

Perth and Kinross Council
Development Management Committee – 16 July 2014
Report of Handling by Development Quality Manager

Erection of a dwellinghouse at Causeway Cottage, Scotlandwell, Kinross

Ref. No: 09/00936/FLL
Ward No: 8 Kinross-shire

Summary

This report recommends approval of this detailed application for the erection of a house in connection with an existing cattery and equestrian business at Causeway Cottage, Scotlandwell.

BACKGROUND AND DESCRIPTION

- 1 This proposal for the erection of a dwellinghouse at Causeway Cottage Cattery and Equestrian Centre, Scotlandwell was previously approved under delegated powers on 14 January 2010. Following a petition for judicial review to the Court of Session by the Scottish Gliding Union, neighbouring owners and operators of Portmoak Airfield, that earlier approval was reduced by the Court on 6 May 2010. The Council did not defend the action because it was accepted that the (original) Report of Handling did not provide an adequate assessment of the material planning considerations. The application was effectively referred back to the Council to re-determine, and now forms the subject of this Report of Handling.
- 2 The application site is 0.2 hectares of land within a larger site at Causeway Cottage Cattery and Equestrian Centre which is situated 1km to the south of Scotlandwell on the west side of the B920. The Equestrian Centre was approved in 2000. In June 2005 consent was granted for a house approximately 450m to the north of the equestrian centre near Wellburn under economic justification. This house has been constructed and occupied. A cattery was approved at the site in 2006. The present application site is within the safeguarding zone for the gliding centre to the west of the site and is within the pipeline consultation zone for the nearby Shell pipeline. It is not within an area at risk from flooding as indicated on the SEPA indicative flood maps nor is it within the Loch Leven Catchment Area. The cattery is situated 10m to the west of the proposed house, the stables 15m to the north, the riding school 20m to the east and the gliding centre boundary 35m to the west of the proposed house. The proposed house is 0.17m higher than the consented replacement stables yet to be constructed. The gliding centre wind sock situated 60m to the south west of the proposed house is 3.76m higher and there are 3 trees within the vicinity of the proposed house which are all greater in height.
- 3 This is an amended proposal for the erection of a house. The amendments submitted after the court action included a slight increase in the site boundary within the applicant's ownership, a reduction in the overall height of the house from 5.8m to 4.9m at the ridge, a shift in the position of the house 8m further to

the east and 3m further north, and changes to the materials, configuration and fenestration of the house. The proposed house is a single storey bungalow with 4 bedrooms. Materials include terracotta pantiles to the roof, drydash render/sandstone features to the walls and timber windows and doors. A Supporting Economic Justification has been prepared by the Scottish Agricultural College (SAC) on behalf of the applicant. An updated labour requirement was submitted on behalf of the applicant by the SAC on 19 March 2014 where the minimum combined labour requirement for Causeway Cattery and Equestrian Centre is 2 full time employees and 2 part time employees. With the low season in the cattery limited to only a few weeks of the year and the livery occupancy consistently at full capacity, the combined labour requirement during the cattery high season is likely to be greater with up to 4 full time staff and 3 part time staff required as a maximum.

- 4 A number of responses and information have been received particularly from the applicant, her agents and the Scottish Gliding Union (SGU) both before and after the court action. Subsequent to that court action, it was considered appropriate to request the applicant to provide an independent aviation safety assessment in accordance with the Kinross Area Local Plan, Policy 49. The applicant had provided an independent aviation safety assessment in March 2011 from Mr C. Hedge, Aviation Consultant, however due to ill health Mr Hedge could not continue his work in responding to the comments/issues raised about his completed assessment. The applicant subsequently commissioned another aviation assessment from Pager Power completed in March 2012. The SGU were given the opportunity to comment on this assessment and provided their own consultant's report completed by Airfield Safeguarding and Development (ASD) dated 4 May 2012. There were conflicting conclusions reached by the applicant's and the SGU's aviation safety assessments and in order to resolve this it was considered appropriate that the Council should commission an independent, impartial aviation assessment which could inform and provide a recommendation to Committee. The Council's aviation safety assessment was carried out by Mark Eddowes of Eddowes Aviation Safety Ltd. Both the applicant and the SGU accepted that Mr Eddowes was an impartial consultant with whom neither had dealings with in the past. Mr Eddowes' scope of study was to consider both the applicant's and the SGU's aviation safety reports as well as other information and to provide his own assessment in the context of all the relevant legislation and guidance. As this correspondence refers to technical aviation matters, the applicant's Pager Power Report, the SGU's response and ASD Report, and the Council's Aviation Consultant's Report are set out fully in Appendices 1, 2 and 3 of this Report. It should be noted that some documents referred to are not set out in the Appendices. However, they are available through the planning portal. Other responses and information received are also available on the planning portal.
- 5 With a previous refusal for a house on the wider site and in light of the court history of the application, and the air safety issues, it has been decided to refer this application to the Development Management Committee for determination.

NATIONAL POLICY AND GUIDANCE

The Scottish Planning Policy 2014

6 The Scottish Planning Policy (SPP) was published on June 23 2014. It sets out national planning policies which reflect Scottish Ministers' priorities for operation of the planning system and for the development and use of land. The SPP promotes consistency in the application of policy across Scotland whilst allowing sufficient flexibility to reflect local circumstances. It directly relates to:

- the preparation of development plans;
- the design of development, from initial concept through to delivery; and
- the determination of planning applications and appeals.

7 Of relevance to this application are:

- Paragraphs 74 - 83: Promoting Rural Development
- Paragraphs 92 - 108: Supporting Business and Employment.
- Paragraphs 109 – 134 Enabling Delivery of New Homes

PAN 67 Housing Quality

8 A successful place in which to live is one which is distinctive, safe and pleasant, accessible, welcoming, adaptable and resource efficient.

DEVELOPMENT PLAN

9 The Development Plan for the area consists of TAYplan Strategic Development Plan 2012 – 2032 and the Perth and Kinross Local Development Plan 2014.

TAYplan Strategic Development Plan 2012 – 2032

10 Under the TAYPlan the principal relevant policy is:-

Policy 5: Housing

11 Ensure that the mix of housing type, size and tenure meets the needs and aspirations of a range of different households throughout their lives, including the provision of an appropriate level of affordable housing based on defined local needs. Local Development Plans (where applicable) will need to set affordable housing requirements for or within each housing market area.

Perth and Kinross Local Development Plan (PLDP) 2014

12 The application site is within the landward area of the plan where the main relevant policies are:-

PM1A: Placemaking

- 13 Development must contribute positively to the quality of the surrounding built and natural environment. The design, density and siting of the development should respect the character and amenity of the place.

PM1B: Placemaking

- 14 Placemaking criteria are set out including:
- (a) consider and respect site topography and any surrounding important landmarks, views or skylines as well as the wider landscape character of the area,
 - (b) the design, density should complement its surrounding in terms of appearance , height, scale, massing, finishes and colours

ED3: Rural Business and Diversification

- 15 Favourable consideration will be given to the expansion of existing businesses and the creation of new businesses within or adjacent to existing settlements in rural areas. Outwith settlements, proposals may be acceptable where they offer opportunities to diversify and existing business or are related to a site specific resource or opportunity. This is provided that they will contribute to the local economy through the provision of permanent employment, or visitor accommodation, or additional tourism or recreational facilities, or involves the re-use of existing buildings. Criteria are expected to be met, including:
- (a) the proposed use is compatible with surrounding land uses and will not detrimentally impact on the amenity of residential properties within or adjacent to the site
 - (b) the proposal meets a specific need by virtue of its quality or location in relation to existing businesses, or tourist facilities.

RD3: Housing in the Countryside

- 16 The development of single houses or groups of houses which fall within the six identified categories will be supported. This policy does not apply in the Green Belt and is limited within the Lunan Valley Catchment Area.

EP13: Airfield Safeguarding

- 17 Developments will be refused if they are likely to have an impact on the safe operation of aircraft from unlicensed airfields (Portmoak Airfield). Applicants for planning consent within this area may be required to provide an independent assessment of the impact on the safe operation of the existing facility, prepared by a suitably qualified person.

OTHER POLICIES

Circular 2/2003 Safeguarding of Aerodromes, Technical Sites and Military Explosives Storage Areas

- 18 Operators of licensed aerodromes which are not officially safeguarded, and operators of unlicensed aerodromes and sites for other aviation activities (for example gliding or parachuting) should take steps to protect their locations from the effects of possible adverse development by establishing an agreed consultation procedure between themselves and the planning authority or authorities. One method, recommended by the Civil Aviation Authority to aerodrome licensees, is to lodge a non-official safeguarding map with the planning authority or authorities. Planning authorities are asked to respond sympathetically to requests for non-official safeguarding. Planning permission should not be refused simply because a proposal is one requiring consultation.

Circular 3/2012: Planning Obligations and Good Neighbour Agreements

- 19 There is a limited role for obligations in restricting the use of land or buildings. Where the Planning Authority is satisfied that an adequate case has been made, it should not be necessary to use a planning obligation as a formal mechanism to restrict occupancy or use.

Civil Aviation Authority

- 20 CAP 168 "Licensing of Aerodromes", April 2011;
CAP 738 "Safeguarding of Aerodromes", December 2006;
CAP 793 "Safe Operating Practices at Unlicensed Aerodromes", July 2010;

British Gliding Association

- 21 BGA Club Briefing: Aerodrome Safeguarding
BGA Site Operations Manual, Chapter 12 Airfield Safeguarding.

Perth & Kinross Council's Airfield Safeguarding 2012

- 22 This statutory supplementary guidance provides details of designated safeguarding zones for each unlicensed airfield in Perth and Kinross which includes Portmoak, Balado, Strathallan and Errol. Safeguarding assists the Planning Authority to make reasonable decisions in response to local development proposals.

Perth & Kinross Council's Housing in the Countryside Guide 2012

- 23 The Council's Housing in the Countryside Guide 2012 stipulates a number of categories where new housing in the countryside may be considered and these include on the basis of operational need associated with either a consented or an established economic activity.

Developer Contributions November 2012

- 24 Across Scotland local authorities are having difficulty maintaining and developing infrastructure in order to keep up with the pressures of new development. Additional funding sources beyond that of the local authority are required to ensure that infrastructure constraints do not inhibit sustainable economic growth.
- 25 This non-statutory supplementary guidance applies over the whole local authority area of Perth and Kinross. It sets out the basis on which Perth and Kinross Council will seek to secure contributions from developers of new homes towards the cost of meeting primary education infrastructure improvements necessary as a consequence of development.

SITE HISTORY

- 26 PK95/0581 An application for the erection of an equestrian centre and house (in outline) at the site was refused in June 1996.
- 27 PK95/1671 Outline consent was approved for the equestrian centre, and for the siting of a residential caravan, in March 1996 against officers' recommendation.
- 28 PK96/1259 Detailed consent for an equestrian centre was granted in October 1996.
- 29 PK97/1154 Consent granted in October 1996 for an amendment to the above consent for an equestrian centre which included the provision of temporary accommodation until February 1999.
- 30 99/00121/FUL An application for an all weather surfaced outdoor school, new vehicular access, an extension to the period for use of temporary accommodation unit and detailed consent for a house was withdrawn before determination.
- 31 99/00766/FUL Application for the formation of an all weather surfaced outdoor school, revised access and amendment to location of isolation box/field shelter was refused in July 1999. In May 2000 the Scottish Minister's Reporter sustained the appeal and granted planning permission. The Reporter concluded that the schooling area would not lead to any more intensive use of the site, and thereby implications for gliding activities, than would the use of the ground as part of the originally approved equestrian centre.
- 32 99/01521/OUT In March 2000 outline planning permission was refused against recommendation on a site to the east of the current application site for the erection of a house. In December 2000 an appeal against refusal was also dismissed (P/PPA/340/189).
- 33 00/01194/FUL In February 2001 planning consent was refused for the erection of a house and alterations to the site layout at the riding centre, following a recommendation for approval subject to a Section 75 Agreement. This

application was submitted following a previous refusal under 99/01521/OUT and sought to provide a new development package with an amended layout and a Section 75 to avoid prejudice to gliding activities by restricting use of fields to the north of the stables.

- 34 05/00385/FLL In June 2005 planning consent was granted for the erection of a house and garage to the 450m to the north of the site near Wellburn on the basis of operational need for the livery business. The occupancy of this house was not restricted by condition.
- 35 05/00384/FUL In January 2006 planning consent was granted for the erection of a cattery to the west of the current application site and extension to the stables.
- 36 09/00937/FLL In November 2009 erection of replacement stables and an extension to the office was approved.
- 37 09/00936/FLL In January 2010 erection of a dwellinghouse was approved on the application site under the Council's Planning Scheme of Delegation. This consent was subsequently reduced in the Court of Session and has effectively been referred back to the Council for re-determination (and the subject of this report).
- 38 11/00588/FLL An application for the siting of a temporary static caravan in retrospect at Causeway Cottage is pending consideration. Withdrawn February 2014.
- 39 12/01935/FLL Alterations to stable block at Causeway Cattery and equestrian Centre. Pending decision.
- 40 13/01312/FLL Extension to cattery and office at Causeway Cattery. Pending decision.
- 41 13/01858/FLL Erection of a dwellinghouse and garage (as an alternative location to the dwellinghouse proposed under application ref 09/00936/FLL and subject of this Report). Pending decision.

CONSULTATIONS

- 42 Education and Children's Services - No objections.
- 43 Environmental Health – No objections
- 44 Scottish Gliding Union (SGU) – Objection
- 45 Shell Exploration & Production – No objection
- 46 Portmoak Community Council – Objection

REPRESENTATIONS

47 Five letters of representation were received from the public in support of the proposal and four letters of objection were received including from Portmoak Community Council, the Scottish Gliding Centre and the Kinross-shire Civic Trust where the main issues can be summarised:-

- contrary to safeguarding policy 49 in Kinross Area Local Plan 2004
- incompatible neighbouring activity
- presumption against development within the AGLV
- proposal is contrary to the Housing in the Countryside Policy
- SPP3 does not encourage this sort of development
- house is not required to run the business
- the site is at risk from flooding
- this would be an intensification of use on the site
- affect long established visitor attraction

ADDITIONAL STATEMENTS

48	Environment Statement	Not required
	Screening Opinion	Not required
	Environmental Impact Assessment	Not required
	Appropriate Assessment	Not required
	Design Statement / Design and Access Statement	None
	Independent Aviation Assessment	Submitted

APPRAISAL

Policy

49 Sections 25 and 37(2) of the Town & Country Planning (Scotland) Act 1997 (as amended) requires the determination of the proposal to be made in accordance with the provisions of the Development Plan, unless material considerations indicate otherwise. The determining issues here are whether the proposals comply with Development Plan policy or if there are other material considerations, which justify a departure from policy.

Policy – Aviation Safety

50 The primary issue to be addressed is whether the proposed house is likely to have an impact on the safe operation of aircraft from Portmoak Airfield in terms of Policy EP13 Airfield Safeguarding of the Perth and Kinross Local Development Plan (PLDP) 2014. Following the court action reducing the earlier approval, the applicant was requested to commission an independent assessment from a suitably qualified person of aviation safety and obstacle safeguarding in relation to the proposed house.

- 51 In March 2011 an independent aviation assessment was completed on behalf of the applicant by Mr C. Hedge. The Consultant concluded that the proposed house would not infringe the safeguarding surfaces lodged with the Council by the SGU. Under the aerodrome safeguarding criteria adopted by the SGU, the house would not be classified as an aerodrome obstacle. Further, the house would be located among objects already in situ that exceed its planned height, three (out of four) of which lie closer to the aerodrome perimeter than the proposed house. Therefore, the house would be shielded by those objects, which being higher, would be greater potential hazards. The proposed site being aligned closely with the wind sleeve mast and aerodrome farm track, would lie under less well used approach flight paths.
- 52 Mr Hedge was unable to continue his work for the applicant in responding to the comments which were raised with regard to his assessment due to ill health and the applicant had to engage another consultant – Pager Power. This is outlined below.

Applicant's Second Aviation Consultants Report (Pager Power)

- 53 The Pager Power Report dated March 2012 (see Appendix 1) was prepared on behalf of the applicant. The Report identifies that the Civil Aviation Authority (CAA) is responsible for safety regulation of civil aviation in the UK although Portmoak is an unlicensed aerodrome where the predominant flying activity is gliding. CAA Guidance may apply to unlicensed aerodromes but is not mandatory.
- 54 The Report reviews and analyses CAA Guidance, CAP 793: Safe Operating Practices at Unlicensed Aerodromes within the context of the operation of Portmoak airfield and the proposal for a dwellinghouse. Reference is made to other structures including trees within the vicinity of the proposed dwellinghouse. An earlier report for the SGU by Captain Brian D Scougall is reviewed followed by a review of the SGU's 1998 Safeguarding documents.
- 55 The Pager Power Report concludes that Portmoak is an unlicensed airfield for which the most applicable document is CAP 793. According to Pager Power, the proposed development does not breach any CAA safeguarding rules and would not as a consequence be illegal. The gliding site is a large field which gliders could approach from any direction especially if experiencing difficulties. If approaching the area of the proposed new house pilots will reach the airfield if they fly either left or right of it. Around 50 people can reside on the airfield and the proposed new house lies in line with an existing house. It is already established that gliders fly near and over residences. There are many airfield buildings, trees and structures on the airfield which are obstructions. The SGU developed the airfield in 2001 in a manner that may well have resulted in more aircraft flying over the existing stables and closer to the existing trees. The large tree next to the proposed house is likely to have a greater impact on flying than the proposed new house. There is no evidence that the SGU has taken any of the measures it could have taken to manage the impact of this tree on its operations. Operations must be suspended if there is a risk of an obstruction endangering aircraft. This means that the tree and consequently the proposed

new house would have no impact on safety. The proposed new house will not affect aviation safety. The proposed new house is unlikely to affect operations.

SGU's Aviation Consultant's Report

- 56 The SGU, as operators of Portmoak airfield have consistently opposed this application for the erection of a dwellinghouse on neighbouring land. Their position is that the proposed house is located under the final approach path to one of the most used landing areas of the airfield. Gliders may inadvertently undershoot the approach and land before the airfield boundary. There would be an increased risk to aircraft, pilots and the occupants of the house. Further, the SGU are concerned that the proposed house would reduce safety margins and may affect their future operation and status.
- 57 The SGU's view is that the Pager Power report is not a credible position. The SGU commissioned their own aviation report from ASD (see Appendix 2). In their report dated May 2012, ASD review the Civil Aviation Authority Guidance and the SGU's safeguarding plans. Reference is made to areas most in need of protection rather than the plans showing operational runways. ASD state that the preferred landing area is the north field. Gliders have to land into the wind. Pilots have to make a judgement where to land based on their own judgement, including avoiding other landed gliders. The nature of gliding operations is that sometimes gliders have to land outside the airfield boundary.
- 58 ASD carried out a technical assessment. ASD recognise the SGU's approach slope figure of 1:20 but then indicate the approach slope is reduced to 1:25 to give a necessary safety buffer. Teaching at Portmoak is for gliders to select a touchdown point 40m inside the boundary. By taking that figure as a notional threshold (NT) and adding 30m before the NT as the approach obstacle limitation surface, ASD carry out a calculation as to whether the proposed house would infringe the approach surface. Their conclusion is that any structure exceeding 2m at the proposed location will infringe the approach surface. As the proposed house is 4.9m to ridge height, the surface is infringed by 2.9m. Temporary structures already infringe the surface, however, ASD's opinion is that those structures do not set a precedent for further degradation of safety for approaching aircraft and neither do they provide a shielding effect for the proposed house. They recommend that the application is refused on grounds of safety, of those in the air and on the ground.

Perth and Kinross Council's Aviation Consultant's Report

- 59 Given these conflicting opinions, it was considered appropriate for the Council to instruct its own aviation safety assessment. That assessment took account of previous representations and assessments received. The full terms of the report from Dr Mark Eddowes of Eddowes Aviation Safety Ltd is set out in Appendix 3. It should be noted that the first issue of the report was received in February 2014. The SGU were given the opportunity to comment on that report and suggested that it had been assessed against the old Kinross Area Local Plan, not the new Perth and Kinross Local Development Plan 2014 and the new supplementary guidance on airfield safeguarding. The SGU also provided

other comments. The Report had taken account of the change in policy, however, to make this clear and to respond to the points made by the SGU, a revised report was produced (Issue 2) in April 2014. It is the revised Report which is reproduced in Appendix 3. The SGU comments are reproduced at Appendix 4.

