

Dr. Tom Dargie

Rebuttal Statement
Scottish Natural Heritage

Golf & Leisure Resort

Menie Estate, Balmedie, Aberdeenshire



Public Inquiry

Rebuttal of Opposition Precognition

Precognition of Scottish Natural Heritage (SNH): Mr Paul Rooney

General Overview

This SNH precognition places correct emphasis on the strong relationship between several dune habitats and dynamic geomorphological processes. It includes reservations on the likely success of proposed mitigation methods.

There is much general agreement between this SNH Precognition and the Applicant's habitat baseline information and interpretation for the development area. Applicant statements on habitat extents and valuation are frequently quoted in terms of agreed opinion. However, there might be some disagreement arising from additional information provided by the Applicant as documents T4 and T50. SNH has stated it has not had sufficient time to scrutinise this information fully. Potential disagreements notwithstanding, there is general agreement on the importance of Foveran Links SSSI and dune habitats south of the SSSI boundary which are regarded as SSSI quality. Likewise, there is further agreement on the severe adverse impacts of development for golf within the dune sector at Menie.

This rebuttal concentrates on remaining issues of disagreement, as expressed in this SNH precognition and submitted documents.

Witness: The witness for TIGLS is Dr Thomas Dargie.

Issue 1 – Temporal and spatial aspects

Paras 21 – 24 of this SNH precognition argue that a very long-term 'intergenerational' view of dune development is needed at Menie, as well as maintenance of space for dune processes to operate naturally. This witness considers that these are aspirational views which are almost impossible to fulfil under the constraints of making a development proposal. There is also a suggestion that the Applicant's assessment lacks sufficient information on past conditions and changes, as well as what will or might be present in the future. The review and research on historical change covered in Chapter 6 of the ES (CD-G3) is more than adequate. The account on habitats in the ES complements this work on geomorphology, emphasising zonations as surrogates for changing conditions over time, as well as demonstrating in T50 the strong role of soil acidity (another proxy for time) influencing sets of dry and wet dune vegetation types. The ES is not deficient in consideration of the past and considerable effort has been applied to study of the recent evolution of the northern sand sheet and the resulting habitat mosaic. The position on future conditions inevitably involves conjecture and even guesswork. It would be wrong to place great emphasis on such uncertainty which is impossible to prove. For the record, this witness considers that much of the present dune dynamism in northern Menie will largely disappear before the end of this century, without development for golf. In nature, large masses of mobile sand tend to stabilise over time as a consequence of normal dune vegetation successional processes but a range of other factors often interfere and prevent this conclusion. If this occurs there might then be little or no new production of young dune

slack habitat. Then, before the end of this century, young dune slacks in the wake of the sand sheet would undergo succession to mature dune slacks and early succession species would probably be lost. The dynamism emphasised by all SNH witnesses as vital to the long-term integrity of geomorphology and habitats, might therefore be lost in the long term, as a result of natural processes operating with sufficient time and space. However, the above scenario of stabilisation cannot be proved and this witness has not sought to highlight it as a component of the Applicant's case.

Witness: The witness for TIGLS is Dr Thomas Dargie.

Issue 2 – Impacts

Para. 25 of this SNH precognition places emphasis on the fact that potential habitat loss at Menie would exceed the size of some individual dune sites in Britain. This witness does not consider this to be a sound measure of scale of impact. Dune site size in Britain, measured in terms of dune habitat extent, is very heavily skewed in terms of frequency towards smaller sizes. The Sand Dune Vegetation Survey of Scotland (SNH22a) records 405 dune and machair sites in Scotland (out of a total of 558) each with a total habitat area <35 ha (the estimated direct loss of key dune habitat to the first course at Menie, T50). These 405 sites together represent only 6% (3175 ha) of the Scottish dune habitat resource and few of these sites are designated as SSSI in their own right for dune or machair interest. Most Scottish dune interest resides in the remaining 153 sites which account for 94% of the resource and habitat losses at Menie are best examined in relation to individual habitat, on a habitat by habitat basis.

