensive deflation sequence, with large areas of bare sand at the north end. This includes a large arcuate mass of sand, which migrates northwards against older dune landforms. In general, there are more open connections between these bare sand areas, with devegetated coastal dunes and the open beach than at Menie. The general morphology is similar to the dome at Menie, but is less massive and has a different shape. Nevertheless, the formative processes of sand movement are the same, but might have different rates of change due to local factors. In general, such massive inland bare sand features are almost unknown elsewhere in Scotland, but are uniquely found at Balmedie, Menie, Foveran and Sands of Forvie.

(v) The North Menie SSSI contains an excellent assemblage of dune and links landforms with clear examples of active and historical formative processes. Accordingly, Chapter 6 described the impact of the golf

course development as normally moderate to severe. Like South Menie, many areas, in addition to the coastal zone, are untouched due to the spacing of the fairways and to the avoidance of some dynamic and topographically over-steep slopes. Nevertheless, the majority of holes have a severe impact as they necessitate topographic modifications and artificial stabilisation. Rightly, interest has focused on the golf course architect's need to stabilise the open, unvegetated sand dome and contiguous areas. If this is done, then a major element in the reason for site designation i.e. dynamic and relatively rapid but variable movement in a generally northwards direction, would cease. There is no disagreement between developer and objectors on this specific concern. It is also agreed that this golf course design requirement crystallises the question whether or not sufficient geomorphological interest remains in this North Menie area to continue to justify the appellation SSSI.

Certainly mitigation, and good practice, dune management advice from MEMAG will be helpful, but, from the outset, this remains the key geomorphological issue and is central to the outcome of the Inquiry. Reciprocal reviews of verbal and documentary statements between SNH and its advisors and the consultants for the developer have never disagreed on the importance of this central issue - in principle and in practice. Without going into detail, there is also general agreement on the specific locations of the greens, tees and fairways that are affected directly or indirectly by both topographic reshaping and by the stabilisation of mobile sand in order to meet constructional and operational requirements. Very minor differences between the developer and SNH relate to the latest version of the golf course layout, but there is probably room for some ‘fine-tuning’. Nevertheless, this is almost irrelevant compared with the central issue of the proposal for relatively extensive stabilisation of large areas of mobile bare sand surfaces within the SSSI.

(vi) In April 2008, a modified golf course layout was submitted. For most tees, greens and fairways, there is less impact on the existing dune and links topography. Partly due to both the shortening of some

holes and resiting of Holes 15 and 16, there is some additional avoidance of some mobile sand surfaces. Nevertheless, substantial areas in the SSSI require stabilisation to provide vegetation cover. Holes 12, 13, 17 and 18 fall wholly, or partly, into this category with hole 13, on the dome, requiring complete stabilisation. The amount of stabilisation and vegetation cover will also affect geomorphological processes in adjacent areas. The plans require little or no stabilisation of mobile sand surfaces elsewhere in the course but all tees, greens and fairways require topographic modification (or smoothing) and revegetation to convert natural surfaces to golf course standards.

The most recent hole-by-hole assessment was written after a site visit with SNH and the golf course architect on 6th May 2008. The most recent design requires much less cut and fill operations and avoids several dynamic dune zones. The overall impact on the landforms is less and the amount of stabilisation has been reduced. This new plan also provides more information on tracks between greens and tees and makes use of low ground, existing pathways and natural depressions. The areas to be used for ancillary constructions, e.g. clubhouse, also seem to be less. In general, these reductions are mainly a consequence of re-positioning and re-alignment.]