- 60 The Report by Dr Eddowes reviews the aerodrome safeguarding criteria, including the safeguarding specifications for Portmoak Airfield before considering and assessing the earlier report by Mr Hedge on behalf of the Applicant; the SGU's objections and the ASD Report; and the Pager Power Report. Existing obstacles and site constraints are considered as well as operational considerations (for aircraft). An undershoot risk assessment is carried out based on the SGU's own lists of accidents and incidents to assess the level of risk to glider pilots and to potential residents and other users on the applicant's site. Other issues are considered before conclusions are then drawn together. The SGU's response to Issue 1 of the Report is also considered

An extract from the summary of the Report is:

- 61 "The planning application for erection of a dwellinghouse, Causeway Cottage (09/00936/FLL), adjacent to Portmoak Airfield, has raised an objection from the Scottish Glider Union (SGU) on the grounds of the possible impact on the safety of aircraft operations. In order to progress its consideration of the application, Perth and Kinross Council has requested an opinion from Eddowes Aviation Safety Limited on the safety implications of the development in respect of operations at Portmoak Airfield, having regard to various submission made by the applicant and the SGU and the apparently contradictory opinions that they contain. The review has included a site visit, primarily to examine and assess existing structures and obstacles in the vicinity of the airfield. Some additional technical analysis has also been undertaken, based on the information provided in the available documents.
- 62 The primary issues raised by the SGU to support their objection relate to the requirements for the safeguarding of airspace and the risks to both aircraft pilots and residents of the cottage that may arise in the event of an undershoot. The constraints on approach operations that may arise from development along the eastern boundary of the airfield, understood to relate primarily to risks in the event of an undershoot, are a further concern. All of these matters can be identified as valid concerns of the SGU.
- 63 Notwithstanding the limitations of the airspace safeguarding assessments put forward by the applicant, the overall conclusion reached is that there are deficiencies and inconsistencies in the airspace safeguarding case presented by the SGU and that the proposed cottage need not be regarded to be an unacceptable infringement of flight paths. The SGU's case relies on the use of criteria for the safeguarding of licensed aerodromes which have not been shown to be necessary for the safe operations at Portmoak and proportionate, taking account of the restrictions that they impose.

- 64 The SGU have identified a hazard associated with undershoot and it is entirely appropriate that the risks associated with that hazard should be put in the balance when determining the application. Historical evidence which confirms the presence of the hazard has been provided but it has not been shown that the risks to either pilots or future residents of the cottage associated with it would be materially significant. Detailed analysis undertaken as part of this review indicates that the risks to both glider pilots and residents of the cottage are at a level where they should not necessarily be considered to be an over-riding factor in determining the application.
- 65 Any new object in the vicinity of an aerodrome may carry with it some additional risk and such a possibility should not be taken lightly. However, some risks can and indeed must be accepted under some circumstances but only in return for an appropriate benefit. If there were to be no benefit whatsoever associated with the proposed application then there would be no justification for any additional risk arising from it.
- 66 The analysis undertaken as part of this review indicates that the additional risks that may arise from the development are likely to be sufficiently small to be regarded to be *de minimis*. In the context of Policy EP 13 on Safeguarding of the Perth and Kinross Local Development Plan 2014, the development need not be regarded as one that is likely to have an impact on the safe operation of aircraft from Portmoak Airfield and refused on that basis. The overall planning balance is not a matter for consideration in this report but is one for later consideration by the local planning authority. In that context, the overall conclusion reached during the review is that limited weight should be placed upon the possible additional risks to pilots and future residents of the cottage, given their scale when compared with standards identified by the UK Health and Safety Executive for evaluating risk significance. These additional risks are small and should be weighed appropriately in the balance with other factors.
- 67 It is the responsibility of the operators of licensed airports to provide Runway End Safety Areas (RESAs) within the airfield boundary to mitigate undershoot risk. Aerodrome licence holders cannot rely on the safeguarding of areas outside the operational area of the aerodrome for that purpose. Additional technical analysis undertaken as part of this review indicates that there is scope for effective undershoot risk mitigation at Portmoak through the adoption of appropriate operating practices. These operating practices primarily involve aiming further into the airfield which will effectively provide a RESA within its boundary. Such measures would be appropriate in any event along the whole of the eastern boundary of the airfield to mitigate potential risks associated with undershoot into the drainage ditch that runs along this boundary.
- 68 Taking account of the constraints that arise from the existing development at the Causeway Cattery and Equestrian Centre site, the proposed cottage is expected not to add materially to those constraints. Operational practices should be such as to avoid overflight of the cottage site wherever practicable. In the event of a requirement for overflight of this area under some circumstances the impacts of the cottage on the safety of operations overall at Portmoak Airfield can be expected not to be significant.

- 69 A letter from the CAA provided with one of the SGU's submissions states the following:
- “The question which the planning authority must consider is the extent to which the aerodrome would need to act in order to mitigate the effects of the development. The crucial question is whether or not that mitigation action would amount to a loss of established amenity. Safety will be a major consideration ...”*
- 70 This review finds that there are no new actions required by the aerodrome to mitigate the effects of the development. Existing development already requires various mitigation actions to be taken that should be sufficient to mitigate any effects associated with the proposed Causeway Cottage. Any additional impacts associated with the cottage are therefore considered not to be materially significant. The caveat that the development must provide some material benefit applies.
- 71 Some loss of amenity in terms of the availability of obstacle free approach areas along the eastern boundary of the airfield has arisen from the previous permissions in relation to the Causeway Cattery and Equestrian Centre. Given the location of this existing development at the end of the farm track that divides the North Field and Centre Field and where some restrictions on operations already apply, it is understood that development in this position will have limited the scale of the amenity loss that was caused. Further development at that location such as the proposed Causeway Cottage is judged not to add materially to that previous loss of amenity.
- 72 A considerable proportion of the original amenity associated with take-off and approach areas along the eastern boundary of the airfield has been retained. It is important for future operations at Portmoak that the current unobstructed areas to the East of the North Field and Centre Field be retained, for example through an appropriate safeguarding process. This review finds that the current specifications provided in the SGU's safeguarding document are not fit-for-purpose in that they do not adequately specify the safeguarded areas and they have not been shown to be proportionate in terms of the balance that they strike between the protection of airspace and the impacts any restrictions may have on the neighbouring community. Development of a revised safeguarding specification that addresses these deficiencies would therefore seem to be of benefit.”
- 73 It should be noted that the SGU, in responding to the first issue of the report, maintain their objection but do not directly dispute the terms of the Council's consultant's report nor the conclusions reached.
- 74 The Council's own consultant therefore reaches a clear conclusion based upon his assessment that the additional risks that may arise from the proposed development are likely to be sufficiently small to be regarded to be de minimis.

Policy – Operational need

- 75 The proposed site for the house is designated within the landward area of the Perth and Kinross Local Development Plan 2014. New housing development in the countryside requires to be assessed under Local Plan Policy RD3 – Housing in the Countryside (c) new houses in the open countryside in defined categories and particularly the Council’s most recent expression of policy – the Housing in the Countryside Guide 2012. In this instance the assessment of the proposed house falls under the 2012 Guide, Section 3.3 – Economic Activity where a house or group of houses is required for a local or key worker associated with an established economic activity.
- 76 A Supporting Economic Justification was prepared by the Scottish Agricultural College (SAC) on behalf of the applicant at the date of submission of the application. On 19 March 2014 an amended and updated Labour Requirement for the cattery and equestrian centre was provided by the SAC. This concluded that the minimum combined labour requirement for the cattery and equestrian centre is 2 full time employees plus 2 part time employees at cattery low season and a maximum of 4 full time and 3 part time employees required at cattery high season. There is already one house which was consented on the basis of economic activity in June 2005 for the equestrian centre element. However, as the labour profile for the business requires as a minimum 2 full time and 2 part time labour units, it is concluded that this would allow for another house to be provided in association with the business. Animal welfare and security is also an important consideration and a permanent on-site presence is required to mitigate against theft, vandalism and as has been experienced relatively recently, the impact of adverse weather conditions on the business. With regard to the cattery, the Feline Advisory Bureau’s criteria on supervision/responsibility refers to the cattery proprietor or a responsible person must always be present to exercise supervision and deal with any emergencies whenever cats are boarded at the premises. They strongly recommend that the cattery proprietor or responsible person live on site. The other house at Wellburn 450m away is not on site and would not be suitable to provide the level of animal welfare and security that the proposed house can provide in accordance with the Feline Advisory Bureau’s advice. The other house at Wellburn is not subject to an occupancy restriction.
- 77 In November 2011 the Chief Planner to the Scottish Government stated that where a planning authority is satisfied there is justification for the house weighed against it’s impact on landscape quality, residential amenity and road safety, it should not be necessary to use formal mechanisms to restrict occupancy. That position is now set out in Circular 3/2012: Planning Obligations and Good Neighbour Agreements. In this case it is considered that the proposed siting of the dwellinghouse within the grouping of buildings in the wider site would be acceptable and in accordance with the Housing in the Countryside Guide 2012 where the proposal will not have an adverse impact on the wider landscape and the amenity of the occupiers or neighbouring residents. An occupancy restriction therefore would not be recommended in this case.

- 78 It is considered that the economic justification is satisfactory and the proposed house would be in accordance with local plan policy and the Council's Housing in the Countryside Policy Guide 2012.

Scale and Design

- 79 The proposed house is a single storey 4 bedroom bungalow situated to the south of the existing stables and generally well contained within this grouping. The scale, design and materials proposed are considered to be acceptable within the context of the existing surrounding buildings and nearby housing and it will therefore not have any adverse impact on the character or visual appearance of the surrounding countryside.

Landscape and Visual Amenity

- 80 It is considered that as the proposed house is situated within the existing building group and within the context of the design of the stable and cattery buildings which are of a lower quality of design and materiality, the proposal will not have any additional adverse visual impact on the surrounding countryside. The application site is not within an AGLV as this designation no longer applies within the new local development plan. Despite this and for the reasons outlined above the proposal will not have any adverse visual impact on the wider countryside.

Education

- 81 When first consulted Education considered that a financial contribution would be required towards increasing capacity at Portmoak Primary School however the capacity has been reviewed and there is now capacity available at the primary school.

Road Safety

- 82 The access for the house would be via an existing access off the public road. There are no objections to the proposed house on road safety grounds subject to conditions on turning facilities and on site parking.

Drainage and infrastructure

- 83 The foul drainage will be to a septic tank and surface water to a field soakaway and should be implemented in accordance with SEPA's regulations and licencing. The application site is not within a flood risk area as indicated in SEPA's flood maps.

Pipeline

- 84 The application site is within the consultation zone for a nearby Shell pipeline, however, after having consulted Shell they have stated that they would have no objections to the proposed house as it will not affect the integrity or status of their operations in this vicinity.

Sustainability

- 85 New development should meet local needs and enhance access to land, employment facilities, goods and services. Living close to your place of work therefore is an important factor in achieving sustainable development where transport costs and the use of non renewable energy resources are reduced. The proposed house will allow the applicant to live and work close to this long established business, albeit she lives relatively close at present, and this will help to sustain it into the future.

LEGAL AGREEMENTS REQUIRED

- 86 Not required.

DIRECTION BY SCOTTISH MINISTERS

- 87 Under the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2008, regulations 30 – 32 there have been no directions by the Scottish Government in respect of an Environmental Impact Assessment screening opinion, call in or notification relating to this application.

CONCLUSION AND REASON FOR RECOMMENDATION

- 88 Following the reduction of the earlier approval, this application was effectively referred back to the Council to be re-determined and to assess more fully the impact of the proposed house on the safe operation of Portmoak Airfield. The applicant and the SGU have provided conflicting aviation safety assessments, however, as outlined above the Council has obtained an Aviation Safety Report carried out by Dr Mark Eddowes of Eddowes Aviation Safety Ltd. In this report he has reviewed both the applicant's and the SGU's conflicting assessments of the implications of the proposal on aircraft safety and provided his own assessment and conclusions as an independent, impartial consultant within the context of current planning policy and aviation safety guidance. He has concluded that:-
- 89 *The analysis undertaken as part of this review indicates that additional risks that may arise from the development are likely to be sufficiently small to be regarded to be de minimis. In the context of Policy EP 13 on Safeguarding of the Perth and Kinross Local Development Plan 2014, the development need not be regarded as one that is likely to have an impact on the safe operation of aircraft from Portmoak Airfield and refused on that basis.*
- 90 The scale and design of the proposed cottage is considered to be acceptable and the applicant has demonstrated a satisfactory operational need for the proposal. There are no objections from the other main consultees. It is considered that the proposal is acceptable in terms of its impact on aircraft safety and amenity at this location and in accordance with the Development Plan and is therefore recommended for approval.

RECOMMENDATION

A Approve the application subject to the following conditions and reasons:

- 1 The proposed development must be carried out in accordance with the approved plans, unless otherwise provided for by conditions imposed on the planning consent.

Reason - To ensure that the development is carried out in accordance with the plans approved.

- 2 Details of the specification and colour of the proposed external finishing materials to be used shall be submitted for the approval of the Planning Authority prior to the commencement of the development. The scheme as approved shall be implemented prior to the occupation and or use of the development.

Reason - In the interests of visual amenity; to ensure a satisfactory standard of local environmental quality.

- 3 Turning facilities shall be provided within the site to enable all vehicles to enter and leave in a forward gear to the satisfaction of the Council as Planning Authority.

Reason - In the interests of pedestrian and traffic safety and in the interests of free traffic flow.

- 4 Two parking spaces shall be provided and maintained to the satisfaction of the Council as Planning Authority.

Reason - In the interests of pedestrian and traffic safety and in the interests of free traffic flow.

B JUSTIFICATION

The proposal is considered to comply with the Development Plan and the material considerations available add weight to a recommendation of approval.

C INFORMATIVES

- 1 This planning permission will last only for three years from the date of this decision notice, unless the development has been started within that period. (See Section 58(1) of the Town and Country Planning (Scotland) Act 1997 (as amended).
- 2 Under Section 27A of the Town and Country Planning (Scotland) Act 1997 (as amended) the person undertaking the development is required to give the Planning Authority prior written notification of the date on which it is intended to commence the development. A failure to comply with this statutory requirement would constitute a breach of planning control under section 123(1) of that Act, which may result in enforcement action being taken.

- 3 As soon as practicable after the development is complete, the person who completes the development is obliged by Section 27B of the Town and Country Planning (Scotland) Act 1997 (as amended) to give the Planning Authority written notice of that position.
- 4 No work shall be commenced until an application for building warrant has been submitted and approved.
- 5 The developer should consult Shell Exploration and Production prior to laying any services that would require to cross the pipeline.
- 6 The applicant shall consult with SEPA to confirm the requirements for any private waste water treatment provisions and licencing under the CAR Regulations.

Background Papers: 9 letters of representation
Contact Officer: Mark Williamson – Ext 75355
Date: 26 June 2014

Nick Brian
Development Quality Manager

If you or someone you know would like a copy of this document in another language or format, (On occasion only, a summary of the document will be provided in translation), this can be arranged by contacting the Customer Service Centre on 01738 475000



Council Text Phone Number 01738 442573

Appendix 1: Aviation Consultant's Report from Pager Power on behalf of the applicant.

Appendix 2: SGU's Response to Pager Power Report and ASD's Report

Appendix 3: Aviation Consultant's Report from Dr Mark Eddowes on behalf of the Council

Appendix 4: SGU's response to report by Dr Mark Eddowes



Rhonda Dick

**Proposed New
House Causeway
Cottage and
Cattery**

Portmoak Airfield

**Aviation
Assessment**

1 ADMINISTRATION PAGE

Job Reference:	6736A
Date:	March 2012
Prepared for:	Rhonda Dick
Author:	Mike Watson
Telephone:	01787 319001
Email:	mike@pagerpower.co.uk

Reviewed By:	Grahame Stuteley
Date:	March 2012
Telephone:	01787 319001
Email:	grahame@pagerpower.co.uk

Issue	Date	Detail of Changes
1	March 2012	First Issue
1.1	March 2012	Reference to existing Cattery added (18)

*Confidential: The contents of this document may not be disclosed to others without permission.
Copyright © Pager Power Limited 2011*

*Unless stated otherwise, all maps are reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office © Crown copyright. All rights reserved.
Licence number LIG0631*

*Pager Power Limited, New Mill, Bakers Court, Gt Cornard, Sudbury, Suffolk CO10 0GG
T:01787 319001 F:01787 319007 E:info@pagerpower.co.uk W:www.pagerpower.co.uk*

2 ASSESSMENT

Scope

1. Rhonda Dick is proposing the development of a single storey new house on her land adjacent to Portmoak Airfield which is operated by Scottish Gliding Union Ltd (SGU). The developer has reduced the height of the house to mitigate its potential impact on SGU operations.
2. The developer has asked Pager Power to assess the likely impact of the proposed house on the safe operation of aircraft from Portmoak Airfield and also to comment on a number of documents relating to the proposed house and airfield.

Location Diagram

3. The diagram below has been prepared to aid understanding of this report. For a full understanding Ordnance Survey or other maps should be used. The diagram is not to scale and should not be used for measuring distances and is indicative only.

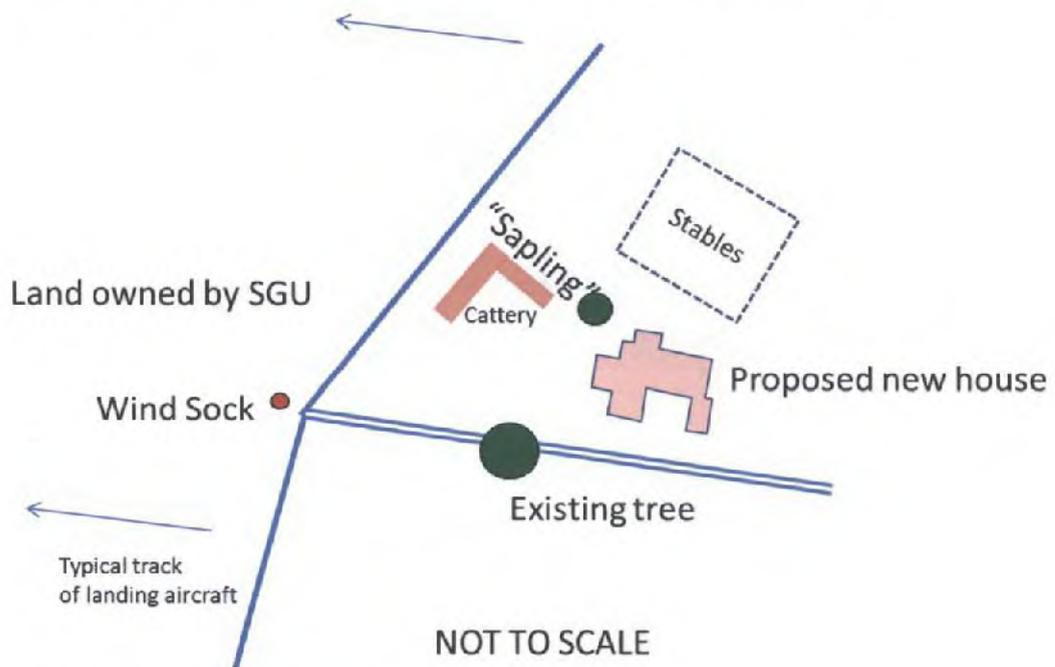


Figure 1 Indicative location chart

Civil Aviation Authority

4. The Civil Aviation Authority (CAA) responsible for safety regulation of civil aviation in the UK¹. Portmoak is an unlicensed aerodrome where the predominant flying activity is gliding. The relevant CAA publication for safeguarding such aerodromes is *CAP 793 Safe Operating Practices at Unlicensed Aerodromes* issued in July 2010. This document applies to unlicensed gliding airfields such as Portmoak². The contents of this document are not mandatory.

Civil Aviation Authority CAP 793 Guidance

5. CAP 793 advises that:
 - a. Safeguarding consultation maps would normally be used as a trigger for discussion rather than to indicate areas where development should be ruled out³. The document also advises that dialogue with neighbours is essential if good relations are to be achieved and maintained⁴.
 - b. Operations must be suspended if there is a risk of an obstruction endangering aircraft⁵. This is further supported by the 1999 CAA letter which states *Ultimately however it is the legal responsibility of the aviators to operate safely, and to stop operating if safety cannot be assured*⁶.
 - c. CAA document CAP 168 *Licensing of Aerodromes* may be used for guidance on the layout of unlicensed aerodromes⁷.
 - d. *It is essential to mark any obstacles, potholes and bad ground. Runway markers and runway numbers will help line up for both take-off and landing*⁸.
 - e. *The runway should, wherever possible, be designed such that trees, power lines, high ground or other obstacles do not obstruct its approach and take-off paths. It is recommended that there are no obstacles greater than 150 feet above the average runway elevation within 2,000m of the runway mid-point*⁹.
 - f. *Where possible, the runway should be oriented to avoid overflight of population, houses, stables, and other sensitive areas during take-off and approach to land*¹⁰.