Para. 26 of this SNH precognition quotes a statement from production T50 on the SSSI quality of ground within and without the Foveran Links SSSI and concludes that "The impact is therefore wide ranging". The quoted statement is simply a measure of the importance of key dune habitats at Menie. It does not refer to golf impact and the SNH conclusion makes little sense to this witness.

Para. 28 of this SNH precognition asserts that fairway construction will destroy dune slacks. This is not accurate. About half of dune slacks are affected by each of the golf course proposals and most of these slacks will not be destroyed. Overlay analysis, placing the Fazio (T1) and Hawtree (T2) courses over habitat baseline geographical information system (GIS) information, gives the following results. There are 19 areas (polygons) mapped as dune slack, excluding many small patches of dune tall willow scrub. These vary considerably in size. The Fazio course would destroy two slacks, the Hawtree course one. The slacks destroyed would be below average or median slack size. The Fazio course would not affect 10 out of the 19 polygons. The Hawtree course would not affect 7 out of the 19 polygons, with further mitigation by avoidance possibly increasing that total to 9 out of 19. The avoidance requires moving a path (tees, Hole 14) for one small slack and trimming the area of transition rough for a small part of Hole 10.

Witness: The witness for TIGLS is Dr Thomas Dargie.

Issue 3 – Mitigation

Para. 31 of this SNH precognition misunderstands the role of the proposed Menie Environmental Management Group (MEMAG). This issue is considered in more detail in the Rebuttal Statement of Professor Ritchie. This witness does not understand why the SNH witness considers it unfortunate that habitat mitigation is included under the remit of MEMAG (last sentence of para. 31). This witness considers MEMAG as the key 'vehicle' to achieve effective mitigation during construction and site environmental management thereafter, by offering independent advice when required and providing monitoring services. Its equivalents elsewhere in Shetland and at St. Fergus have been very effective over decades. In many respects MEMAG would provide the same founding principles highlighted in para. 10 of this SNH precognition, regarding the Foundation for Golf and Environment.

Paras. 32 and 33 of this SNH precognition assert that the success rate for habitat translocation of dune slack will be poor or very poor. This witness agrees that these habitats could be difficult. This is due to uncertainty in how to determine and measure the important donor site variables habitat, for use in locating and preparing receptor conditions (e.g. flux in watertable depth, soil nutrition and reaction, flux in water quality). However, that uncertainty does not preclude success and this witness considers the last sentence of para. 32 to be illogical. There is a good literature field available to assist, on both habitat translocation and soil – vegetation relationships in dune slacks, as evidenced in SNH and RSPB documents. There is also site-specific information available in the quadrat analysis presented in T50. Research is required to move this analysis from abstract national scales of soil acidity, soil nutrition and soil wetness to site-specific instrumental measurement. This is stated in T50. This witness does not accept that all wetland habitat translocation has a low success rate. There are well-monitored studies undertaken as part of Section 75 Management Agreements or planning conditions – this witness insists to clients that adequate baselines and monitoring must be undertaken and reported. However, these reports are rarely placed in the public domain and such work is never considered as part of a general view of success or otherwise. Personal experience with 50 ha of blanket bog turf translocation shows the development of stands with species composition, patterning and structure which is within the range of undisturbed bog uninfluenced by development. This requires 10 years (i.e. medium-term, defined as 5 – 15 years) to be achieved when starting with a surface with a low live vegetation cover (usually 0 - 25% cover). Judged by the speed of young dune slack succession at Menie, dune slack habitat will respond much more quickly than blanket bog and good young dune slack conditions should be achievable in the short term (up to 5 years).

Witness: The witness for TIGLS is Dr Thomas Dargie.