¹ Under the Civil Aviation Act 1982. CAP 764 Chapter 1 ¶1.1

² CAP 793 Chapter 1, Introduction ¶2 Gliders are specifically referenced in Appendix B ¶3.1

³ CAP 793 Chapter 2, Safeguarding ¶3.1

⁴ CAP 793 Chapter 2, Local Engagement ¶5.2

⁵ CAP 793 Chapter 2, Obstructions ¶6.1

⁶ Letter from Harry Siepmann CAA to Mike Barnacle Perth and Kinross Council 22 September 1999

⁷ CAP 793 Chapter 4, Aerodrome Physical Characteristics ¶2

⁸ CAP 793 Chapter 4, Runways ¶3.5

⁹ CAP 793 Chapter 4, Runways ¶3.6

¹⁰ CAP 793 Chapter 4, Runways ¶3.10

- g. Anything that, because of its height or position, could be a hazard to aircraft landing or taking off should be conspicuously marked if it cannot be practicably removed or minimised¹¹.
- h. The height of the highest obstacle within 4 nm of the centre of the aerodrome, together with any potentially hazardous obstacles outside the aerodrome boundary, over which the aerodrome operator cannot exercise control, should be mentioned in any aeronautical information publications in which the aerodrome is included. Consideration should also be given to displaying this information on a chart or map on a notice board within the clubhouse, in the training or briefing room and on the aerodrome website to raise awareness of these obstacles¹².
- i. The location of roads, buildings and other structures outside the aerodrome perimeter should be considered when aligning runways to allow safe approaches and departures without hazarding people or vehicles using such roads, buildings and other structures¹³.

Analysis in accordance with CAP 793

- 6. The 1998 CAA letter also makes the point that *the basis for all Safeguarding must be the process of reasonable discussion which underpins Planning law*¹⁴ [See (a) above].
- 7. In an email to Perth and Kinross council the SGU stated the following¹⁵:

The airfield has been subject to a continuous programme of improvements to the drainage and grass surface, most relevantly in 2001 when significant areas were graded and replanted with new grass as shown on "Plan 3". These areas included the landing area with which with the site of the proposed house is aligned. Gliders landing in this area would pass directly over the house. It is also important to re-emphasise that the description "rough" on "Plan 3" is relevant to powered aircraft, not to gliders, as noted in the answer to Q. 2. Gliders can, and do, land on these areas as well as on the green areas and the uncoloured areas (but not the roadways) according to wind direction and the presence of obstacles such as landed gliders or launch cables. In reality, all of the airfield is landable by gliders, including the whole of the North Field if necessary.
- 8. This means that SGU developed the airfield in a way that means aircraft would be more likely to overfly Rhonda Dick's property. Mrs Dick has advised that she was not consulted on this matter by the SGU even though her land has stables, paddocks and a livery which could all have been affected by the increase in overflying traffic. It would have been at least courteous to inform Rhonda Dick of these changes which could well have adversely affected her livelihood.
- 9. The CAA made the following statements in a letter to the council in 1999:

¹¹ CAP 793 Chapter 4, Obstacles ¶5.1

¹² CAP 793 Chapter 4, Obstacles ¶5.2

¹³ CAP 793 Chapter 4, Roads, Buildings and Other Structures Outside the Aerodrome Perimeter ¶6.1

¹⁴ Letter from H R Siepmann CAA to Tony Shelton SGU 22 May 1998

¹⁵ Email from Alec Stevenson SGU to Colin Elliott Perth and Kinross Council 24 March 2012

News of the dispute with the Equestrian Centre therefore filled me with disappointment. I do not wish to take sides as the matter is entirely one for the planning authority to determine. I nevertheless greatly regret that reasonable discussion seems to have been replaced by confrontation. In my considerable experience of such disputes I have never come across one which could not be resolved by sensible talking.

...

Safeguarding is intended to be a method of achieving harmony between an aerodrome and its local community. It is not a pretext for aviators to act in an overbearing manner and any such behaviour which brings the system into disrepute damages aviation. The CAA supports sensible safeguarding and reasonable discussion.

10. Whilst I have been advised that the proposed new house has been designed to minimise its potential impact on the airfield's operations I have seen no evidence that the airport has tried to accommodate Rhonda Dick's right to enjoy and develop her land, business and potential home. Indeed the evidence appears to be that SGU has developed their site in a way that could adversely affect her business without consulting her.
11. The author's impression is that SGU continues to act in an overbearing manner towards its neighbours and that it does not engage with them in a positive or open manner.
12. This assessment should consider the aerodrome's safeguarding document and the aerodrome's own safeguarding assessment [See 4(a) above].
13. The presence of an obstruction cannot be a safety issue because flying must not take place if there is a risk of any obstruction endangering an aircraft [See 4(b) above]. If a pilot of an aircraft determines that an obstruction will make a flight unsafe he or she must not take-off. This means that the proposed house, and other existing obstructions, cannot be safety risks. Given that gliders are currently flying from Portmoak it must therefore be the case that there is no risk of any existing obstruction endangering an aircraft.
14. There do not appear to be any marking of obstacles, potholes or bad ground at Portmoak. There also do not appear to be any runway numbers to help line up for both take-off and landing [See 4(d) above]. There appears to be no evidence in aeronautical publications, the SGU website or aerial photography to suggest that there are any markings. The SGU chairman also advised that runways are unmarked in a telephone conversation.
15. The SGU seems to have developed the airfield so that landing aircraft overfly an existing house (Red House) and a working stable and Livery yard against CAA guidance [See 4(f) and 4(i) above].
16. The proposed new house has a height of 4.9 metres which is 16.1 feet. This is less than 150 feet above the average runway threshold elevation [See 4(e) above]. The proposed new house does not breach the 150 feet height recommendation for obstacles.
17. There is a tree within 23 metres¹⁶ of the proposed house which has a height of approximately 15.3 metres which is 50.2 feet [See 4(e) above]. The proposed house is significantly lower than a well-established existing obstacle which is closer to the airfield.

¹⁶ Horizontal distance from tree canopy to SW corner of house 22.4 metres – calculated from aerial photography and Site Plan



Figure 2 Existing tree – adjacent to, and approximately three times height of, proposed house

18. The proposed new house is within 15¹⁷ metres of existing stables which are used regularly by horses [See 4(f) above]. A new stable building, higher than the existing stables but lower than the proposed new house, has been granted planning permission and was not objected to by SGU. Similarly the SGU did not object to the Cattery which results in the public regularly visiting the premises during the hours that the airfield is operational.

¹⁷ Horizontal distance from S corner of stable to NW corner of house 14.4 metres – calculated from Site Plan



Figure 3 Existing stables adjacent to proposed new house

19. Neither the tree or buildings and structures around the airfield appear to have been conspicuously marked. There is no evidence of SGU attempting to reduce or minimize obstructions in the vicinity of the airfield [See 4(g) above].
20. Portmoak aviation information is provided in the following publications:
 - a. Official web site www.scottishglidingcentre.co.uk
 - b. Pooley's Flight Guide 2012
 - c. AFE VFR Flight Guide UK 2012
21. The author has been unable to find specific guidance regarding obstructions surrounding the airfield in any of the above publications [see 4(h) above]. SGU does not appear to have followed the obstacle awareness advice in CAP 793. The fact that no obstructions are marked or referenced suggests that these existing obstructions do not have a significant impact on SGU operations.

Conclusions and Summary - CAA CAP 793

22. SGU states it upgraded the airfield in 2001 in a manner that has resulted in aircraft overflying an existing house, stables and equestrian centre. It does not appear to have consulted its neighbours regarding this upgrade or its potential consequences. The proposed new house, however, has been designed to limit its potential impact on SGU's operations.
23. The proposed new house is lower than the recommended maximum obstruction height of 150 feet and is also much lower than the large established tree which is closer to the airfield. The proposed new house is a much less significant obstruction than the tree.
24. Pilots must not fly if there is a risk of an obstruction endangering aircraft. As aircraft fly currently this means that there is no risk of any existing obstruction endangering aircraft. The proposed new house will therefore not affect operations because it is a less significant obstruction than the tree.

25. SGU appears not to have followed recommendations on dialogue with neighbours; overflight of houses; overflight of stables; marking obstacles, potholes and bad ground; runway markers and numbers; publication of obstacle details and runway alignment.

Review of 21 Feb 2012 SGU Report

26. The SGU has written a report regarding the proposed new house written by Captain Brian D Scougall. A review of this report follows. I refer to the report's paragraph numbers in square brackets.
27. [1.2] The development would not constitute a hazard to pilots and persons on the ground because pilots must not fly if there is a risk of an obstruction endangering aircraft¹⁸.
28. [1.3] Note that the comments of the aerodrome management should be carefully considered. The document does not say that the comments should be accepted or followed.
29. [2.1] The statement "None of the above legislation relates to gliding sites" is incorrect. The CAA is responsible for the safety regulation of Civil Aviation in the United Kingdom¹⁹ and Portmoak is an unlicensed airfield²⁰. CAA document CAP 793 *Safe Operating Practices at Unlicensed Airfields* clearly applies.
30. [2.1] The statement "The official recommendation is that a 1:20 approach gradient is advisable for unlicensed airfields" is incorrect. CAA document CAP 168 specifies a 1:20 slope for *Licensed Airfields* and CAA CAP 793 (which applies to unlicensed aerodromes such as Portmoak) states that CAP 168 may be used for guidance on the layout of unlicensed aerodromes.
31. [3.1] The author claims he is well qualified to make judgements on Mr Hedge's report. He is undoubtedly an extremely experienced and well qualified pilot. The qualifications and experience required for a pilot are different than those required for safeguarding. By way of example Pager Power has recently been appointed by a retired Airbus A340 pilot to deal with safeguarding issues on his behalf.
32. [4.1] There are four plans which are currently available to pilots who may use Portmoak airfield. These are:
- The plan of Portmoak Airfield accessible via the Members Area of the SGU website²¹.
 - The plan of Portmoak Airfield accessible via the Other Visiting Pilots Area of the SGU website²².
 - The plan of the Portmoak Airfield shown in Pooley's Flight Guide 2011.
 - The plan of Portmoak Airfield shown in AFE VFR Flight Guide UK 2011.

¹⁸ CAA CAP793 Chapter 2, Obstructions ¶6.1

¹⁹ Under the Civil Aviation Act 1982. CAP 764 Chapter 1 ¶1.1

²⁰ Scottish Gliding Union, Safeguarding Portmoak Aviation Site, April 1998, ¶2.5 and Pooley's Flight Guide 2011

²¹ From home page select Pilots Area then Members Area then Downloads then Plan of Portmoak Airfield

²² From home page select Pilots Area then Other Visiting Pilots then Airfield Map

33. None of the above match the safeguarding charts in the 1998 safeguarding plan and all are more recent than the 1998 safeguarding plan. The safeguarding plan does not appear to be available to pilots²³.
34. It appears that (a) is primarily intended for glider pilots who are members of SGU and (b) is intended for visiting powered pilots. Plans (a) and (b) are identical. Plans (c) and (d) are primarily for pilots of powered aircraft. Plan (d) is similar to (a) and (b). A plan similar to plan(a)/plan(b) was displayed on the noticeboard in the SGU clubhouse on 21 March 2012.
35. It is reasonable to consider the most recent plans available to pilots of gliders and powered aircraft rather than older plans which do not appear to be available to pilots when undertaking safeguarding assessments.
36. [4.2] Given that there are at least four different plans, all under the control of SGU, and no runway markings it is unreasonable to conclude that Mr Hedge failed to research the situation properly. It is the SGU that has failed to issue and maintain consistent plans of the airfield. Having a number of current airfield plans which show runways in different places and having different numbering systems must be confusing for pilots and can hardly be blamed on Mr Hedge. Saying Mr Hedge has misled the planning officer is also **completely unreasonable**.

²³ If a 1:20 slope were to be projected from the roof of the proposed new house down to the airfield it would intersect the airfield approximately 57 metres inside its boundary. If such a slope were projected from the mature tree it would intersect the airfield approximately 264 metres inside its boundary.

37. [5.1] One of the trees that is described as a sapling is shown in the photograph below.



Figure 4 Tree (described as sapling) having a height of approximately 5m

38. [5.1] It is asserted that this tree would be unlikely to deflect an aircraft from its flight path. In the author's opinion (the author has less flying experience than Captain Scougall) an aircraft whose wing hit the above tree could well be deflected from its flight path.
39. [5.1] CAA document CAP 168 states that:

The principle of shielding is employed when a substantial and permanent object or natural terrain already penetrates an obstacle limitation surface. When it is considered that such

an obstacle is permanent, objects of equal or lesser height around it may, at the CAA's discretion, be permitted to penetrate the surface.

40. [5.1] The trees in question appear to be both substantial, growing and in good health (The author is not a tree expert). There is nothing to indicate that the trees (or indeed the wind sock) are likely to disappear in the near future. There are other trees on Rhonda Dick's land that are young and growing. When the existing trees eventually die other trees are likely to have grown and replaced them (although not in exactly the same locations). In the author's opinion it is reasonable to consider the trees to be permanent.
41. [5.1] The SGU safeguarding officer has advised that gliders would pass directly over the house²⁴. A glider flying directly over the house would fly 32 metres from the tree. If it had a wingspan of 15 metres the separation between the tree's canopy and the wing tip would be just 24.5 metres which is 80 feet. An aircraft 80 feet off course would fly over the tree.
42. [5.1] If the safeguarding criteria in CAP 168 were to be applied then it would be impossible for the proposed new house to breach these safeguarding criteria unless the large tree to the south of the house also breached these criteria. This would be true whatever the runway position. CAP 168 defines a number of protective surfaces for physical safeguarding²⁵ including the Outer Horizontal Surface, Conical Surface, Inner Horizontal Surface, Approach Surface, Take Off Climb Surface and Transitional Surface. This is because the transitional surface has a slope of 1:5²⁶; the minimum distance between the tree and the house is 23 metres and the tree is approximately 10 metres higher than the house.
43. [5.1] Without obstacle shielding the house cannot breach CAP 168 surfaces unless the tree below does as well, whatever the defined runway positions and whichever chart is deemed to be correct. SGU do not appear to have attempted to remove; mark or publicise this obstruction.



44. [5.1] In a telephone conversation on the 24 March the SGU chairman advised the author that the airfield is essentially a single large grass area where aircraft can land from all directions. If the airfield can be approached from any angle then the tree is clearly a

²⁴ Email from Alec Stevenson SGU to Colin Elliott Perth and Kinross Council 24 March 2012

²⁵ CAP 168 Chapter 4 The Assessment and Treatment of Obstacles

²⁶ CAP 168 Chapter 4, The Transitional Surface ¶4.3

relevant obstruction. It is therefore incorrect to conclude that no glider or powered aircraft would approach over the tree.

45. [5.2] This is again incorrect. The CAA does not recommend a 1:20 approach gradient for unlicensed airfields. CAA document CAP 168 specifies a 1:20 slope for *Licensed Airfields* and CAA CAP 793 (which applies to unlicensed aerodromes such as Portmoak) states that CAP 168 may be used for guidance on the layout of unlicensed aerodromes.
46. [6.2] This is incorrect. The proposed house and stables do not create obstacles along 50% of the eastern boundary. The actual figure is approximately 14%²⁷. Some of this represents an area through which it is claimed aircraft would not approach [see 5.1]. The areas immediately north and south are not obstructed to the same degree.
47. [6.2] If 30 glider pilots are airborne simultaneously then each glider pilot has made a conscious decision that it is safe to takeoff. They are clearly aware of the risk of the weather changing and the presence of all obstacles on and off the airfield before they make their decision to fly.
48. [6.2] This is also incorrect. The proposed house and other obstacles will not prevent normally landing gliders overflying them and then landing. The SGU safeguarding document clearly states that the gliding approach is usually steeper than the 1:20 angle in paragraph 4.1 A.
49. [6.3] The British Gliding Association²⁸ advises that the principal cause of accidents when landing at a home airfield is that pilots are unable to cope with normal problems. It recommends better training of pilots to ensure that landing accidents do not occur.
50. [6.5] Incorrect statement. The Equestrian centre is not defunct. It has been open since 1998 with a number of horses permanently in residence.
51. [6.7] This is an invalid concern. No CAA safeguarding document, BGA safeguarding document or SGU safeguarding document advises that turbulence should be assessed - turbulence is not even mentioned. Pilots of all aircraft are taught to deal with turbulence. It is the author's view that the turbulence caused by the trees is likely to be more significant than the turbulence from any buildings.
52. [6.8] It is stated that it is almost certain that a pilot will be seriously injured or die in the vicinity of the stables or paddocks. British Gliding Association advice is quite clear that this issue should be dealt with through better training. This implies that pilot training is inadequate. The required action to resolve this is clearly to improve flying training.
53. [6.9] This paragraph is ill founded for a number of reasons. There is no guidance that states turbulence should be assessed. There is clear guidance that advises pilots they should not take-off unless they are sure it will be safe to do so. Winds from the South East are rare. Turbulence is a very normal part of flying. Turbulence will not cause handling characteristics to change.

²⁷ Depending on how one defines the boundary

²⁸ British Gliding Association, Glider Accidents in 2011, page 2

54. [7.1] The phrase “grasping at straws” is unreasonable, particularly when the author of the SGU report has raised the issue of turbulence even though this is not raised in any of the identified safeguarding guidance.
55. [7.1] There are a number of airfield plans – all indications are that Mr Hedge selected the most appropriate one.
56. [7.1] The trees are substantial enough to affect an aircraft in a collision. The other larger tree is of sufficient size in its own right to provide shielding. Even if shielding does not apply the proposed house is not an obstacle if the large tree isn't – wherever the runway is.
57. [7.1] There is no direction to assess turbulence issues in any of the CAA documents identified in Captain Scougall's report or indeed in the SGU's own safeguarding document.
58. [7.1] Mr Hedge is assessing the proposed new house, not the paddocks. If there is a serious risk of aircraft landing short of the airfield this should be addressed through training as advised by the BGA.
59. [7.2] As an airfield inspector Mr Hedge's is eminently qualified to comment when compared to a pilot. By way of example a highway's inspector would be better able to comment professionally on the safe design of a road than a driver. Captain Scougall failed to recognise which CAA document actually applied to his airfield.
60. [7.2] As a visual approach specialist Mr Hedge will have spent a lot of his career considering the angles at which aircraft should and actually do approach airfields. Such experience is extremely useful when considering physical safeguarding.
61. [7.3] I have reviewed BGA safeguarding guidance and have noted some inconsistencies regarding safeguarded approach angles (There are currently references to 1:7 slopes and 1:20 slopes). It is therefore likely that their guidance will be updated in future and not unreasonable to think Mr Hedge's guidance could be followed given that his proposed slope falls between the two currently referenced by the BGA.

Review Summary – Feb 2012 SGU Report

62. It is stated that it is almost certain that a pilot will be seriously injured or die in the vicinity of the stables or paddocks due to undershoot. BGA advice appears to be that pilot training should be improved to prevent this.
63. The proposed new house cannot breach the physical safeguarding surfaces defined in CAA CAP 168 unless the large tree does too. SGU do not appear to have attempted to remove, mark or publicise this existing obstruction.
64. A substantial conifer which is approximately 5 metres tall and has a spread of approximately 3 metres has been described as a sapling.
65. Given that there are at least four different plans, all under the control of SGU, and no runway markings it is unreasonable to conclude that Mr Hedge failed to research the situation properly. It is the SGU that has failed to issue and maintain consistent plans of the airfield. Having a number of current airfield plans which show runways in different

places and having different numbering systems must be confusing for pilots and can hardly be blamed on Mr Hedge. Saying Mr Hedge has misled the planning officer is also completely unreasonable.

66. No CAA or SGU safeguarding document advises that turbulence should be considered yet Mr Hedge is criticised for not assessing it. It is not an issue.
67. As an airfield inspector Mr Hedge's is eminently qualified to comment on safeguarding issues when compared to a pilot.
68. There are a number of mistakes in the report. These include: Failure to recognise the relevance of CAP 793 *Safe Operating Practices at Unlicensed Airfields*; Failure to recognise that it is pilots who are ultimately responsible for flight safety; Incorrectly stating that the CAA recommends a 1:20 approach gradient for unlicensed airfields; Incorrectly stating that the house and stables cover 50% of the boundary; Incorrectly stating that the proposed house and stables will prevent gliders overflying and incorrectly stating the equestrian centre is defunct.

Review of 1998 SGU Safeguarding Report

69. This document was published in April 1998 with the title "Safeguarding Portmoak Aviation Site" and is marked Draft 3.
70. The CAA recognises the value of safeguarding documents and the specific value of this one. The author of this report also recognises the value of safeguarding documents and fully supports their use and implementation.
71. The foreword states that *The Portmoak's Safeguarding Co-ordinator is directly responsible to the directors of the SGU for the compilation, production, routine updating and distribution of this document.* The document, however, does not appear to have been updated since 1998.
72. The foreword also states that *It also describes with the aid of Safeguarding Maps areas of neighbouring land and developments that would be prejudicial to operations and safety within the prescribed airspace.* This, together with other sections of the document, appears to presume that neighbouring developments will be a problem and should be stopped. However CAP 793 suggests that safeguarding should be a trigger for discussion rather than a process of ruling development out.
73. [1.3] The suggestion that evidence be sent to the LPA implies that an objection will be made and that there will be no direct discussion with the applicant. This again goes against the spirit of CAP 793.
74. [1.6] Again the presumption appears to be that there will be an objection. The guidance seems to be about how to explain your objection rather than how to decide whether one will object.
75. [1.8] There do not appear to be any agreements with neighbouring land owners.
76. [2.3] It is noted that there are 22 caravan stands; 2 residential mobile homes; a hospitality unit with 15 beds and various other buildings. Presumably SGU believes it is safe for people to reside, work and generally be on site in the presence of all of the flying activities.