Issue 4 – Dune stabilisation

Para. 36 of this SNH precognition asserts that mitigation “to establish grey dune and heath on the Menie sand sheet must not be associated with mitigation at all and must be discounted from the calculation of mitigated habitat. It is a damaging operation for the geomorphological interests.” This witness agrees with the last sentence and suggests that whatever stabilising vegetation cover might be used, its effects are assessed too as an

impact on the mobile dune geomorphology receptor. However, grey dune and heath established as part of stabilisation, via habitat translocation, should be included in calculations of mitigated habitat. To deny that is to deny the continued existence of such translocated habitat.

Witness: The witness for TIGLS is Dr Thomas Dargie.

Issue 5 – Habitat translocation

Paras. 42 - 44 suggest gaps and inadequacies in Applicant material on a proposed habitat translocation programme, together with poor understanding for wet dune habitats. The material is detailed in section 7.1.2 of T50 and described as “Outline mitigation proposals”. All Applicant material on environmental matters relevant to this Inquiry are part of an application for Outline Planning Permission. The gaps and inadequacies listed in this SNH precognition are matters for a Detailed application. It would be wrong to go into the level of detail required by SNH at this stage. MEMAG has to be involved in the formulation of a specification to cover all aspects of the habitat translocation. The Applicant is well aware of the complexity of the translocation programme, especially the importance of matching donor and receptor site conditions. Duplication of habitat conditions via translocation requires careful measurement of donor site conditions because these are the resultants of stable surface processes, for wet and dry dune environments. This would be done in advance of any turf stripping work. It would then be followed by ground preparation at a suitable receptor site to achieve near-matching conditions with the donor site. These basics are listed as simple principles and advice in production SNH 49c. This witness would refer the Inquiry to a much more detailed review of best practice in habitat translocation (Anderson 2003), by the same author of SNH 49c, and cited in SNH 49c. This sets the standards which the Applicant would apply to habitat translocation from initial planning through to long-term management and monitoring of results.

Para. 45 of this SNH precognition asserts that “dune soils as a whole are notoriously under studied and poorly understood”. This misrepresents a considerable literature on this subject, with SNH and RSPB documents for this Inquiry including some excellent examples of rather good understanding, including the classic work of Salisbury. Recent volumes on European dune conservation contain many studies on dune soils. The history of dune soil research and its application to a complex problem, mycorrhizas and nutrient cycling in sand dune ecosystems, wet and dry, is testament to the maturity of this knowledge and is cited in the Applicant’s ES (CD-G3, Read 1989). This paper can be made available to the Inquiry to illustrate this point, that there a mature understanding of soils and soil-vegetation relationships.

Paras. 46 and 48 of this SNH precognition reports T50 descriptions of the results of a very brief trial involving three dune habitats (mobile dune, grey dune, mature dune slack), lifting a turf, placing it on a trailer, then removing it and replacing it in its original position. This was obviously not included as an example of a rigorous scientific trial. The SNH account emphasises the difficulties likely to be associated with lifting turf from Menie slacks due to the presence of shingle, cobbles and glacial till beneath thin sand. This witness decided on the habitats to trial at Menie and the mature slack example was deliberately selected to

assess the success of one piece of excavator equipment. It has been deemed inadequate for use in dune slacks and other equipment now needs to be tested. Examples of much more sophisticated equipment are given in the best practice review of Anderson (2003) which can be supplied to the Inquiry. Once the required range of likely successful equipment is assembled, more comprehensive trials would be organised.