77. [2.5] It is noted that there is a wide range of flying activity at the site.
78. [3a] At an airfield with multiple parallel runways a single tall object is unlikely to shut down an airfield operation. The control tower at Heathrow is situated in between the two main parallel runways and has a height of 279 feet. It cannot be presumed that all tall structures will be a safety issue.
79. [4.5] This statement is unreasonable. It is the responsibility of pilots to ensure their flying is safe and to remain on the ground if they cannot conduct a safe flight.
80. [6] It is stated that *Maintaining the good will of people and businesses close to the airfield boundaries is fundamental to the long term operation and development.*
81. [Annex B] A reference is made to CAP 429. This should read 428. CAP 428 has now been superseded by CAP 793.

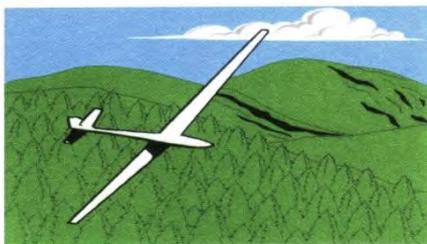
Safeguarding Assessment – Personal Qualifications

82. My name is Mike Watson. I have an honours degree in Electronic, Computer and Communications Engineering and am a Chartered Engineer. I have worked as a commissioning engineer at Sizewell B nuclear power station and have worked as a software developer for Barclays Bank plc. I founded Pager Power Limited in 1997. Pager Power advises project developers and undertakes safeguarding studies for them, specialising in wind farms and radar.
83. The International Energy Agency (IEA) runs Topical Expert Meetings on wind farms, radar and radio. I was technical chairperson of the last meeting in Amsterdam.
84. The company has acted for many blue chip UK companies on hundreds of projects. The company has also worked on projects in Ireland, France, Belgium, Canada, Bulgaria, Greece, Seychelles, South Africa and Australia.
85. I have a good relationship with the Civil Aviation Authority, the Ministry of Defence, National Air Traffic Services, BAA and many airport operators. I also have a good relationship with Eurocontrol and a number of overseas aviation and military bodies.
86. I am a qualified pilot and have flown (but not piloted) in gliders in England and Scotland. I used to own and fly a Cessna 182 single engine aircraft.

Safeguarding Assessment

87. I have read and studied a comprehensive range of documents including CAA guidance, BGA guidance, SGU safeguarding advice, the CGU website, Pilot publications and a variety of reports, letters and emails.
88. I recognise the CAA as the ultimate authority in this matter and therefore place great weight on the CAA publications and specific letters from the CAA on this matter.
89. There is no doubt that Portmoak is an unlicensed airfield and the most applicable document is therefore CAP 793.

90. The proposed development does not breach any CAA safeguarding rules and would not as a consequence be illegal.
91. In essence the gliding site is a large field which gliders could approach from any direction especially if experiencing difficulties. If approaching the area of the proposed new house pilots will reach the airfield if they fly either left or right of it.
92. Around 50 people can reside on the airfield and the proposed new house lies in line with an existing house. It is already established that gliders fly near and over residences.
93. There are many airfield buildings, trees and structures on the airfield which are obstructions.
94. SGU developed the airfield in 2001 in a manner that may well have resulted in more aircraft flying over the existing stables and closer to the existing trees.
95. The large tree next to the proposed new house is likely have a greater impact on flying than the proposed new house.
96. There is no evidence that the SGU has taken any of the measures it could have taken to manage the impact of this tree on its operations.
97. Operations must be suspended if there is a risk of an obstruction endangering aircraft. This means that the tree and consequently the proposed new house would have no impact on safety.
98. The proposed new house will not affect aviation safety.
99. The proposed new house is unlikely to affect operations.



Scottish Gliding Centre

Portmoak Airfield, Scotlandwell, by Kinross, KY13 9JJ

Tel: 01592 840543 Fax: 08707 626543

e-mail: office@scottishglidingcentre.co.uk

website: www.scottishglidingcentre.co.uk

SCOTTISH GLIDING UNION'S RESPONSE TO PAGER POWER REPORT ON THE SAFEGUARDING IMPLICATIONS OF PLANNING APPLICATION 09/00936/FLL

Part A of this response sets out the context. Part B makes general comments about the Pager Power Report and its authors. Part C gives specific reasons why the Pager Power Report does not show that building a house at the proposed location will not affect the safe operation of Portmoak Airfield. The Annex contains an Expert Report drafted by Mr Richard Vousden ["The Vousden Report"]¹ in support of the SGU's argument that granting the planning permission sought by Mrs Dick will affect the safety of glider operations from Portmoak Airfield. This Response should be read in conjunction with that Report, which contains maps and photographs showing the layout of the airfield and the area in dispute.

A) The context

- 1) SGU has no objection to Mrs Dick building a house somewhere else on her own land away from the airfield boundary. The only question at issue is whether siting the house immediately adjacent to a section of Portmoak Airfield used by gliders coming into land is a safe and sensible option. Pager Power concludes that it is safe because aircraft have to operate so as to avoid obstacles on the approach into airfields. This is not a credible position. Our view is that safety requires that additional obstacles should not be constructed within the safeguarding zone of the airfield. The North Field at Portmoak is now and has always been an area where gliders land. Some of those gliders approach directly over the site of Mrs Dick's proposed house. Her proposed house will infringe the Obstacle Limitation Surface associated with the normal glidepath of gliders landing in that area by 2.9 metres. This is incompatible with CAA guidance, and will endanger aircraft safety and the safety of anyone residing in the house.²
- 2) Most of Pager Power's Report simply restates Mrs Dick's case for building a house and her complaints about the SGU. These arguments have been rebutted in earlier correspondence and there is no need to elaborate on them here. The remainder of our Response focuses on the use of the North Field for glider operations and explains why Pager Power gives an erroneous view of the safety implications of Mrs Dick's application.
- 3) The Vousden Report, annexed to this Response, shows that a house at this location will interfere with the safe operation of gliders. It will become an unnecessary obstacle on the approach into the North Field. There is inevitably a risk that a glider landing short will

¹ Richard Vousden, *Assessment for the SGU of the Safeguarding Implications of Planning Application 09/00936/FLL upon Portmoak Airfield*, 4 May 2012. ["Vousden Report"]

² Vousden Report, paragraphs 24-26.

hit the house. It will become a hazard to pilots and to anyone who lives there. A solid house cannot be compared to the frangible structures currently found beneath the glidepath – wooden fences, small shrubs, wooden stables. A house at this site is potentially a fatal accident waiting to happen. Creating a risk of this kind cannot be regarded as safe.

- 4) PKC adopted an airfield safeguarding policy in 1998. The purpose of that policy is to protect the operational viability of the airfield by ensuring that obstacles are not built at locations where they will interfere with the safe operation of the airfield. Permitting the construction of the proposed house at the proposed location constitutes an obstacle that will interfere with the safe operation of the airfield. That is why planning permission must be refused in this instance, as it was in 2000 when a planning application for a house similarly located was turned down on safety grounds by the Council and by the Reporter who heard Mrs Dick's appeal. Nothing has changed since then in the way the airfield is used or the areas in which gliders land.
- 5) Airfield maps. The correct and current maps are reproduced in the Vousden Report³, annexed to this Response. The first map (Figure 1) is the airfield safeguarding map annexed to the PKC local plan. It shows that Mrs Dick's proposed house is squarely within the airfield safeguarding zone. The second map (Figure 2) shows that the current layout of the airfield and the areas used for takeoffs and landings have not changed since 1998, or indeed for many years prior to that. Both maps show clearly that the North Field immediately to the west of Mrs Dick's proposed house is available and usable for landings by gliders, as it always has been. Only the irrelevant area along the northern boundary is currently too rough for safe use. Everything else is a working airfield.

B) The Pager Power Report and its authors

- 1) Author and Reviewer: one is an electronics engineer, the other a metallurgist. They have experience in advising clients about the impact of wind turbine developments on aviation, radar and telecommunications. Neither claims experience of piloting a glider or experience of operating a gliding site. It is difficult to see what relevant "expertise" they have for advising on operational safety at gliding sites.
- 2) Other safeguarding studies at Portmoak:
 - a) Mr Hill (for the Levenmouth Farm proposal) took a pragmatic approach to assessing safety in relation to the concept of an Obstacle Limitation Surface for a landing area at an unlicensed airfield. He followed the principles and guidance in CAP 168, 738, CAP 793 and CAP insofar as they were capable of being applied to a gliding site with no fixed-direction hard-surface runways.⁴
 - b) Mr Hedge did likewise but went further, saying that *"if asked for guidance about an unlicensed aerodrome, the CAA Aerodrome Standards Department would advise compliance with the CAP 168 criteria for a licensed aerodrome. Since those criteria are considered to be the minimum standards, no other advice would be reasonable."*⁵ He applied these criteria in detail, but to the wrong approach paths.

³ Vousden Report, p.2, figures 1 and 2.

⁴ Hill Report, 07/00595/FUL, paragraphs 7 - 15

⁵ Hedge Report, 09/00936/FLL, section 2

- c) The Pager Power report initially suggests that only CAP 793 is relevant to the safeguarding of unlicensed aerodromes⁶ but then attempts to demonstrate that CAP 168 could be applied in its entirety to an undefined landing area without acknowledging that some aspects (those relating to fixed-direction hard-surface runways of defined width and length) cannot be applied to a grass field gliding site where many landing directions are possible.⁷
- d) Our own expert Mr Vousden has long-standing professional experience in advising on airfield safeguarding.⁸ Like Mr Hill (see above), he sees no reason to afford unlicensed airfields lower safety standards than licensed airfields and bases his report on guidance issued by the CAA in CAP 168, 738 and 793 insofar as appropriate. Based on the CAA's recommendations and adjusting them to take account of glider operations, his conclusion is that the proposed house will infringe the Obstacle Limitation Surface by 2.9 metres.. This is almost the same conclusion reached by Mrs Dick's previous consultant, Mr Hedge.⁹ The only difference between Hedge and Vousden is that Vousden uses the right map and understands that gliders land in the area adjacent to the proposed house. Pager Power's Report does not disagree (see next section). None of the experts disputes that the house protrudes into the approach path of gliders landing in the North Field and thus constitutes an obstacle. Only Pager Power takes the view that putting a house in the path of landing aircraft is safe.

C) SPECIFIC PROBLEMS WITH THE PAGER POWER REPORT

- 1) Selectivity. The Pager Power report tries once again to rely on maps produced for different purposes that are irrelevant to this planning application:

- a) *"It is reasonable to consider the most recent plans available to pilots of gliders and powered aircraft rather than older plans which do not appear to be available to pilots when undertaking safeguarding assessments."*¹⁰

In assessing Mrs Dick's planning application the only relevant plans are those lodged by the Scottish Gliding Union as part of the 1998 Technical Appendix to the Local Plan. They are the plans to which the Council must have regard when considering this application and applying the agreed airfield safeguarding policy. These plans were not produced for use by pilots when deciding where to land, but to give guidance to the Council when assessing whether proposed developments will affect the safety or amenity of operations at the airfield. Pilots do not undertake "safeguarding assessments" – the Council does. As explained in A5 above, nothing has changed since 1998 nor do subsequent maps alter the position in any way: the safeguarding map remains the relevant one.

- b) *"Having a number of current airfield plans which show runways in different places and having different numbering systems must be confusing for pilots and can hardly be blamed on Mr Hedge. Saying Mr Hedge has misled the planning officer is also completely unreasonable."*¹¹

⁶ Pager Power Report, 09/00936/FLL, paragraph 4

⁷ Pager Power Report, 09/00936/FLL, paragraph 42

⁸ Vousden Report, paragraph 1.

⁹ Hedge Report, 09/00936/FLL, section 6

¹⁰ Pager Power Report, 09/00936/FLL, paragraph 35.

¹¹ Pager Power Report, 09/00936/FLL, paragraph 36.

Only Mr Watson is confused. As we have made clear on previous occasions, Mr Hedge was given the relevant safeguarding plans by SGU, but chose not to rely on them. Had he done so he would have seen that **the area adjacent to Mrs Dick's proposed house has always been in use for glider operations**, a point that Mr Watson implicitly acknowledges but chooses to evade by saying that "SGU developed the airfield in a way that means aircraft would be more likely to overfly Rhonda Dick's property". This invention is addressed in the next section, but Mr Watson cannot have it both ways. He agrees that aircraft will overfly the proposed house. He agrees that the house will be an obstacle to gliders. [para 46]. That necessarily means it will pose a safety risk to gliders landing in the North Field.

- c) *"The proposed house and other obstacles will not prevent normally landing gliders overflying them and then landing"*¹²

But that is not the point: it is the *abnormally* landing gliders that matter – no-one plans to hit a house, but gliders do sometimes land short of the planned touchdown point, especially when the weather and the wind catch them out. Building a house on the approach will either force gliders to come in much higher, and risk overshooting at the far end of the airfield, or it will increase the risk of accidents when gliders land short and fail to clear this unnecessary man-made obstacle. Unlike powered aircraft which can go-around for another approach, gliders have to land: the point is to enable them to do so safely, and **putting obstacles in their way does not achieve that objective.**

- 2) Invention. The report makes several inventive and unwarranted assumptions:

- a) *"That the SGU developed the airfield in a way that means aircraft would be more likely to overfly Rhonda Dick's property."*¹³

It is simply untrue to say that the SGU has "developed" the airfield since 1998. In fact, quite the opposite is true. Gliders used the North Field for many years before Mrs Dick came along and chose to develop an equestrian centre under the final approach paths to an active airfield. The SGU has merely made the surface of that area better than it used to be. A large grass airfield has to be maintained, just like a golf course. Different sections of the airfield are levelled and reseeded as necessary as part of an ongoing programme. This is not "development" as any normal person would understand the term: it is simply care and maintenance of a grass surface that has to support over 22,000 takeoffs and landings per year, plus wear and tear caused by retrieve vehicles towing gliders back and forth. A far better analogy is the repainting of the Forth Bridge. No-one would call that "development".

- b) *"That the SGU has developed their site in a way that could adversely affect her business without consulting her."*¹⁴

See the previous comment.

- c) That *"the SGU seems to have developed the airfield so that landing aircraft overfly an existing house (The Red House) and a working stable and livery yard against CAA guidance."*

¹² Pager Power Report, 09/00936/FLL, paragraph 48.

¹³ Pager Power Report, 09/00936/FLL, paragraph 8, repeated in paragraph 22

¹⁴ Pager Power Report, 09/00936/FLL, paragraph 10, repeated in paragraph 22

Mr Watson has invented a new chronology for the dates of the respective developments. The airfield was established and aircraft overflew this area for many years before the stables and livery yard were developed. Also, the Red House is much further from the airfield than Mrs Dick's proposal and does not present an obstacle to take-off or landing.

- d) That *"in the author's opinion, it is reasonable to consider the trees to be permanent."*¹⁵

No tree is permanent, and particularly not so in the meaning of CAP 168 Chapter 4 which also uses the word "immovable" in the context of shielding.¹⁶ The large tree is not in practice an obstacle because it is aligned with the roadway on the airfield and aircraft do not land on the roadway. Gliders have no reason to fly over it, which is why it has never been taken down. In any event a glider hitting a tree will damage the glider and may injure the pilot. A glider hitting a house will demolish itself and seriously damage the house, likely killing the pilot and putting any occupants of the house at serious risk of injury. These are not comparable safety risks.

- e) That the 1998 Safeguarding Report *"appears to presume that neighbouring developments will be a problem and should be stopped."*¹⁷

In quoting from the Foreword that the 1998 Safeguarding Report *"...describes...developments that **would** be prejudicial to operations and safety..."* Mr Watson has not acknowledged that the emphasis in the quotation is his own. His is a curious interpretation of the text, one completely at odds with the Council's acceptance of the report and its inclusion in the local plan as the basis for consultation. It is a matter of record that the SGU has not objected to proposals on which it has been consulted where there has been no concern about safety and no adverse impact on airfield operations. Mrs Dick's proposed development would be prejudicial to operations and safety, as the Vousden Report shows. That is why SGU objects to application 09/00936/FLL.

- 3) Ignorance. The report's author seems unaware of many pertinent facts:

- a) *Of gliding operations at Portmoak Airfield.*

Mr Watson was offered several alternative times to meet representatives of the SGU and observe the actual operation of the airfield, but the only time acceptable to him was 20.30 hrs on 21 March 2012, in the dark. Then the Chairman of the SGU initiated a telephone call to him on 24th March 2012 but Mr Watson declined to make further arrangements for a visit.

- b) *Of gliding operations per se.*

Mr Watson's experience as a power pilot is neither helpful nor sufficient for understanding the nature of gliding operations. This is nowhere more evident than in his statement that *"all pilots are clearly aware of.....the presence of all obstacles on and off the airfield before they make their decision to fly"*.¹⁸ No pilot is aware of all obstacles on his/her intended landing airfield before he takes off. Even

¹⁵ Pager Power Report, 09/00936/FLL, paragraph 40

¹⁶ CAP 168 4.9

¹⁷ Pager Power Report, 09/00936/FLL, paragraphs 72 - 74

¹⁸ Pager Power Report, 09/00936/FLL, paragraph 47

commercial jets have to divert on occasions because a runway gets blocked. For gliders, without power, diversion is not an option. If parts of the landing area are blocked by previously-landed gliders and towing vehicles, glider pilots have no choice but to re-arrange their approach into another part of the airfield, including the North Field. This does not mean that they shouldn't have taken off in the first place, as Mr Watson seems to imply.

- c) *Of the effect of Mrs Dick's proposed development on the established amenity of the airfield.*

Amenity is defined as **“a desirable or useful feature or facility of a building or place”**.¹⁹ In the case of Portmoak Airfield, part of its established amenity prior to Mrs Dick's arrival was the ability to make approaches into the North Field from the east without risk of hitting houses obstructing the approach. Mr Watson seems unaware of the landmark case involving two planning appeals at Chatteris Aerodrome where it was held that the issue of amenity is wider than visual impact and can include considerations of safety. It was concluded that the use of land as an aerodrome is a matter of public interest, and that to inhibit such use may result in a loss of amenity. The appeals were, accordingly, refused.²⁰

- d) *Of the fact that runway numbers and markings are irrelevant to a grass field gliding site.*

Mr Watson makes much of the SGU's alleged failure to include runway markings on the ground and in aeronautical publications.²¹ But Portmoak is a grass airfield – it has no hard runways. One of its safety features is that gliders can usually land into wind whatever its direction, so runway numbers and markings on the ground would be of no practical use. Indeed, they would reduce the flexibility and safety of the airfield. He also seems unaware that it is standard practice for local and visiting pilots to be briefed, before flying, about any areas of ground that are to be avoided – for example, because they are under repair. He further seems unaware that visiting power pilots must not rely on unofficial aeronautical publications such as Pooleys or the AFE VFR guide which can easily become out of date.²² Visiting aircraft are accepted at Portmoak only on a Prior Permission Required (PPR) basis. This involves a pre-departure telephone call to Portmoak during which the pilot will be given current, relevant airfield information, in accordance with CAP 793, 5.4.

- e) *Of CAA guidance regarding risk from turbulence.*

In rejecting Captain Scougall's comments about turbulence,²³ Mr Watson displays a lack of knowledge of the official guidance. This is to be found in CAP 793 at 5.11: *“Aerodrome operators and pilots should investigate and be aware of the effect of various wind directions on operations, considering wind shear, roll over from trees and buildings on the aerodrome.”* Wind shear is a sudden reduction in wind strength occurring during a descent. It is caused by friction between the wind flow and a line of trees, or buildings and other structures on the ground. Wind shear causes a sudden reduction in air speed and a rapid increase in the rate of descent of a glider, which is then more likely to land short. More buildings in the proposed location will increase the likelihood of turbulence and wind shear, and thus increase the risk of potentially serious accidents at that point.

¹⁹ Oxford English Dictionary

²⁰ APP/DO515/C/02/1088024 & 1088025

²¹ Pager Power Report, 09/00936/FLL, paragraphs 14 & 25

²² Pager Power Report, 09/00936/FLL, paragraphs 20, 21, & 32 - 36

²³ Pager Power Report, 09/00936/FLL, paragraphs 51, 53 & 57

f) *Of the current progress towards revision of airfield safeguarding.*

Mr Watson states that he “recognises the value of safeguarding documents and fully supports there (*sic*) use and implementation” but complains that the 1998 Safeguarding Report for Portmoak Airfield hasn’t been updated. There has been no need, as it was accepted by the Council, incorporated into the Local Plan, and the airfield has not changed. Had Mr Watson been more thorough in his research, he would have become aware of the considerable dialogue between SGU and the Council over the past two years on the review of airfield safeguarding in the draft local plan – not just for Portmoak but for all the other airfields within the local authority area.

g) *Of the history of Mrs Dick’s applications to build a house here.*

Mr Watson makes several allegations in his report that the SGU is the antagonist, “developing the airfield” in a way that adversely affects Mrs Dick and “failing to enter into dialogue” with her.²⁴ He is evidently unaware of the fact (or chooses to ignore it) that the airfield and its activities pre-date Mrs Dick’s development of the stables by many years, and that there has been no development of the airfield that has changed the degree or nature of overflight of the property since Mrs Dick chose to purchase it. He is obviously badly briefed on the amount of dialogue that Mrs Dick’s proposals have generated – such as: (i) a discussion with our chairman in 2005 in which she gave her assurance that, if granted permission to build a house on the Wellburn end of her property, she would not seek further permission for a house at the stables, and (ii) the meeting with Mrs Dick and her agent at Perth & Kinross Planning Department on 16th April 2010 “*to discuss whether there are any options that the parties are willing to consider.*”²⁵ The chairman and vice-chairman have met Mrs Dick on several occasions in order to try to reach a compromise. It remains the case that if her proposed house were located well away from the airfield boundary the SGU would not object, but this solution is not acceptable to Mrs Dick.