Para. 48 of this SNH precognition notes that short and medium term are not defined in T50. These in fact agree with terms used in recent years by the Institute of Ecology and Environmental Management. Short-term covers up to 5 years, medium term 5 – 15 years and long term 15 – 25 years. The SNH precognition doubts the T50 claims on time for dune habitat recovery from translocation. This was based on experience and knowledge of how quickly natural plant successions occur on dunes in Britain, as well as responses of dune vegetation to major disturbance. Witnesses for the Applicant, William Ritchie, David Bell and Thomas Dargie, have experience of developments affecting dune habitats in Scotland. This experience includes the large dune system at Barry Links, Tayside. The witnesses Bell and Dargie visited this site recently and assessed vegetation recovery after 7 – 8 years following installation of a large sewer pipeline. An SNH witness here, Stewart Angus, was involved in approving the original procedures for pipeline corridor restoration. The witnesses found very good recovery. Indeed, grey dune habitat heavily disturbed in 2000 is in better condition than the very uniform, rank and species-poor adjacent ground. It has a wider range of National Vegetation Classification types, usually with more species and a better vegetation structure, including small patches of bare sand. A brief review of these findings can be made available to the Inquiry if required.

Paras. 49 – 50 of this SNH precognition repeat earlier inferences that habitat translocation is unlikely to be successful. The experience of this witness is that dune habitats, including dune slacks, are resilient and cope with small to large scale disturbance via rapid habitat succession. The brief review of dune restoration and habitat recovery, including Barry Links, is offered to the Inquiry as an example. These factors, together with best practice as outlined in SNH 49c and detailed in Anderson (2003), will ensure a high level of success. There is therefore a fundamental difference in opinion here. SNH witnesses consider that habitat translocation *should* not be used and extend that reasoning too to suggest the (un)likely success of the method. This witness is sympathetic to the SNH reasoning regarding *should* habitat translocation be used. However, this witness is equally convinced, from wide experience of dune habitats, knowledge of the ways dune habitat copes with dynamism, as well as observation of dune restoration schemes in Britain, France, Spain and the Netherlands, that habitat translocation *could* be used with a high measure of success. SNH witnesses seem unprepared to consider this point of view which is necessary in this case, as a measure of last resort.

Witness: The witness for TIGLS is Dr Thomas Dargie.

Issue 6 – Compensation

Paras. 52 – 53 define compensation and outline its possible role at Menie. No proposals for habitat compensation have been made by the Applicant. The SNH precognition seems unaware that compensation need not necessarily involve like for like habitat. An example is

the substitution of lost intertidal habitat at Cardiff Bay for coastal grazing marsh and reedbed development and enhancement on the Gwent Levels in Wales.

Witness: The witness for TIGLS is Dr Thomas Dargie.

Precognition of Scottish Natural Heritage (SNH): Mr Stewart Angus

General Overview

This SNH precognition places correct emphasis on the strong relationship between several dune habitats and dynamic geomorphological processes. It expresses reservations on the likely scale of measured direct impacts and the likely success of proposed mitigation methods.

There is much general agreement between this SNH Precognition and the Applicant's habitat baseline information and interpretation for the development area. However, there might be some disagreement arising from additional information provided by the Applicant as documents T4 and T50. SNH has stated it has not had sufficient time to scrutinise this information fully. Potential disagreements notwithstanding, there is general agreement on the importance of Foveran Links SSSI and dune habitats south of the SSSI boundary which are regarded as SSSI quality. Likewise, there is further agreement on the severe adverse impacts of development for golf within the dune sector at Menie.

This rebuttal concentrates on remaining issues of disagreement, as expressed in this SNH precognition and submitted documents.

Witness: The witness for TIGLS is Dr Thomas Dargie.

Issue 1 – Dune slack conditions at Menie and development impacts

Para. 45 of this SNH precognition quotes three paragraphs from the applicant's ES (CD-G3, section 7.3.2) regarding the ecology of dune slacks. The third paragraph quoted by SNH actually refers to dune grassland, not to dune slacks. It is not relevant to dune slack ecology.