4) Omission. There are several key omissions in the report:a) *Location diagram.*

The location diagram omits the very approach path that is at issue, the one shown in the SGU Safeguarding Report lodged with the Council. The diagram is, therefore, misleading rather than the aid to understanding that it is claimed to be.

b) *CAP 738 “Safeguarding of Aerodromes.”*

Mr Watson omits to make any reference whatsoever to CAP 738 “Safeguarding of Aerodromes”, despite stating that he has “...studied a comprehensive range of documents including CAA guidance...”²⁶ Although it refers primarily to officially safeguarded airfields, this document reinforces government advice that all airfields should be safeguarded and makes it clear that some of the guidance therein may be useful to the operators of unlicensed airfields in making safeguarding arrangements.²⁷

²⁴ See 1 a), b), and c) above

²⁵ Minute of the meeting by John Wright, Strutt & Parker

²⁶ Pager Power Report, 09/00936/FLL, paragraph 87

²⁷ CAP 738 1.1.2 & 1.3.1

c) *CAA Safety Regulation Group letter to Councillor Barnacle.*

The Pager Power report omits to quote also that part of the letter where the author said “...the original safeguarding document produced by the SGU struck me as being of a very high quality, to the extent that I suggested to the Council that it should be used as a model for the safeguarding of Perth (Scone) Airport.” Instead, the Pager Power report implies, on the basis of the selected quotation, that dialogue has not taken place and that the SGU has “(not) tried to accommodate Rhonda Dick’s right to enjoy and develop her land, business and potential home.”²⁸ Quite apart from the fact that there is no unfettered “right” to develop land (only to apply for planning consent if that is required), it takes two parties to have a dialogue and the SGU has always been willing to have discussions with Mrs Dick and her agents. Indeed, we did just that when agreeing that we had no objection to the house at Wellburn. She obtained planning permission based on operational need, built the house, occupied it, advertised it for sale, couldn’t sell it, let the house to tenants and moved into an unauthorised caravan at the stables. This sequence of events was not of the SGU’s making.

d) *Recent tree planting by Mrs Dick.*

The report omits any mention of conifers that Mrs Dick has planted close to and all along the eastern boundary of the airfield. If these are Leylandii, which they appear to be, they will be fast-growing to a mature height in excess of 70 feet and will effectively sterilise the northern half of the airfield. We refer again to the concept (referred to in 2 (e) above) that loss of established amenity at airfields is a matter of public interest. Planting a line of trees in this location is just as dangerous to landing aircraft as building a house.

D. CONCLUSIONS

Pager Power’s Report evades rather than addresses the airfield safety implications of Mrs Dick’s proposed house. The Report accepts that aircraft will overfly the house and it accepts that they will land in the area adjacent to the house. Its answer to the safety problem is to say that the airfield should be re-arranged so that gliders can no longer land in the North Field. Accepting such a conclusion would increase the risk of a serious accident on the airfield boundary, and encourage further piecemeal developments along the airfield perimeter that would eventually render the airfield unusable. This approach entirely defeats the object and purpose of the airfield safeguarding policy adopted by PKC in 1998.

Richard Vousden’s Expert Report, which is annexed to this Response, reviews the CAA guidance on airfield safeguarding, including its guidance on obstacle clearance limitations. He notes that for aircraft landing in the North Field the proposed house will infringe the Obstacle Limitation Surface associated with the normal glidepath of gliders landing in that area by 2.9 metres. His Report concludes:

“It is recommended that the application is refused on grounds of safety, of those in the air and on the ground.”

Alan Boyle, Chairman, SGU
Alec Stevenson, Safeguarding Officer, SGU
17 May 2012

²⁸ Pager Power Report, 09/00936/FLL, paragraphs 9 - 11

An Assessment for the Scottish Gliding Union Ltd
of the Safeguarding Implications
of
Planning Application 09/00936/FLL
upon Portmoak Airfield
by
Airfield Safeguarding & Development

ASD

e: enquiry@airfield-safeguarding.com
t : 01353 723683
u: www.airfield-safeguarding.com

SGU/05.12

4 May 12

INTRODUCTION

1. ASD has been asked by the Scottish Gliding Union Ltd (SGU), the operators, to carry out an assessment of the safeguarding implications of a planning application for a dwelling at Causeway Cottage, near to its Eastern boundary to Portmoak Airfield. The application number is 09/00936/FLL, submitted to the Perth and Kinross Council. The SGU is concerned that the planned structure will degrade the safety of aircraft landing from the East.
2. The author is a consultant specialising in airfield safeguarding matters. A brief summary of his background and experience may be viewed at the ASD website - <http://www.airfield-safeguarding.com/about%20asd.htm>.

SAFEGUARDING PRINCIPLES

3. The purpose of safeguarding an airfield is to protect both the airspace over and around it and its navigation aids against developments or structures that may affect safe operation. This is to protect those on the ground and in the air. The legislation covering safeguarding is 'Planning Circular 2 2003 - Scottish Planning Series: Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosives Storage Areas) (Scotland) Direction 2003'. The legislation says:
'.....operators of unlicensed aerodromes and sites for other aviation activities (for example gliding or parachuting) should take steps to protect their locations from the effects of possible adverse development by establishing an agreed consultation procedure between themselves and the planning authority or authorities.'
4. The CAA publishes CAP793 as guidance for safe operating procedures at unlicensed airfields. It suggests that CAP168 (for licensed airfields) can be used with CAP793 to provide detailed information on 'aerodrome physical characteristics, lighting standards, signs and signals, etc'. Within CAP793's section on safeguarding, reference is made to CAP 738, Safeguarding of Aerodromes. CAP 738 repeats the legislation's recommendation that **all** airfields should be safeguarded, and shows, inter alia, how a safeguarding map may be produced.
5. The conclusion to be drawn is that the CAA recommends that all unlicensed airfields should safeguard themselves, using the guidance of CAP 738 and CAP 168. As there is no reason to afford lesser safeguarding (=safety) standards to takeoffs and approaches at a busy unlicensed airfield than to a licensed one, this report uses the premise that CAPs 168 and 738 should be used for safeguarding guidance.

PORTMOAK AIRFIELD

6. Portmoak is an airfield largely used for gliding operations, run by the SGU. It is a busy unlicensed airfield with approximately 11300 takeoffs per year, of which 86% are winch-launched, 8% are aero-tows/light aircraft, and 6% are self-launched (motor gliders). The number of landings is approximately 11300.
7. **Safeguarding Plan.** In the current Perth & Kinross local plan (2004) Portmoak's safeguarding is based upon the runways shown in Figure 1. It shows those areas most frequently used for take-off and landing, and the corresponding overshoot and undershoot

areas most in need of protection rather than being an accurate representation of physical runways. From Figures 1 and 2 it is not possible to ascertain the geographic positions of the runways. Furthermore, there are no runways marked on the ground, or visible from the air. See A 1. They are, therefore, notional, and cannot be the basis for constructing obstacle limitation surfaces.

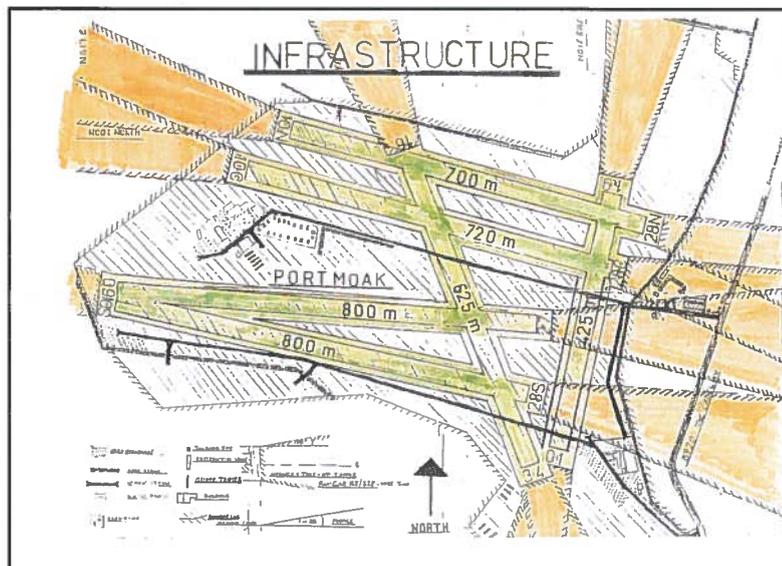


Figure 1

8. **Gliding Operations.** The nature of gliding relies upon the movement of air, horizontally and vertically. Being usually unpowered, it is necessary for gliders to takeoff and land into the prevailing wind. A1 shows the operational area available to gliders at Portmoak, outlined in cyan, and Figure 2 the airfield layout. While there are preferred landing areas, without the constraints of runways, takeoffs and landings are adjusted to accommodate the wind direction and other factors.

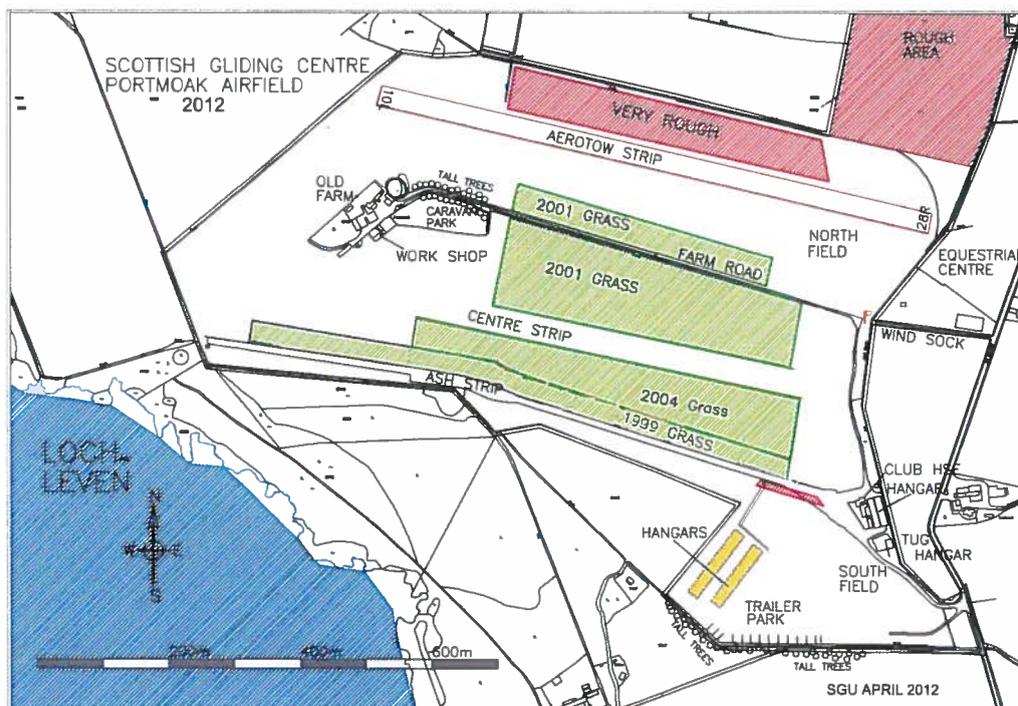


Figure 2

9. The preferred landing area is North Field. This is because it lies East-West into the prevailing wind, gives about 800m landing distance, and approaches are not over populated areas. Winched takeoffs (the majority) are carried out South of the road, from the Centre Strip. Aerotows are exclusively from the aerotow strip. While takeoffs are controlled by the duty instructor, landings are the sole responsibility of the pilot.
10. The landing direction and location for gliders can only be determined by the pilot before joining the circuit. Gliders have to land into wind; they may run short of height unexpectedly and have to land early; they may have to avoid other landed gliders that may be blocking a portion of the airfield; there may be several gliders approaching simultaneously. The pilot has to use his/her own judgment and will, if necessary, land in areas of the airfield that are otherwise only rarely used. Likewise, gliders landing after a cable break during the launch may have to do abbreviated circuits and land in unusual places.
11. It can be seen that the nature of gliding operations is that sometimes gliders have to land outside the airfield boundary. The SGU has recorded such incidents, the results of which (up to 1999) are plotted at A2. It can be seen that a majority of the incidents lie along the East and West boundaries of the airfield. This will be because the majority of takeoffs and approaches are made along the East-West axis.
12. As observed earlier, there are no marked runways, and gliders land into wind where it is safe to do so. No pilot will aim to land at the boundary, and the teaching at Portmoak is to select a touchdown point 40m inside. So, this report will assume a notional threshold (NT) 40m inside the airfield operational boundary. This is illustrated at A1. To increase this value would shorten the landing field length available in any direction. A1 also shows the site of the proposed development.
13. The approach slope of gliders can be shallower than that of powered aircraft. The SGU gives a figure of 1:20, or 2.86° . Examples of this are high performance gliders in very light winds; when pilots get too far back from the airfield and try to stretch the glide; when emergencies arise, such 180° turns after failures of the launch system or failures of instruments.
14. Using an 40m NT, the maximum landing distance available is approximately 800m, East/West along North Field. In CAP 168 terms this equates to a Code 1 visual runway.

SAFEGUARDING PORTMOAK'S OPERATIONS

15. At Para 5, it is shown that the guidance of CAPs 168 and 738 should be used to safeguard Portmoak's flying operations. Using Code 1 visual runway parameters, the origin of the approach (APPS) obstacle limitation surface (OLS) will be positioned 30m before the NT. However, with a shallower approach angle than is catered for by code 1 parameters, the protective APPS slope is reduced to 1:25 to give a necessary safety buffer. The profile of the APPS is shown at Figure 3.

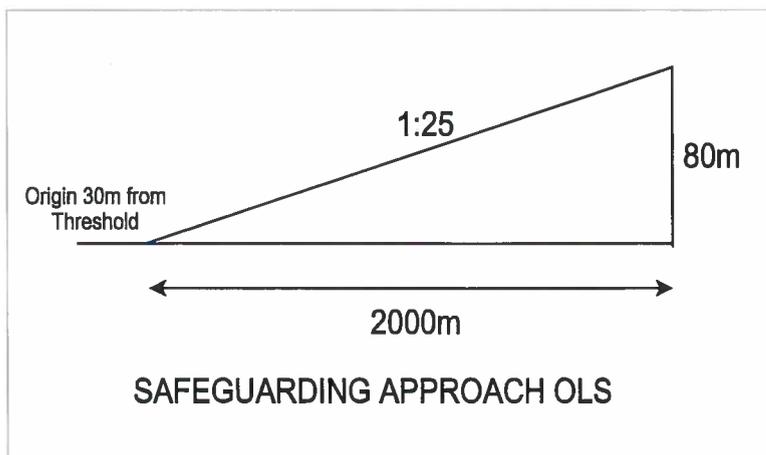


Figure 3

16. A slope of 1:25 equates to 2.3° . (The takeoff and climb OLS (TOCS) has a slope of 1:20 or 2.86° .) The photograph at A3 is taken at approximately 40m from the Eastern boundary, facing East. Using Ordnance Survey digital terrain elevation data (OSDTED) the average ground elevation data along the NT immediately to the West of the site is 108mAOD. The elevation of the origin of APPS would therefore be 108mAOD. Survey would be necessary to determine precise elevations.

THE APPLICATION

17. **Position and Elevations.** A5 shows the position of the proposed building. This was created by overlaying the site plan (amended) onto Google Earth. It also shows the relation of the proposed building to the airfield boundary and the notional threshold. Measurements from the plan and from the overlay are not precise to the centimetre, but are adequate for this assessment. A4 shows the site from the air, A8 and A9 show the site from the East, looking West towards the airfield.
18. OSDTED shows the average elevation of the site to be also 108mAOD. Even if the OSDTED is not precise, using the same data source would show that the NT and site elevations are the same. However, only survey would confirm this.
19. From the elevations of the building plans it would appear that the ridge the highest point, shown at 4.9mAGL. From the site plan, it would appear that the ridge lies 40m from the airfield boundary, perpendicular to it. This equates to 80m from the NT and 50m from the origin of the APPS. See Figure 4.
20. **Safeguarding Assessment.** As both the origin and the site have the same elevation, the maximum permitted height AGL at the position of the ridge is calculated thus:

$$\text{Distance from origin of APPS} \div \text{Slope of APPS}$$

$$\text{Or } 50 \div 25 = 2.0\text{mAGL}$$

21. Thus, any structure exceeding 2.0mAGL at the proposed position will infringe the safeguarding approach OLS. At a stated height of 4.9mAGL the proposed building would infringe the APPS by 2.9m, illustrated at Figure 4.

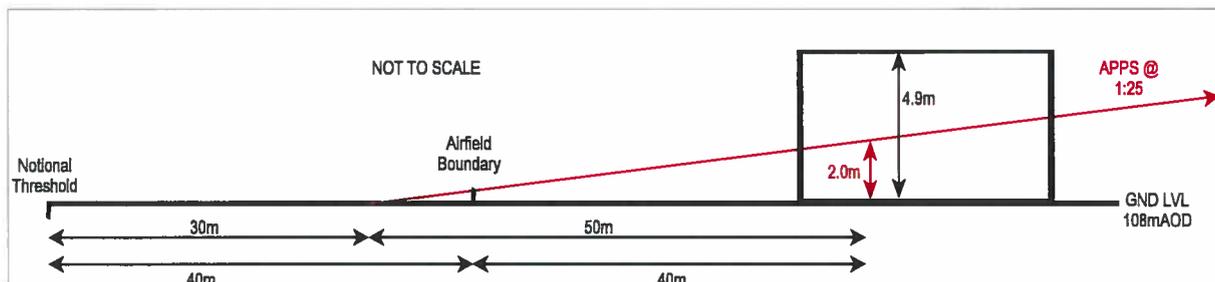
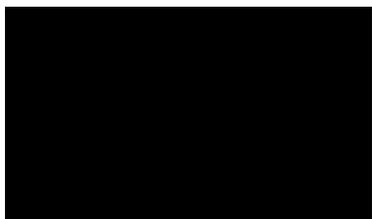


Figure 4

22. From the photos at A6 and A7, across the site looking E and SE respectively, it is evident that there are temporary structures close to the boundary fence that infringe the APPS. There is also a tree that would infringe. This could be lopped or removed. But, their existence does not provide a precedence for a further degradation of safety for approaching aircraft. Neither do they provide a shielding effect for the proposed house.
23. In addition to the foregoing, the wisdom of placing a dwelling so close to the boundary of a busy gliding airfield, under its approach path, must be questioned. Any risk assessment is likely to support this.