Para. 46 of this SNH precognition states that the "site possesses the best range of slacks in Great Britain in terms of stages of development". This is imprecise and an exaggeration. The NVC descriptions of dune slacks (SNH 35, pages 54-63, but also including pp. 236-241 in the original publication edited by Rodwell) refer to habitats which are more calcareous than those at Menie. The published NVC represents the best definition of the stages of slack development in Great Britain. It is generally accepted that the near-full (i.e. published NVC) range is only well developed at two sites (Kenfig Burrows in Wales and Braunton Burrows in England). Menie has mainly acidic dune slacks which are very different, particularly in their mature phases. It should be regarded as one of two of the best examples in Great Britain of successional (young to old) and hydrological (dry to wet) slack gradients upon acidic substrates. The other acidic site is Morrish More in Ross-shire, which has more slack habitat than is present in all of Wales, mostly developed by accretionary processes from former saltmarsh, not via wind deflation as at Menie and the sites in England and Wales. Menie is therefore probably one of four sites in Great Britain with the best range of slacks in terms of stages of development.

Para. 49 of this SNH precognition cites hectareage and percent extent for SD13 dune slack vegetation at Menie and in Scotland and Great Britain. The large areas of SD13 found at

Menie in 2006 is simply added to results from earlier surveys which date back to the late 1980s and early 1990s. Given that little SD13 was present in Great Britain mapping from that period, this gives large numbers in terms of the importance of the Foveran - Menie SD13 extents. However, like other sites, the 1990 Foveran Links survey (SNH 24) found only very small areas. It could be that there has also been an expansion in SD13 elsewhere in Scotland and Great Britain. The hectareage and percent extent figures therefore need very careful handling without up-to-date information from other sites in Britain. This SNH precognition could be correct, or a major exaggeration, or even an underestimate. We simply do not know.

Para. 51 of this SNH precognition states that slacks at Menie “would be destroyed or partly destroyed over 9-10 of the planned holes”. The word “destroyed” and the balance between “destroyed”, “partly destroyed” and unaffected totals needs careful consideration, set in context. Overlay analysis, placing the Fazio (T1) and Hawtree (T2) courses over habitat baseline geographical information system (GIS) information, gives the following results. There are 19 areas (polygons) mapped as dune slack, excluding many small patches of dune tall willow scrub. These 19 areas vary considerably in size. The Fazio course would destroy two slacks, the Hawtree course one. The slacks destroyed would be below average or median slack size. The Fazio course would not affect 10 out of the 19 polygons. The Hawtree course would not affect 7 out of the 19 polygons, with further mitigation by avoidance possibly increasing that total to 9 out of 19. The avoidance requires moving a path (tees, Hole 14) for one small slack and trimming the area of transition rough for a small part of Hole 10.

Para. 51 of this SNH precognition asserts that a thin algal/microbial mat, critical to the timing of slack plant succession (SNH27), will “be badly damaged by any relocation methodology”. The use of “any” is too sweeping a judgement. There are effective habitat translocation methodologies which will minimise damage, particularly transport as large areas of turf. SNH49c refers to the importance of turf size. That SNH production refers to an authoritative best practice review (Anderson 2003) which contains much more information on this subject. This witness makes further comment on this matter in rebuttal of the SNH precognition by Mr. Paul Rooney.

Para. 52 of this SNH precognition asserts that “dune slacks will have 50-100cm of sand added above their current surface, possibly with additional drainage” and that “the functionality of these areas as slacks will be permanently destroyed”. This is too simplistic a description of the works likely to take place. It is correct for areas of slack within the footprint of fairways, greens, semi-rough, transition rough, tees and paths. It does not apply to slack habitat outside that footprint. Those slack areas outside the footprint could still continue to function as slack because of the nature of most slack hydrology at Menie (water seeping over relatively impermeable till within a thin, varying thickness of blown sand). These areas do not flood. That seepage will continue after development. There are also areas of slack which flood for a lengthy period every winter. These have all been avoided and no ground raising will occur.