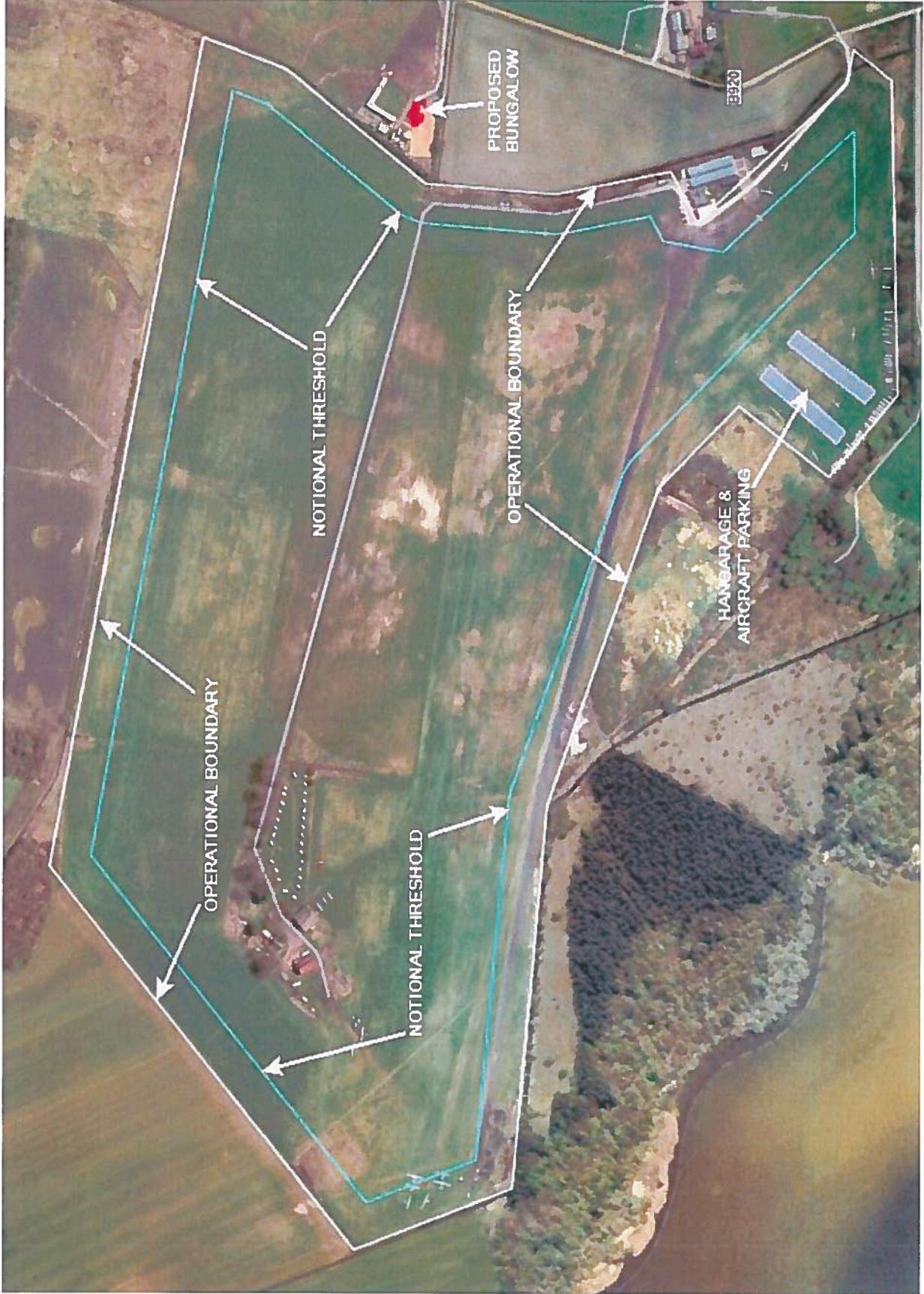
CONCLUSION

24. There is no doubt that a busy unlicensed airfield should be safeguarded. It is without designated and marked runways, with landing and takeoff directions determined by the prevailing wind. To provide protection to the flying operations (and to those on the ground), it is necessary to extrapolate the CAA's OLS parameters along a notional threshold, parallel to the operational boundary. Most aircraft movements take place along the East-West axis.
25. Using OLS dimensions for a Code 1 runway, modified for a shallower than normal approach slope (1:25), the proposed building infringes the approach OLS by 2.9m.
26. It is recommended that the application is refused on grounds of safety, of those in the air and on the ground.

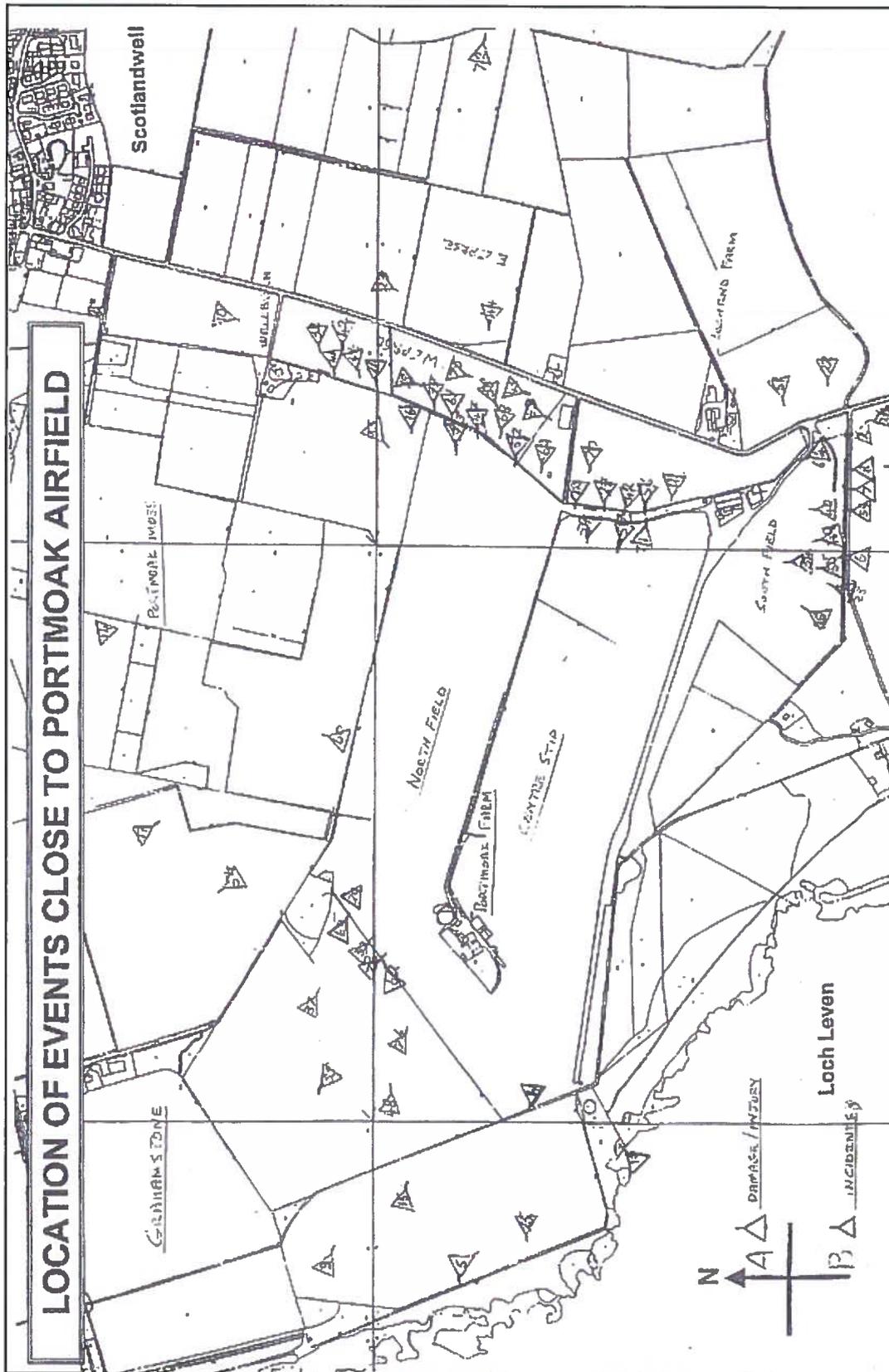


R J C Vousden
Airfield Safeguarding & Development

Appendix: Figures A1 to A9



A1





A 3



A 4



A 5



A 6



A 7



A 8



A 9

**Review of the Causeway Cottage Planning
Application in relation to the safety of
operations at Portmoak Airfield**

P1030/R1/Issue 2

Report prepared on behalf of Perth and Kinross Council

April 2014

Eddowes Aviation Safety Ltd

Specialist Aviation Assessments

Authorisation Sheet

Report Title:	Review of the Causeway Cottage Planning Application in relation to the safety of operations at Portmoak Airfield
Client:	Perth and Kinross Council
Project Reference:	P1030
Report Number:	P1030/R1
Issue:	Issue 2
Distribution List:	

Issued by:	Mark Eddowes		16 April 2014
-------------------	--------------	--	---------------

© COPYRIGHT Eddowes Aviation Safety Ltd

This report is the Copyright of Eddowes Aviation Safety Ltd and has been prepared by Eddowes Aviation Safety Ltd under contract to Perth and Kinross Council. Subject to the terms of the contract the contents of this report may not be reproduced in whole or in part, nor passed to any organisation or person without the specific prior written permission of the Eddowes Aviation Safety Ltd. Eddowes Aviation Safety Ltd accepts no liability whatsoever to any third party for any loss or damage arising from any interpretation or use of the information contained in this report, or reliance on any views expressed therein.

Summary

1. The planning application for erection of a dwellinghouse, "Causeway Cottage" (09/00936/FLL), adjacent to Portmoak Airfield, has raised an objection from the Scottish Glider Union (SGU) on the grounds of the possible impact on the safety of aircraft operations. In order to progress its consideration of the application, Perth and Kinross Council has requested an opinion from Eddowes Aviation Safety Limited on the safety implications of the development in respect of operations at Portmoak Airfield, having regard to various submission made by the applicant and the SGU and the apparently contradictory opinions that they contain. The review has included a site visit, primarily to examine and assess existing structures and obstacles in the vicinity of the airfield. Some additional technical analysis has also been undertaken, based on the information provided in the available documents.
2. The primary issues raised by the SGU to support their objection relate to the requirements for the safeguarding of airspace and the risks to both aircraft pilots and residents of the cottage that may arise in the event of an undershoot. The constraints on approach operations that may arise from development along the eastern boundary of the airfield, understood to relate primarily to risks in the event of an undershoot, are a further concern. All of these matters can be identified as valid concerns of the SGU.
3. Notwithstanding the limitations of the airspace safeguarding assessments put forward by the applicant, the overall conclusion reached is that there are deficiencies and inconsistencies in the airspace safeguarding case presented by the SGU and that the proposed cottage need not be regarded to be an unacceptable infringement of flight paths. The SGU's case relies on the use of criteria for the safeguarding of licensed aerodromes which have not been shown to be necessary for the safe operations at Portmoak and proportionate, taking account of the restrictions that they impose.
4. The SGU have identified a hazard associated with undershoot and it is entirely appropriate that the risks associated with that hazard should be put in the balance when determining the application. Historical evidence which confirms the presence of the hazard has been provided but it has not been shown that the risks to either pilots or future residents of the cottage associated with it would be materially significant. Detailed analysis undertaken as part of this review indicates that the risks to both glider pilots and residents of the cottage are at a level where they should not necessarily be considered to be an over-riding factor in determining the application.
5. Any new object in the vicinity of an aerodrome may carry with it some additional risk and such a possibility should not be taken lightly. However, some risks can and indeed must be accepted under some circumstances but only in return for an appropriate benefit. If there were to be no benefit whatsoever associated with the proposed application then there would be no justification for any additional risk arising from it.
6. The analysis undertaken as part of this review indicates that the additional risks that may arise from the development are likely to be sufficiently small to be regarded to be *de minimis*. In the context of Policy EP 13 on Safeguarding in the Perth and Kinross Local Development Plan 2014, the development need not be regarded as one that is likely to have an unacceptable impact on the safe operation of aircraft from Portmoak Airfield and refused on that basis. The overall planning balance is not a matter for consideration in this report but is one for later consideration by the local planning authority. In that context, the overall conclusion reached during the review is that limited weight should be placed upon the possible additional risks to pilots and future residents

of the cottage, given their scale when compared with standards identified by the UK Health and Safety Executive for evaluating risk significance. These additional risks are small and should be weighed appropriately in the balance with other factors.

7. It is the responsibility of the operators of licensed airports to provide Runway End Safety Areas (RESAs) within the airfield boundary to mitigate undershoot risk. Aerodrome licence holders cannot rely on the safeguarding of areas outside the operational area of the aerodrome for that purpose. Additional technical analysis undertaken as part of this review indicates that there is scope for effective undershoot risk mitigation at Portmoak through the adoption of appropriate operating practices. These operating practices primarily involve aiming further into the airfield which will effectively provide a RESA within its boundary. Such measures would be appropriate in any event along the whole of the eastern boundary of the airfield to mitigate potential risks associated with undershoot into the drainage ditch that runs along this boundary.
8. Taking account of the constraints that arise from the existing development at the Causeway Cattery and Equestrian Centre site, the proposed cottage is expected not to add materially to those constraints. Operational practices should be such as to avoid overflight of the cottage site wherever practicable. In the event of a requirement for overflight of this area under some circumstances the impacts of the cottage on the safety of operations overall at Portmoak Airfield can be expected not to be significant.
9. A letter from the CAA provided with one of the SGU's submissions states the following:
"The question which the planning authority must consider is the extent to which the aerodrome would need to act in order to mitigate the effects of the development. The crucial question is whether or not that mitigation action would amount to a loss of established amenity. Safety will be a major consideration ..."
This review finds that there are no new actions required by the aerodrome to mitigate the effects of the development. Existing development already requires various mitigation actions to be taken that should be sufficient to mitigate any effects associated with the proposed Causeway Cottage. Any additional impacts associated with the cottage are therefore considered not to be materially significant. The caveat that the development must provide some material benefit applies.
10. Some loss of amenity in terms of the availability of obstacle free approach areas along the eastern boundary of the airfield has arisen from the previous permissions in relation to the Causeway Cattery and Equestrian Centre. Given the location of this existing development at the end of the farm track that divides the North Field and Centre Field and where some restrictions on operations already apply, it is understood that development in this position will have limited the scale of the amenity loss that was caused. Further development at that location such as the proposed Causeway Cottage is judged not to add materially to that previous loss of amenity.
11. A considerable proportion of the original amenity associated with take-off and approach areas along the eastern boundary of the airfield has been retained. It is important for future operations at Portmoak that the current unobstructed areas to the East of the North Field and Centre Field be retained, for example through an appropriate safeguarding process. This review finds that the current specifications provided in the SGU's safeguarding document are not fit-for-purpose in that they do not adequately specify the safeguarded areas and they have not been shown to be proportionate in terms of the balance that they strike between the protection of airspace and the impacts any restrictions may have on the neighbouring community. Development of a revised safeguarding specification that addresses these deficiencies would therefore seem to be of benefit.

Contents

1	INTRODUCTION	1
2	AERODROME SAFEGUARDING CRITERIA	3
2.1	Introduction	3
2.2	CAP 793 on Safe Operating Practices at Unlicensed Aerodromes.....	3
2.3	British Gliding Association Guidance on Safeguarding	4
2.4	Current Safeguarding Specifications for Portmoak Airfield	4
2.5	The Hedge Aviation Safety and Obstacle Safeguarding Report	6
2.6	SGU Objection and Related Submissions	6
2.7	Pager Power Aviation Assessment.....	8
2.8	Safeguarding Assessment of Causeway Cottage	8
2.9	Discussion	10
3	EXISTING OBSTACLES AND SITE CONSTRAINTS.....	13
4	OPERATIONAL CONSIDERATIONS	16
4.1	Approach Vertical Profile and Vertical Margin Requirements	16
4.2	Approach Alignment with the Landing Field.....	19
5	UNDERSHOOT RISK ASSESSMENT	21
5.1	Background.....	21
5.2	Analysis of Risks to Glider Pilots.....	22
5.3	Risks to Residents and Other Site Users.....	27
5.4	Summary Assessment	29
6	OTHER ISSUES	32
7	SPECIFIC QUESTIONS RAISED BY PKC	33
8	DISCUSSION AND CONCLUSIONS	37
9	THE SGU’S LETTER OF 14 MARCH 2014	40

1 Introduction

- 1.1. The planning application for erection of a dwellinghouse, “Causeway Cottage” (09/00936/FLL), adjacent to Portmoak Airfield, has raised an objection from the Scottish Glider Union (SGU) on the grounds of the possible impact on the safety of aircraft operations. The applicant and the SGU have both put forward cases, supported by technical consultants, in support of their respective positions, on the one hand, arguing that the development would be acceptable from an aviation perspective and, on the other, arguing that it would not.
- 1.2. In order to progress its consideration of the application, Perth and Kinross Council (PKC) has requested an opinion from Eddowes Aviation Safety Limited on the safety implications of the development in respect of operations at Portmoak Airfield, having regard to various documents produced by or on behalf of the two parties and the apparently contradictory opinions that they contain. These documents are generally available via the PKC website.
- 1.3. In addition to document review, the assessment has included a site visit to both the applicant’s site and the airfield, primarily to examine and assess existing structures and obstacles in the vicinity of the airfield. Some additional technical analysis has also been undertaken, based on the information provided in the available documents.
- 1.4. This report provides an account of the assessment undertaken by Eddowes Aviation Safety Limited. It is structured primarily around a number of main themes that can be identified from the various documents, that are addressed in the following chapters of this report:
 - Physical safeguarding criteria.
 - The existing obstacle environment.
 - Operational needs and practices at Portmoak.
 - Undershoot risk, including risks to pilots and residents at Causeway Cottage.
 - Other issues, including risks associated with take-off operations, risks associated with other non-standard operational scenarios and accident scenarios, and turbulence impacts.
- 1.5. Perth & Kinross Council has identified the following specific questions which have also been addressed as part of the review:
 1. What technical safeguarding criteria may reasonably be applied to an unlicensed aerodrome?
 2. Does the objection of the SGU contradict the SGU’s own criteria, as set out in Policy 49, appended to the Kinross Area Local Plan 2004 and which provides technical guidance on safeguarding of Portmoak Airfield?
 3. Is the logical conclusion to be drawn from the calculation in respect of the height limit at the site of the proposed dwellinghouse presented in the assessment by Richard Vousden of ASD that a similar buffer zone is applicable all around the aerodrome boundary and, if so, is that contrary to the Technical Guidance?
 4. Have any technical criteria been applied in the Pager Power assessment undertaken on behalf of the applicant that would provide a justification for the opinion presented in it?
- 1.6. Question 2 above makes reference to the Kinross Area Local Plan 2004 which was in place when the review was initially commenced. This plan was superseded by the Perth

and Kinross Local Development Plan 2014, adopted by the Council on 3rd February 2014, after the majority of the review had been completed but before the final report had been issued. This plan contains a revised policy on airfield safeguarding and is supported by new supplementary guidance. This change does not materially impact upon the overall findings presented in Issue 1 of the review report. The general intent of the revised policy under the new plan remains essentially the same as that under the previous policy and consideration was given to the new supplementary guidance on airfield safeguarding in the initial review process. Nevertheless, in response to comments in relation to these changes made by the SGU, Issue 1 of the review report has been revised and is superseded by Issue 2.

2 Aerodrome Safeguarding Criteria

2.1 INTRODUCTION

2.1 The following general guidance documents and documents relating specifically to Portmoak safeguarding and the proposed Causeway Cottage address aerodrome safeguarding criteria:

- CAP 793 on safe operating practices at unlicensed aerodromes;
- British Gliding Association guidance on aerodrome safeguarding;
- Current Safeguarding Specifications for Portmoak Airfield;
- Aviation Safety and Obstacle Safeguarding Report, Chris Hedge, 21 March 2011;
- SGU Objection and Related Submissions, in particular the ASD Report;
- Pager Power Aviation Assessment and follow-up submission.

Relevant points raised in these documents have been summarised in the following sections of this chapter of the report.

2.2 Consideration is then given to the safeguarding assessment of the proposed Causeway Cottage against the proposed safeguarding criteria.

2.3 The chapter concludes with a discussion of the points raised by the various documents that support the final conclusions made later in the report.

2.2 CAP 793 ON SAFE OPERATING PRACTICES AT UNLICENSED AERODROMES

2.4 The objective of the CAA's Civil Aviation Publication (CAP) 793 is to provide guidance to the operators of unlicensed aerodromes on sound practice for achieving safe operation and its adoption is not mandatory. It provides no specific guidance in relation to the operation of airfields for the use of gliders.

2.5 CAP 793 advocates the establishment of a safeguarding process to support development planning decision-making but prescribes no specific safeguarding requirements.

2.6 In respect of "aerodrome physical characteristics" the CAA guidance in CAP 793 states the following:

"The physical characteristics required of a licensed aerodrome are detailed in CAP 168 Licensing of Aerodromes, available via www.caa.co.uk/cap168. While the licensing criteria may not be necessary for safe operation of every type of aircraft, they can be used as guidance on which the layout of an unlicensed aerodrome may be based."

2.7 It should be noted that, in the international regulatory context and in CAP 168, the term "aerodrome physical characteristics" refers to the physical layout of an aerodrome on the ground rather than to the requirements for obstacle free airspace in the vicinity of an aerodrome. For the current purposes, the term may be considered to include the airspace safeguarding aspect of the specification for an aerodrome. In considering CAP793 guidance in the current context, it will be appropriate also to consider issues relating to the aerodrome physical layout on the ground.

2.3 BRITISH GLIDING ASSOCIATION GUIDANCE ON SAFEGUARDING

- 2.8 Three separate guidance documents relating to safeguarding are accessible on the British Gliding Association (BGA) web site as follows:
- BGA Site Operations Manual: Chapter 12 Airfield Safeguarding;
 - BGA Club Briefing: Aerodrome Safeguarding;
 - BGA Conference 2005: Aerodrome Safeguarding Seminar Notes.
- 2.9 The Safeguarding Chapter in the BGA Site Operations Manual is concerned largely with the process of safeguarding, rather than the details of any specifications to be applied. In relation to safeguarding criteria it identifies the CAP 428 criteria (now superseded by CAP 793), suggesting no obstacles greater than 45 metre above aerodrome reference elevation within 2 km of the aerodrome. It alludes to the potential use of additional measures for the protection of take-off and approach operations but does not identify any specific height limits to be adopted. The BGA Club Briefing is evidently concerned primarily with raising awareness and identifies no safeguarding specifications. The BGA Safeguarding Seminar Notes include a schematic diagram of the CAP 168 Obstacle Limitation Surfaces and identify some elements of the specification for the Take-off Climb and Approach Surfaces (the slope and the divergence but not the location and width of the surface origin).

2.4 CURRENT SAFEGUARDING SPECIFICATIONS FOR PORTMOAK AIRFIELD

- 2.10 Policy EP 13 on Safeguarding in the Perth and Kinross Local Development Plan 2014 states the following:

“Planning permission will be refused for developments likely to have an unacceptable impact on the safe operation of aircraft from the following airfields:

- *Dundee Airport;*
- *Perth Airport; and*
- *Unlicensed airfields, as defined in Supplementary Guidance.*

Applicants for planning consents within the safeguarding zones of these airfields may be required to provide an independent assessment of the impact on the safe operation of the existing facility, prepared by a suitably qualified person.

Note: Licensed airfields are safeguarded in line with CAA document CAP 168 “Licensing of Aerodromes”. Unlicensed airfields are safeguarded in line with CAA document CAP 793 “Safe Operating Practices at Unlicensed Aerodromes”, and Supplementary Guidance will define the areas where consultations will take place and consider prejudicial developments including incompatible activities and navigational obstructions.”

- 2.11 The above policy superseded Policy 49 of Kinross Area Local Plan 2004 which states the following:

“Proposals Map 1 indicates an area surrounding Portmoak Airfield where developments likely to have an impact on the safe operation of aircraft from Portmoak Airfield will be refused. Applicants for planning consent within this area may be required to provide an independent assessment prepared by a suitably qualified person.

Note: See Technical Appendix for further guidance.”

- 2.12 Supplementary guidance on Policy EP 13 is provided by the Perth & Kinross Council Aerodrome Safeguarding document, dated November 2012. In relation to unlicensed aerodromes such as Portmoak it identifies an airfield safeguarding zone of 2,000 metre radius from the centre of the airfield. In respect of height restrictions it identifies a “general rule of the CAA” that “if possible there shall be no obstruction within 2,000 metres of a runway centreline of a height greater than 45 metres”. This rule is identified as a “counsel of perfection”, rarely achieved in the real world. No other specifications for height restriction are identified in this technical guidance document.
- 2.13 More detailed prescriptions for the safeguarding of approach and take-off paths to and from Portmoak Airfield are contained in the Scottish Gliding Union’s guidance document on Safeguarding Portmoak Aviation Site, April 1998 (the SGU’s safeguarding document). This document is a technical appendix to the Kinross Area Local Plan 2004, in respect of Policy 49. This document was evidently intended to provide technical guidance on the identification of development likely to have such an impact.
- 2.14 With Policy 49 of the Kinross Area Local Plan 2004 being superseded by policy EP13 of the Perth and Kinross Local Development Plan 2014, the SGU’s safeguarding document is no longer specifically applicable. In accordance with policy EP13 which states that *Unlicensed airfields are safeguarded in line with CAA document CAP 793 “Safe Operating Practices at Unlicensed Aerodromes”*, the technical guidance that is now applicable is that provided in CAP 793. The SGU’s guidance document was largely based on CAP 428 on Safety Standards at Unlicensed Aerodromes (now superseded by CAP 793). As such the technical guidance that is now applicable is at least broadly comparable with that contained in the SGU’s safeguarding document.
- 2.15 The SGU’s safeguarding document starts by outlining a process for consultation between the local planning authority and the operators of Portmoak Airfield in cases where there are development proposals within one kilometre of the airfield that would potentially infringe airspace identified later in the document. It goes on to provide an account of operations at Portmoak, including an “infrastructure” plan with no explanatory accompanying text. The “infrastructure” plan shows six notional runways of up to 800 m in length, four of which lie essentially in an east-west direction, one of which lies in a north-south direction and one of which lies in a south-east to north-west direction. At Section 3 on prejudicial developments it identifies the CAA general rule, as identified earlier in relation to the Perth & Kinross Council Aerodrome Safeguarding document. It then identifies the specification for Take-off Climb and Approach Surfaces in an extract from CAP 428 (now superseded by CAP 793) on Safety Standards at Unlicensed Aerodromes.
- 2.16 The extract from CAP 428 identifies the specification for ‘Short’ Runways and ‘Medium’ Runways but it is not explicitly identified in the document which specification has been adopted at Portmoak. Reference to a “table of longitudinal distance to maximum height” indicates that a 1 in 20 slope has been adopted which is consistent with the ‘Short’ Runway specification and is also consistent with a hand drawn diagram that accompanies the “infrastructure” plan. A map of the surrounding area which includes the outlines of what are evidently proposed take-off climb and approach surfaces (Map A) is presented in this section of the document.
- 2.17 It is appropriate at this point to identify an apparent discrepancy between outlines on the “infrastructure” plan and those shown in Map A. In the plan, the 10/28C and 10/28N runways are drawn essentially parallel with the farm track and the northern boundary of the site is drawn off-set very slightly from the line of the runways. The

Google Earth satellite image indicates a slightly greater angle between the alignments of the farm track and the northern boundary of the site. Whilst no runways are clearly visible on the satellite image, it would appear that there is a line corresponding with Runway 10/28N that is parallel to the northern boundary and at an angle of approximately $11.1/281.1^\circ$ with respect to North. The line of the farm track is at an angle of approximately $15.1/285.1^\circ$ with respect to North.

- 2.18 Given the scale of Map A, it is difficult to be sure what alignment is shown for the 10/28 runways but it would appear to correspond with the line of the northern boundary and therefore differ from that indicated on the “infrastructure” plan. For a licensed aerodrome, the coordinates of the runway thresholds will be identified in the Aeronautical Information Publication (AIP) and this information will provide a reference point for the take-off climb and approach surfaces. Threshold elevations will also be specified. The SGU safeguarding document does not provide this information for the nominal runways at Portmoak. Given also the apparent discrepancy between the locations of the runways and associated obstacle limitation surfaces as shown on the “infrastructure” plan and Map A, there is evidently some uncertainty concerning the area where the intended height restrictions apply and the precise values that are proposed. The safeguarding specification provided in the SGU’s document, whilst indicative of the nature of the proposed restrictions, is therefore not fully fit-for-purpose.

2.5 THE HEDGE AVIATION SAFETY AND OBSTACLE SAFEGUARDING REPORT

- 2.19 The Hedge Report starts by providing some background to aerodrome safeguarding, points out that formal safeguarding requirements apply at licensed aerodromes but not at unlicensed ones such as Portmoak and identifies a 1 in 20 or 5% slope as the safeguarding requirement under CAP 168 for the take-off climb surface and approach surfaces at a licensed runway of the length of those at Portmoak.
- 2.20 As an alternative to CAP 168 criteria, a pre-second world war perimeter safeguarded surface (PSS) is proposed in the Hedge Report for the purpose of safeguarding glider approach operations at Portmoak. This comprises a protected surface slope specification of 1 in 15 (approximately 3.75°) referenced against a “screen height” (the height of the surface at the airfield perimeter) of at least 2 m and preferably 3 m, for the purpose of accommodating the boundary fence and other structures and vehicles that might be encountered immediately beyond the boundary. The Hedge Report identifies this proposal as being “*eminently reasonable for glider sites today*” and as “*a more practical objective*” than adoption of CAP 168 criteria for licensed aerodromes. This judgement is made against the background of some consideration of the nature of glider approach operations and on the understanding that the practice of glider pilots is “*to aim for about a quarter or a third into the field and, having judged that, land closer to the boundary by activating lift spoilers as necessary*”.
- 2.21 The Hedge report suggests that it would still be advisable to retain the specifications for take-off climb, approach and transitional surfaces for safeguarding the aerotow runway alignments if the PSS criteria were to be adopted more generally around the airfield boundary.

2.6 SGU OBJECTION AND RELATED SUBMISSIONS

- 2.22 In accordance with the specifications in the SGU safeguarding document, a number of SGU submissions made in support of the objection point to CAP 793 guidance on safe

operating practices at unlicensed aerodromes and CAP 168 guidance on safeguarding criteria for licensed aerodromes as the basis for the safeguarding assessment of the proposed development. The SGU's letter dated 23 April 2011 states the following:

“CAP 168 advises an origin for the OPS [Obstacle Protection Surface] of 30 metres from the boundary and a gradient of 1:20 for the OPS (CAP 168 chapter 4, page 9, figure 4.10.”

2.23 At para. 2.1 the Scougall report makes reference to CAP 168, CAP 738 and CAP 793 and states the following:

“None of the above legislation relates specifically to gliding sites but the official recommendation is that a 1:20 approach gradient is advisable for unlicensed airfields.”

2.24 The ASD report similarly makes reference to CAP 168, CAP 738 and CAP 793 at para. 4 as a basis for safeguarding unlicensed aerodromes, before making the following statement at para. 5:

“The conclusion to be drawn is that the CAA recommends that all unlicensed airfields should safeguard themselves, using the guidance of CAP 738 and CAP 168. As there is no reason to afford lesser safeguarding (=safety) standards to take-offs and approaches at a busy unlicensed airfield than to a licensed one, this report uses the premise that CAPs 168 and 738 should be used for safeguarding guidance.”

2.25 The ASD report considers the SGU's safeguarding plan for Portmoak at para. 7 and presents a copy of the SGU's "infrastructure" plan showing the six notional runways. It notes that, on the basis of the available airfield plans, *“it is not possible to ascertain the geographical positions of the runways”*. It goes on to say that *“there are no runways marked on the ground, or visible from the air”* and that the runways *“are therefore notional and cannot be the basis for constructing obstacle limitation surfaces.”* It then proceeds to apply CAP 168 safeguarding criteria, based on constructed obstacle limitation surfaces for an assumed specification of the most critical notional runway from the perspective of the proposed development (Runway 28C), in a safeguarding assessment of the proposed development.

2.26 The OLS assessment in the ASD report is based on an "approach surface" referenced against a notional threshold location at a distance of 40 m from the airfield boundary and a surface origin at the end of the "runway strip", 30 m from threshold: i.e. 10 m from the perimeter. This threshold location is justified on the basis that *“no pilot will aim to land at the boundary, and the teaching at Portmoak is to select a touchdown point 40 m inside.”* It does not correspond with the apparent notional threshold location for this runway shown on the SGU's infrastructure plan. As noted in the second Pager Power submission, this threshold location is impractical from a safeguarding perspective since it implies a surface height of 0.4 metres at the airfield boundary where somewhat larger existing obstacles are to be found. It may be noted further that the distances of the surface origins for the different notional runways shown in the SGU's infrastructure plan are not consistent with one another or with the selected location being based on a 40 m aiming point referenced against the boundary. The approach surface origins for Runways 28N and 28C are estimated to be approximately 45 m from the airfield boundary (threshold at 75 m), as measured along the runway extended centre-lines whereas those for Runways 27 and 28 S are estimated to be approximately 130 m from the airfield boundary (threshold at 160 m). This observation calls into question both the 10 m assumption in the ASD report and the broader logic of the specifications of the notional runways in the ASD safeguarding document.

2.27 The surface specification adopted in the ASD Report is based on a slope of 1 in 25

(4%) rather than the conventional slope of 1 in 20 (5%) identified in CAP 168 for a runway of this length and identified in the SGU Safeguarding document. It is stated at para. 15 that *“with a shallower angle than is catered for by code 1 parameters, the protective APPS slope is reduced to 1:25 to give a necessary safety buffer.”* The adoption of a 1 in 25 slope, is based on the observation that *“the approach slope of gliders can be shallower than that of powered aircraft”*. The SGU is quoted as identifying a figure of 1 in 20 that may apply to high performance gliders or under some more extreme circumstances.

- 2.28 It concludes that the proposed development would infringe this notional approach surface and hence that the application should be refused on the grounds of aviation safety, in respect of both those in the air and on the ground.

2.7 PAGER POWER AVIATION ASSESSMENT

- 2.29 The Pager Power aviation assessment makes reference to CAP 793 guidance and in that context identifies the 150 feet limit within 2,000 m of the runway mid-point but does not identify any specific criteria in respect of take-off and approach surfaces for use in the current context. It makes reference to comments in the Scougall report concerning CAP 793 guidance on safeguarding. The statement in the Scougall report that the official recommendation is that a 1:20 approach gradient is advisable for unlicensed airfields is identified as incorrect.
- 2.30 As noted earlier, the second Pager Power submission, notes that the approach surface origin location identified in the ASD report is impractical from a safeguarding perspective since it implies a surface height of 0.4 metres at the airfield boundary.

2.8 SAFEGUARDING ASSESSMENT OF CAUSEWAY COTTAGE

- 2.31 The Hedge Report presents a safeguarding assessment of Causeway Cottage against the proposed perimeter safeguarded surface and concludes that the cottage would penetrate the surface if a 2 m screen height at the airfield boundary were to be adopted whereas the cottage would not penetrate the surface if a 3 m screen height were to be adopted. For an assumed distance of 40 m from the airfield boundary to the closest elevation of the cottage (not stated in the Hedge Report but taken from the ASD Report), the height limits at that point for a 1 in 15 slope are determined to be 4.67 m and 5.67 m, for screen heights of 2 m and 3 m, respectively, as compared with the height of 4.9 m identified for the cottage.
- 2.32 The Hedge Report presents an assessment of the surface penetrations associated with the aerotow strip (10L/28R) and the centre strip (10C/28C), identified in a 2005 plan of the airfield and concludes that the cottage would not infringe the take-off climb surface, the approach surface or the transitional surface associated with these runways. A tree along the southern boundary of Causeway Cattery and Equestrian Centre and immediately to the south of the proposed location of Causeway Cottage is identified to penetrate the transitional surface (apparently of the centre strip) by approximately 4 m. It is noted that the Hedge Report does not assess Causeway Cottage against the safeguarded surfaces identified in the 1998 SGU safeguarding document, which identified 4 notional runways with east-west orientations but only those on the 2005 plan which shows three runways with east-west orientations.
- 2.33 The SGU's letter dated 23 April 2011 presents a safeguarding assessment nominally based on the obstacle limitation surface specification identified in the SGU

safeguarding document (1 in 20 slope with an origin 30 m from the airfield boundary) and an assumed location for Causeway Cottage at 36 m from the airfield boundary. A height limit of 3.3 m is identified.

- 2.34 The ASD report determines a height limit of 2 m at the west end of Causeway Cottage, at its closest point to the airfield boundary, based on an assumed surface origin at 10 m from the airfield boundary and a surface slope of 1 in 25. Accordingly, the cottage at 4.9 m is determined to be a 2.9 m penetration of this surface. It may be noted that these criteria differ from those identified in the SGU's safeguarding document and those identified in the SGU's letter identified in the previous paragraph.
- 2.35 The various safeguarding assessments of surface penetrations by Causeway Cottage that have been described above are identified to be consistent with the assumptions upon which they are based. None would necessarily appear to be based explicitly on the specification identified in the SGU's 1998 safeguarding document. Given the angle of the boundary between the airfield and the Causeway Cottage site with respect to both the axis of the runway and the axis of the cottage, the assumed distance between the boundary and runway threshold and the boundary and the cottage would appear to be subject to some interpretation and uncertainty. Having regard to these uncertainties, a further safeguarding assessment has been undertaken as part of this review, making reference to the Causeway Cottage location identified in the amended plans, dated 2 September 2010.
- 2.36 Relative locations of the cottage and the origin of the approach surface have been determined with respect to the line of the southern boundary of the Causeway Cottage site, referenced against the south-west corner of the site. The main axes of the building and of the runway are more-or-less parallel with this boundary line. By using ruler measurements from the available plans and the identified east-west length of the building, the western end of the proposed cottage is estimated to be 53.71 m East of the SW corner. Based on the "infrastructure" plan in the SGU 1998 safeguarding document, the origin of the approach surface is estimated to be 23.65 m West of the SW corner. At a total distance of 77.36 m from the surface origin, the height limit associated with a 1 in 20 sloping surface is estimated to be 3.87 m. Assuming that the ground level at the Causeway Cottage site is the same as the approach surface origin elevation the proposed building height of 4.9 m would represent an erosion of the vertical clearance margin with respect to the approach path of around 1 m.
- 2.37 The estimated height limit is evidently dependent upon the assumption concerning the location of the surface origin relative to the boundary. The Pager Power Report has raised questions concerning the validity of the assumption in the ASD Report that the origin should be placed at 10 m from the boundary, given that this will result in features along the boundary being surface penetrations. The apparent location of the surface origin shown in the infrastructure plan at about 23.65 m from the boundary is also questionable. For the purposes of providing an indication of the likely significance of the scale of the surface penetration presented by Causeway Cottage, it is worth noting that, for a 1 in 20 slope, relocation of the origin by around 20 m would be sufficient to eliminate the 1 m penetration estimated on the basis of the origin location determined from the infrastructure plan in the SGU 1998 safeguarding document. The questions raised earlier at para. 2.23 concerning the lack of consistency in the locations of the notional runway ends relative to the airfield boundary are a relevant consideration in this respect. New structures at an equivalent height and equivalent distance from the boundary as the proposed Causeway Cottage but under the approach surfaces of Runway 27 or Runway 28S are estimated not to be surface penetrations.

2.9 DISCUSSION

2.38 There is a general consensus among the documents that have been reviewed that it is appropriate to safeguard the approach and take-off flight paths at unlicensed aerodromes, including airfields for use by gliders. The Pager Power submissions, which explicitly recognise no more than the 150 feet limit within 2 km of the runway, are the only exception in this respect. There would appear to be little doubt that it would be beneficial to adopt some more specific provisions for safeguarding take-off and approach operations than this more general requirement. The question that next needs to be addressed is the nature of the areas that should be safeguarded at Portmoak to ensure adequate safety and operational efficiency.

2.39 The position adopted in the Hedge Report would appear to be reasonable in principle since it is based on the recognition of the following:

- That the safeguarding requirements should be tailored to suit glider operations;
- That approach from a wide range of directions rather than along a limited number of runway aligned flight paths may need to be accommodated;
- That it would be unrealistic to apply restrictions such as those for approach surface slopes applicable to licensed aerodromes all around the perimeter of an airfield;
- That it would be advisable for the aerotow runway which accommodates powered aircraft to be safeguarded using conventional criteria normally applied to those types of operations.

However, the selection of a 1 in 15 gradient as proposed in the Hedge Report would appear to be based on historical precedent and expert judgement without the support of any specific technical analysis to demonstrate that this specification would necessarily meet the requirements of glider approach operations. This technical issue is considered further in Section 4.

2.40 Whilst the SGU has rejected the safeguarding approach proposed in the Hedge Report, their submissions present no technical arguments to demonstrate that a 1 in 15 gradient would be insufficient to adequately safeguard the airspace required for gliders on approach. The safety concerns of the SGU would appear to be related primarily to unplanned landings off the airfield but in the vicinity of the boundary (undershoots). This is an issue that is not specifically addressed in the Hedge Report, an omission for which raises some criticism from the SGU. It is evident that the safeguarding proposals presented in the Hedge Report will not provide protection for undershoot incidents. However, whilst provision for undershoot is a relevant safety consideration that the SGU needs to address it is a distinct technical issue from the safeguarding of airspace. These two distinct safety issues should not be confused and need separate consideration. Undershoot risk is considered in further detail in Chapter 5.

2.41 The SGU's case that CAP 168 criteria for licensed aerodromes should be adopted at Portmoak is not supported by the wording of CAA guidance in CAP 793. The statement in CAP 793 that the licensing criteria "*can be used as guidance on which the layout of an unlicensed aerodrome may be based*" falls short of saying that the criteria themselves can be used directly and indicates only that they "*can be used as guidance*". The use of the criteria as guidance in relation to an approach surface specification might be rather more general than the adoption of the dimensions prescribed for use at licensed aerodromes: for example that the surface can be characterised by a slope, an origin beyond the runway end, a width at origin and a divergence, all of which may be selected to suit the nature of the operations in question, recognising, in the words of the guidance, that "*the licensing criteria may not be necessary for safe operation of every type of aircraft*". The wording in CAP 793

certainly does not amount to a recommendation that CAP 168 criteria should necessarily be used directly. The premise identified in the ASD Report is that the licensing criteria should be used as guidance but the report then goes further than that and applies them directly, without adequate justification.