Para. 53 exaggerates the likely (non) production of new young dune slack vegetation adjacent to the 15th hole. A generous transition rough would be present. The dynamic

geomorphology of dunes to the east is being retained and new bare damp ground will continue to develop, followed by new young dune slack vegetation, well beyond the transition rough limit. Young dune slack vegetation develops very quickly upon bare damp sand. Once formed, it is resilient too – several vehicle tracks cross it at Menie south of the northern “dome” and many species cope with this level of damage, which is probably more severe than the golf impacts cited by SNH. Characteristic species are either annuals developing from seeds within bare ground, mosses developing from a spore rain falling on bare ground, or low-growing prostrate perennials. These can readily cope with moderate trampling and small amounts of ground disturbance, indeed many species are adapted to exploit such disturbance which historically is created by rabbit scraping.

Para. 54 of this SNH precognition makes rather sweeping judgements on the effects of soil re-profiling on the slack water table, particularly more mature dune slack with creeping willow. Some of this ground is subject to flooding every winter and these areas have been avoided. Their hydrology is unlikely to change. Higher ground has seepage hydrology rather than flooding and this will continue on this type of slack area outside the golf footprint. In terms of water levels, there will be little change to either type of slack hydrology (flooding, seepage) unless groundwater abstraction is required. Information on that is not decided, either in principle or detail. The very general statement on more indirect impacts of dune stabilisation, referring just to “soil/plant/atmosphere water relationships” is also not helpful in terms of being able to understand SNH opinion on water table effects.

Witness: The witness for TIGLS is Dr Thomas Dargie.

Issue 2 – Dune heath conditions at Menie and development impacts

Para. 58 of this SNH precognition, discussing the small extent of dune heath recorded on the northern margin of the Menie sand sheet, fails to give a full account of the reasons for loss of dune heath within Foveran Links SSSI. The mapping in this area, as recorded in SNH23, was based on 1990 vegetation survey (SNH24). Burial by blown sand, as a consequence of natural dynamism, is the only SNH explanation. This is only half the story. Further north from areas of sand-buried dune heath mapped there have been near-total, extensive dune heath losses due to bad land management (winter grazing and supplementary feeding of cattle). The habitat has switched from dune heath to dune slack, some of it badly damaged by dumping of straw and the spread of weedy, nitrophilous species (indicators of nutrient-enriched ground, often with surface disturbance). This winter grazing, a known damaging operation, appears to have been undertaken without the permission of SNH and without notification to SNH by landowner, occupier or grazier (T40).

Witness: The witness for TIGLS is Dr Thomas Dargie.

Issue 3 – Grey dune conditions at Menie and development impacts

Para. 63 of this SNH precognition asserts that excavation and removal of grey dune turf would not be able to duplicate processes and transitions by transplanting. This witness considers this to be incorrect. Most grey dune habitats at Menie are stable, with the

exception of semi-fixed dunes. Duplication of habitat conditions via translocation therefore requires careful measurement of donor site conditions because these are the resultants of stable surface processes. This would be done in advance of any turf stripping work. It would then be followed by ground preparation at a suitable receptor site to achieve near-matching conditions with the donor site. These basics are listed as simple principles and advice in production SNH 49c. This witness would refer the Inquiry to a much more detailed review of best practice in habitat translocation (Anderson 2003), by the same author of SNH 49c, and cited in SNH 49c. In addition, witnesses for the Applicant, William Ritchie, David Bell and Thomas Dargie, have experience of developments affecting dune habitats in Scotland. This experience includes the large dune system at Barry Links, Tayside. The witnesses Bell and Dargie visited this site recently and assessed vegetation recovery after 7 – 8 years following installation of a large sewer pipeline. The SNH witness here, Stewart Angus, was involved in approving the original procedures for pipeline corridor restoration. The witnesses Bell and Dargie found very good recovery. Indeed, grey dune habitat heavily disturbed in 2000 is in better condition than the very uniform, rank and species-poor adjacent ground unaffected by pipeline restoration. It has a wider range of National Vegetation Classification types, usually with more species and a better vegetation structure, including small patches of bare sand. A brief review of these findings can be made available to the Inquiry if required.

Paras. 65-66 of this SNH precognition include part of a review of the Doonbeg dune site in the Republic of Ireland. This is reported (SNH19) as having 28.70 ha of a Republic total of 5,700 ha for the Annex 1 grey dune type, stating that this quantity is significant both nationally (0.5% of the national resource) and in a European context. This witness has reservations on this data and its interpretation by SNH. The extracts of the original in SNH19 do not contain all information on the mapping and character (e.g. quadrat samples) of the Annex 1 grey dune type. There is also a hand-written comment on page 4 of SNH19 signed by Liam Wright (14.12.98) stating "Grey Dune definition wrong". Without the opportunity for detailed scrutiny it is impossible to accept the figures quoted with confidence. Furthermore, there are no guidelines on what thresholds for habitat extent might separate national from regional interest, or national from European. The precognition of this witness for the applicant has used a 1% threshold (of national extent) to represent a site of national importance. Doonbeg might not attain that threshold. There are no accurate figures on extent, to the knowledge of this witness, for the area of Annex 1 Grey Dune in Europe, making any assessment of European status impossible. It would be better to disregard the Doonbeg case. This witness has applied the 1% threshold test to corrected (2008) habitat data in his precognition (pages 16-17) and arrived at the conclusion that the Menie site and Foveran Links SSSI are each of regional level of interest in terms of their Annex 1 Grey Dune extent. This is a markedly different valuation from SNH.

Para. 68 of this SNH precognition includes the following two statements which are misleading: "The scale of impact of this proposal on the natural heritage interests and the wider SSSI is strikingly illustrated in Fig 5 of T50, stating that 182.78 ha of "Key Dune Habitat" could be impacted by the development" and "SNH concurs with this map as a general indication of impact". Fig 5 of T50 includes no reference to 182.78 ha of anything. The 182.78 ha value is given in Table 4 of T50. It refers to the total area of key dune habitats within the blown sand development area, with or without any development. The likely area of

direct habitat loss arising from the first golf course (T2) is also quoted as 35.08 ha, a much lower figure. Figure 5 in T50 is clearly described as showing the distribution of ground of high, moderate and low nature conservation interest. It is not a map showing the impact of golf development at all.

Witness: The witness for TIGLS is Dr Thomas Dargie.

Issue 4 – The impact of golf on sand dune interest

Para. 71 of this SNH precognition quotes from SNH40 that “the fragmentation and isolation of habitats is a worldwide phenomenon and one of the most significant threats now facing the conservation of our remaining landscape”. This witness is unconvinced by such a sweeping general statement applied to a specific development. The scientific evidence for negative fragmentation effects upon biodiversity is equivocal and is discussed briefly in the Environmental Statement (CD-G3, section 7.4.5), citing a thorough recent review by Fahrig.

Paras. 71 and 72 of this SNH precognition covers the effects of trampling of golf courses on dune heath (71) and general trampling on crowberry dune heath in Denmark (72). This witness regards this evidence as exaggerating the risk to Menie dune heath. Searches for balls will not result, for a given small area of dune heath, in anything as high as a human transit passage of 200 persons over four months, as quoted for the study in Denmark. There is extensive dune heath in the well-visited firing ranges at Black Dog to the south of Menie, as well as at Sands of Forvie National Nature Reserve. Forvie receives many visitors which mainly use paths (their construction probably destroying some dune heath). In addition, the area has been used by many researchers from the University of Aberdeen, as well as other vegetation surveyors (including this witness) working off path. Their levels of trampling damage have seemed acceptable to the Nature Conservancy Council and SNH for a site of European importance.

Para. 73 of this SNH precognition is not an accurate description of the habitat translocation methods which would be deployed at Menie. The description of receptor areas does not agree with that given in section 7.1.2 of T50. The statement that “The impact on Annex 1 habitat is thus very much higher than we believed when submitting our original objection, in that we would regard all fairways as completely destroyed in terms of their original ecological and conservation value” seems a *non-sequitur*. The ES (CD-G3) and subsequent applicant documents have certainly assumed that all Annex 1 habitat, indeed all pre-existing habitat, would be lost from the fairway footprint. However, key habitats will not be destroyed. The intention is to remove all key dune habitats and place them in prepared receptor areas suited to a particular key habitat type. This illustrates a fundamental difference between SNH witnesses and this witness regarding mitigation via habitat translocation. SNH consider that this method *should* not be used and extend that reasoning to suggest the (un)likely success of the habitat translocation. This witness is sympathetic to the SNH reasoning regarding *should* habitat translocation be used. However, this witness is equally convinced, from wide experience of dune habitats, knowledge of the ways dune habitat copes with dynamism, as well as observation of dune restoration schemes in Britain, France, Spain and the Netherlands, that habitat translocation *could* be used with a high measure of success. SNH witnesses seem unprepared to consider this point of view which is necessary in this case, as

a measure of last resort. This witness is not prepared, if permission is granted, to see large areas of key dune habitat buried beneath the development footprint simply because a near-natural system is not allowed to be changed into a mix of natural, high-quality translocated zones and golf development due to nature conservation purism.

Witness: The witness for TIGLS is Dr Thomas Dargie.

Issue 5 – Favourable Conservation Status and favourable condition at Menie

Paras. 78 and 85 of this SNH precognition consider the condition of Foveran Links SSSI. The SNH account does not describe the condition information accurately. Indeed, SNH appears to have judged this site to be in Favourable Condition (T42) when in fact it should have been reported as Unfavourable. This witness completed recording forms on site condition monitoring for SNH in 2000, reporting in 2001. This information was based on observations along five transects, each divided into lengths representing different dune habitats, assessing condition for each. A total of 45 sectors was assessed, of which 14 were considered in unfavourable condition. This does not agree with the SNH description of “minor problems with issues such as cattle feeding in a limited area of the site”. The 2000 data was obtained by sampling and total extent in unfavourable condition is therefore likely to be high. There is now clear evidence in the Menie sector of the SSSI (section 6.1 of T50) that winter cattle grazing, feeding and straw spreading are having dramatic effects on vegetation, changing dune heath beyond the effects of mobile sand to dune slack (probably of a form with higher nutrient levels than the norm outwith the SSSI), destroying some grey dune and replacing it with weed-infested high-nutrient soils, as well as affecting the steep slopes of grey dune habitats and probably contaminating the groundwater with stock-derived nutrients. This SNH precognition (para. 85) does not dispute this evidence but considers that it is “of a nature that can be addressed and resolved”. This understates the problem – at least one dune SSSI - Natura site in England is similarly afflicted and grazing effects seem long-lasting (T32, T18). It is important that the Inquiry should understand that Foveran Links SSSI illustrates many of the failings of the SSSI system. The correct boundaries embracing the best habitats were not applied in the first place. Legislation has not protected SSSI habitats from change and decline in condition due to cattle effects. SNH has not so far engaged in any significant attempt to address this problem (T40) and has failed to appreciate the severity of the problem by making the wrong judgement on condition status, despite having received condition information indicating unfavourable condition.

Witness: The witness for TIGLS is Dr Thomas Dargie.

Issue 6 – SNH Conclusion

Para. 87 of this SNH precognition suggests that a further precognition will demonstrate that habitat translocation “is most unlikely to succeed”. This witness has already made a case for successful habitat translocation in relation to SNH Para. 73 above, under Issue 4. A more detailed case is given in a Rebuttal Statement by this witness regarding the precognition of Mr. P. Rooney, a further SNH witness.

Witness: The witness for TIGLS is Dr Thomas Dargie.