- 2.42 The ASD Report is misconceived in other respects. The safeguarding standards are not related solely to safety standards as is implied by the statement from the report quoted above at para. 2.24. A primary objective of safeguarding relates to the maintenance of operational efficiency. There are many instances at licensed aerodromes where the safeguarding criteria are not fully met. This will not necessarily mean that lower operational safety standards will apply in these cases. In order to accommodate existing obstacles normal practice is to apply some operational restrictions that will provide for the maintenance of appropriate safety standards. The penalty associated with an obstacle may therefore generally be manifested as a reduction in operational efficiency rather than a degradation of safety levels.
- 2.43 Also, when the International Civil Aviation Organisation (ICAO) defined the safeguarding criteria that are adopted in the UK through CAP 168, it was explicitly recognised¹ that it could not reasonably be expected that the most stringent safeguarding criteria could be applied uniformly across all aerodromes. Since safeguarding restrictions impact on the rights of local property owners, it was accepted that the most stringent criteria should be applied only at the largest airports which would provide the most significant economic benefits. For the purposes of optimising the operational efficiency of take-off operations, a 2% slope was identified for the take-off climb surface at longer runways (i.e. predominantly at larger international airports) whilst a 5% slope was considered more reasonable at shorter runways. Contrary to the assertion in the ASD Report, there are valid reasons to afford lesser safeguarding standards at some airfields than at others.
- 2.44 ICAO safeguarding criteria were developed with recognition that the restrictions they impose need to be proportionate, taking account of the nature of operations. ICAO guidance² on the implementation of international standards which underpin the UK CAA's approach to safeguarding states that *"local bodies should co-operate closely with airport operators to ensure that the measures taken provide the greatest possible degree of safety and operational efficiency for aircraft operations, the maximum economic benefit to the neighbouring communities and the least possible interference with the rights of property owners."* The prescriptions proposed in the ASD Report have not been shown to be proportionate.
- 2.45 At the time these safeguarding specifications were developed, a single combined surface was employed for the protection of take-off and approach operations. As the regulations developed and provided separate specifications for the take-off climb surface and the approach surface these slopes, originally identified as a pragmatic balance for the protection of the efficiency of take-off operations, were applied³ to the approach surface. When consideration is given later in this assessment to the approach surface slope required to provide an adequate level of safety for operations at Portmoak, it may be worth remembering that the specifications that apply at licensed aerodromes were not selected by reference to the level of safety that they were

¹ Fifth session of the Aerodromes, Air Routes and Ground Aids Division of the International Civil Aviation Organisation, 1952

² Aerodrome Services Manual Part 6 on the Control of Obstacles, International Civil Aviation Organisation (ICAO)

³ Sixth session of the Aerodromes, Air Routes and Ground Aids Division of the International Civil Aviation Organisation, 1957

expected to provide but are derived historically from other quite unrelated objectives. Given the history of the specification of the slope of the approach surface it cannot necessarily be assumed to be necessary for safe operation at licensed aerodromes, let alone for the safe operation of gliders at an unlicensed aerodrome.

- 2.46 The SGU safeguarding document adopts licensing criteria for a set of notional runways without justifying that they are appropriate to address the needs of glider operations at Portmoak and proportionate, given the land-use restrictions they would impose. The specifications are presented in a manner that does not adequately allow for precise determination of the height restrictions that they seek to achieve. It represents an important step forward in terms of putting a safeguarding process in place for which the SGU deserves credit. However, it is lacking in terms of its technical detail which requires reconsideration. Even if the basic dimensional specifications of the obstacle limitation surfaces applied at licensed aerodromes (slope, width at origin and divergence) were to be considered appropriate for safeguarding operations at Portmoak, there must be reservations concerning the placement of the notional runways which provide reference points for the origins of the surfaces.
- 2.47 The extent to which the proposed Causeway Cottage might penetrate the safeguarded surfaces is evidently critically dependent upon their specifications, in particular the origin and the slope. The current best estimate of the height limit associated with the approach surface specification identified in the SGU safeguarding document at the western end of Causeway Cottage is 3.87 m. This compares with the proposed building height of 4.9 m such that the penetration would amount to an erosion of the vertical clearance margin with respect to the approach path by just over 1 m. Relocation of the origin of this surface by just over 20 m to the West would be sufficient to eliminate this penetration. Given the reservations identified above concerning the location of the surface origin, the extent to which the proposed development would represent a valid safeguarding objection is questionable.

3 Existing Obstacles and Site Constraints

- 3.1 On the basis of the available documents and the site visit, a number of existing obstacles and potentially relevant physical features can be identified at the Causeway Cottage site and at the Portmoak Airfield that may have a bearing on the additional impact that may arise from the proposed Causeway Cottage. Some existing features may influence the nature of current operations, thereby influencing the extent to which the proposal may affect future operations. Other existing features may already influence risks to operations, thereby influencing the additional risk that may be presented by the proposal.
- 3.2 The general status of the site at present is illustrated by the available Google Earth satellite image, reproduced in Figure 3.1. This image is understood to be based on data from around 2006 and shows the outlines of the majority of current buildings at the site. The primary exception is a new shed, located approximately as shown by the yellow rectangle in Figure 3.2. At the time of the site visit, two horse transporter vehicles were located in the area indicated by the orange rectangle, as shown in Figure 3.3. The approximate location of the proposed cottage is shown by the red rectangle. The buildings evident in outline in the satellite image include the cattery and an office building, located relatively close to the north-west boundary of the site, shown in Figure 3.4 and the L-shaped stables building. Another pertinent feature evident in the satellite image is the large tree, as described in the Pager Power Report, located south-west of the proposed cottage location. A ditch, shown in Figure 3.5, runs along the north-west boundary of the property.

Figure 3.1: Causeway Cattery and Equestrian Centre Site



- 3.3 The existing house, known as Red House, located to the East of the property and on the east side of the Causeway is a further existing feature worth noting in the satellite image shown in Figure 3.1.

Figure 3.2: New Shed



Figure 3.3: Horse Transporters



Figure 3.4: Cattery and Office



Figure 3.5: Boundary Ditch



- 3.4 The following information on building heights was provided during the site visit: Office and stables, 12 feet (3.66 m); Cattery, 3 m; Shed, 4.446 m. Having regard to the location of these various buildings in relation to the proposed cottage and the findings of the safeguarding assessment presented in Section 2.8, it is expected that none of the existing buildings would represent penetrations of the approach surface indicated in the SGU's safeguarding document. The Pager Power report identified the height of the tree along the southern boundary of the site as approximately 15.3 m. This tree is estimated to penetrate the approach surface specification in the SGU Safeguarding document by approximately 11.5 m, assuming that the height estimate in the Pager Power report is reasonably accurate.
- 3.5 The location of the Causeway Cottage site in relation to Portmoak Airfield is shown in Figure 3.6. The site lies at the east end of the track that runs east-south-east to west-north-west, providing access to the farm and caravan park located in the western third of the site. This track divides the North field and Centre field which are the main areas employed for take-off and landing operations. The SGU advises that landing operations will typically avoid crossing this track and preferentially adopt flight paths that align broadly with the 10/28 orientation of the notional runways identified in the SGU's safeguarding document. The farm, caravan park and associated trees would also appear to place a constraint on the choice of alignment during landing operations.

Figure 3.6: Causeway Cottage Site in relation to Portmoak Airfield



- 3.6 There is a wind-sock located at the eastern end of the farm track and close to the boundary with the Causeway Cottage site, as illustrated in the picture (A3) presented in the ASD Report. This obstacle is understood to be of the order of 8 metres high.
- 3.7 Irrespective of the existing development at the Causeway Cottage site it is evident that there are constraints at the airfield on the selection of the orientation of the preferred alignment for landing, associated with the location of the farm track, the wind sock and the tree on the southern boundary. These constraints are considered in further detail in Section 4 of this report.
- 3.8 It is also evident that the existing obstacle environment at the Causeway Cottage site will already have an implications for safety in the event of an undershoot. These implications have been recognised by the SGU in its letter of 8 September 2010 which included the following comment on alternative locations for a house at the site:
- “... a position in line between Red House and the existing stables would pose somewhat less of a problem. Such a location would not be unequivocally “safe” but the outcome would be a series of obstructions in a line rather than a spread of obstructions across possible approach paths, and the proposed house would be further from the airfield boundary.”*

The extent to which a new building at the location currently proposed would represent a materially significant increase in the spread of obstructions is therefore identified to be an important consideration in determining the safety impacts of the proposal which is also considered in further detail in Section 4.

4 Operational Considerations

- 4.1 The extent to which aircraft need to overfly the Causeway Cottage site as a part of the safe and efficient use of Portmoak Airfield and the safe vertical margins required in the event that do overfly the site are clearly key considerations for this review. This section of the report gives separate consideration to the vertical profile of approach operations and the alignment of flight paths.

4.1 APPROACH VERTICAL PROFILE AND VERTICAL MARGIN REQUIREMENTS

- 4.2 As noted earlier in Section 2, different proposals for the safeguarding of approach operations over the Causeway Cottage site have been identified. In the first instance, the SGU Safeguarding Document identified a 1 in 20 slope, based on CAP 168 licensing criteria for a Code 1 aerodrome, but provided no specific justification for the adoption of this slope for glider approach operations. The Hedge Report subsequently proposed a 1 in 15 slope, based on the author's experience as an aerodrome inspector with the CAA and as a professional pilot with some gliding experience. That proposal was based on some qualitative consideration of the nature of the approach in which it was said that glider pilot practice "*is to aim for about a quarter or a third into the field and, having judged that, land closer to the boundary by activating lift spoilers as necessary ...*". The implication of this statement is evidently that the final part of the approach is likely to be relatively steep.

- 4.3 The ASD Report works on the basis of a 1 in 25 slope. The justification identified for adoption of this slope is as follows:

"The approach slope of gliders can be shallower than that of powered aircraft. The SGU give a figure of 1 in 20, or 2.86°. Examples of this are very high performance gliders in very light winds; when pilots get too far back from the airfield and try to stretch the glide; when emergencies arise, such as 180° turns after failures of the launch system or failures of the instruments."

The logic of this statement as a justification for a 1 in 25 slope seems questionable. Commercial operations at licensed aerodromes involving powered aircraft typically employ a 3° glide slope but, by using power, powered aircraft are evidently physically capable of a shallower approach. It is not necessarily the limiting capability that is relevant but how gliders fly in practice. High performance gliders may be capable of shallower angles of 1 in 20 but that does not mean that they will normally attempt to fly approaches at that angle. Nothing in the ASD Report or any other document put forward in support of the SGU's objection to the development indicates that a slope of 1 in 25 might be materially beneficial for safeguarding a normal approach. Whilst it may be appropriate to consider how some reasonably foreseeable incident scenarios might be safely accommodated, the adoption of a shallow approach slope, which will have implications for the restrictions of the rights of local property owners, has not been shown to be an effective means of achieving this.

- 4.4 Where the SGU give a figure of 1 in 20 in their safeguarding document, they would appear to be seeking to justify the adoption of that slope and they state the following:
- "The gliding approach is usually steeper than the 1 in 20 angle. However, for training purposes, pupils must be capable of handling a shallower approach. Crosswinds, light wind conditions and tailwind component all require a shallower approach angle and*

anything that threatens to intercept the approach surface is creating a risk of an approach accident.”

This statement is poorly worded and open to different interpretations. Must pupils be capable of handling an approach that is shallower than 1 in 20 or one that is shallower than a normal approach that is steeper than 1 in 20? Other technical information, as discussed further below, does not support the assertion that crosswind or light wind conditions specifically “require” a shallower angle [shallower than what?]. Given the performance characteristics of gliders, approaches that are executed in a manner appropriate to the conditions should not require an approach as shallow as 1 in 20: tailwind landings should not normally be undertaken. The statement in the SGU safeguarding document is therefore taken as evidence that the SGU believe that a 1 in 20 slope for the approach surface is adequate but leaves doubt concerning the justification for that belief.

- 4.5 The second Pager Power submission refers to guidance on how glider pilots should control approaches given by the Bowland Forest Gliding Club and available at the following web address: <http://www.bfgc.co.uk/Technical/Wedge/Wedge.aspx> . Based on the statement in this guidance that “a well-braked approach from 300 feet takes around 25 seconds” the second Pager Power submission identifies that, “at a speed of 55 knots [understood to be an appropriate approach speed] this corresponds to a descent angle of about 1 in 8 which is much steeper than a slope of 1 in 20.” Whilst this statement may be a little simplistic in that it takes no account of the impact of any headwind on the approach angle or other factors that may affect the details of the approach angle, it represents a useful start in terms of the evaluation of the safeguarding requirements for glider approach operations.
- 4.6 The above guidance provided by the Bowland Forest Gliding Club provides further information of relevance to the current assessment. The guidance advocates a steep approach to ensure safety during landings and provides the following advice concerning the location of the point at which the approach should start.
- “The standard orthodoxy, not just a whim but well established by experience, requires the final turn to be completed by about 300 feet.”*
- “Many gliders can achieve a descent angle of about 6 to 1 with full brake. In no wind, that means the 300 foot final turn should be no nearer than 1800 feet from the touchdown point, which is two thirds of our airfield length. In a strong wind, with turbulence and possible sink, it might have to be only two or three hundred feet at the most, though then a much higher final turn is greatly to be preferred.”*
- 4.7 The Portmoak Aerodrome Manual identifies that the flying of circuits immediately prior to approach is mandatory. It is understood that a circuit height of 300 feet at the start of the approach is the preferred practice. The Portmoak airfield safeguarding questionnaire from August 2007 identifies that:
- “a good circuit would lead to a final leg being established at a distance of c. 1 km. An emergency landing could result in a continuous turn onto late final at a height as low as 200 ft and a range of 50 m.”*
- The upper limit of a 6 to 1 descent angle identified in the Bowland Forest Gliding Club guidance would represent a 16.7% slope whereas descent from a height of 300 feet at 1 km would give a slope of 1 in 11 or 9.1%.
- 4.8 It is evident from the above discussion that wind conditions will affect the approach slope. Flying often takes place at Portmoak in relatively windy conditions which allow for hill soaring and approaches should take place into the wind. Headwinds of 10 to 15 knots are understood to be fairly typical of conditions at Portmoak. An approach from 300 feet over 25 seconds at 55 knots airspeed into a headwind of about 10 to 15 knots

would represent a slope of 15.8-17.8% against the ground: i.e. around 1 in 6. Clearly, provision needs to be made for approaches in zero wind which would not necessarily be accommodated by a 1 in 6 slope. The 1 in 11 (9.1%) slope identified from the SGU's data relates to "a good circuit" and provision for a "not so good circuit" will also be required. Some additional margin would be provided by the 1 in 15 slope proposed in the Hedge Report. The 1 in 20 approach slope identified in the SGU would appear to be the limiting case for high performance gliders in zero wind which would not be achievable by all aircraft in light winds and not achievable by any aircraft on approach into a headwind. The use of a shallower slope than 1 in 20 is therefore expected to provide no benefit and is identified to be excessive.

- 4.9 As noted earlier, undershoot risk is identified as a major concern of the SGU and it is appropriate at this point to consider the approach profile that is likely to arise in these situations. In general terms, undershoots will arise where the location of the start of the approach is not appropriately matched to the prevailing wind conditions and where the pilot fails to respond appropriately to changing conditions encountered during the course of the approach. Whilst the details may be expected to vary considerably between incidents it would seem unlikely that they will typically arise only from a poor selection of the starting point that would necessitate a shallow approach angle close to the 1 in 20 limit that may be achievable in zero wind conditions throughout. Some unanticipated "sink" may be encountered during the approach such that the aircraft descends more rapidly than can be catered for, given the initial starting point. Alternatively, the starting point may not sufficiently accommodate the strength of the headwind to be encountered along the approach path, resulting in a steeper descent against the ground than was anticipated. Wind shear effects may lead to a greater loss of height than has been accounted for. Clearly, where these effects are encountered after a starting point requiring a relatively shallow overall approach angle has been selected they may be more likely to confound the situation and lead to an undershoot. However, cases where a 5% approach angle would be dictated from the start of the approach in order to avoid an undershoot would appear to be most unlikely. It is concluded on that basis that undershoots will generally be preceded by approaches with descent angles that are generally in excess of 1 in 20 but may which, in the final stages and in an attempt to reach the airfield, involve descent angles close to this limiting value.
- 4.10 Adopting a sloping surface with a shallow angle to protect against undershoot can therefore be seen to be a relatively ineffective approach. It would place the greatest absolute height restriction furthest from the landing area where this can provide the least benefit and the least absolute restriction closest to the landing area where additional space would be of most benefit. Undershoot risk and measures to mitigate it are considered in further detail in Section 5. At this stage, it is concluded that undershoot risk will not be effectively mitigated by lowering the slope of the approach surface below a slope of 1 in 20.
- 4.11 The above considerations therefore indicate that an approach slope of somewhere in the region of 1 in 20 to 1 in 15 should provide an appropriate level of protection to glider approach operations. It will be a matter of judgement as to which end of that range will be more appropriate, having regard to the balance between the possible benefits to be gained from adopting a more cautious approach and the costs of imposition of greater restrictions.
- 4.12 When applying criteria of the type adopted at licensed aerodromes, the location of the surface origin relative to the runway ends is a further consideration that will influence the safety margins provided. This is a potentially important consideration in relation to

the management of undershoot risk and is addressed in more detail in that context in the following chapter of this report.

4.2 APPROACH ALIGNMENT WITH THE LANDING FIELD

- 4.13 Discussions with the Chief Flying Instructor during the site visit emphasised the SGU's concern about new constraints being placed upon safe approach areas, in particular the approach from the East to the North Field. This is the area most frequently used for approaches given the prevalence of westerly winds and the use of the Centre Field for winch launches. This section of the report considers the implications of the proposed development for additional constraints on these operations.
- 4.14 As noted in submissions from the SGU, landing can, in principle, take place in any direction and will preferably be undertaken into the wind and at least with some headwind component. The layout of the Portmoak Airfield leads to a preference for landings along the main axis of the North Field, in a generally east-west direction. From the perspective of this assessment and the possible overflight of the Causeway Cottage site, westerly landings are the primary consideration. The main axis of the North Field is determined by its northern boundary, at an angle of approximately $101^{\circ}/281^{\circ}$, and the alignment of the farm track to the South at approximately $105^{\circ}/285^{\circ}$. As pointed out in the SGU's submissions, landings avoid the farm track and will also need to avoid the wind sock located at the eastern end of the farm track and the large tree, as described earlier in Section 3, that is located further East, along the southern boundary of the Causeway Cottage site.
- 4.15 In order to maximise the available landing distance, it is understood that approaches to the North Field from the East will typically be aligned broadly with the $101^{\circ}/281^{\circ}$ and $105^{\circ}/285^{\circ}$ boundaries of it. Landings diagonally across a larger range of angles but still broadly along the main east-west axis would appear to be possible, in principle at least. Given the operational preference to avoid the farm track and the need to avoid obstacles such as the line of trees towards the western end of the North Field, the wind sock and the tree along the Causeway Cottage site boundary, landings will generally be precluded along this strip of land on the airfield aligned at 285° . These existing constraints will already limit the possible options for landing involving overflight of the southern strip of the Causeway Cattery and Equestrian Centre site.
- 4.16 Landings diagonally across the North Field, at an angle of less than 270° , as might be preferred in the event of a west-south-westerly wind, would not involve overflight of the Causeway Cottage site, given the requirement to avoid the farm track and to maximize the available landing distance. Landings at more than 285° that might be preferred in the event of a northerly component in the wind and involving overflight of the proposed Cottage location are expected to be precluded by the large tree on the southern boundary of the site. In any event, if approaches were to take place in that direction they would need to accommodate the existing tree and would therefore need to be at a height that would also accommodate the proposed cottage. On that basis, the current review concludes that any additional impact on approaches to the North Field associated with the proposed cottage would apply primarily to approaches aligned with the main $281^{\circ}/285^{\circ}$ alignment of it.
- 4.17 The existing tree, located on the southern boundary of the site, is measured to be approximately 15 m diameter. Assuming a glider wingspan of 25 m, the tree will imply a limit of the centre of a glider during a 285° aligned approach along a line 20 m ($= (15 + 25) / 2$ m) to the North of the boundary. Some additional allowance for a safe clearance margin would also be required. A similar constraint would apply to the south

in respect of landings in the Centre Field. The margin identified to avoid the tree is expected to provide an adequate margin to avoid landing along the farm track within the airfield. The proposed cottage, at a distance of 11 m North of the boundary and extending 16.2 m further to the North, would place the limit of the centre of a glider on a 285° aligned approach at a distance of 40 m North of the boundary.

- 4.18 On that basis, it may be concluded that, if the height of the cottage were to preclude over flight of the southern part of the site and that this was the only consideration (i.e. undershoot risk associated with other existing buildings at the Causeway Cottage site was not an issue) then the extent to which the cottage would increase the existing constraints on the width of the eastern boundary of the North Field available for the approach operations would be from about 20 m plus an additional lateral safety margin to about 40 m plus the lateral safety margin. This distance compares with the total length of the eastern boundary of the North Field perpendicular to the approach path of about 255 m. On that basis, it is concluded that, neglecting undershoot risk and assuming that it represented a real impediment to overflight, the proposed cottage might be considered to have some potential impact on the available width of the approach area but it would be relatively minor, amounting to less than 10%⁴. In practice, existing constraints associated with mitigation of undershoot risk that apply at the site in the absence of the cottage can be expected to have a greater impact on the restriction of the width of the area available for safe approaches.
- 4.19 Similar considerations in relation to the use of the Centre Field for westerly landings indicate that the proposed Causeway Cottage would not have any impact on these operations. The primary constraint at present is identified to be the tree along the southern boundary of the site. This existing obstacle will be more limiting than the proposed cottage in respect of approach operations aligned with and to the South of the 285° line of the farm track and would be more limiting in relation to possible diagonal landing options using alignment angles slightly to the South of the 285° line.

⁴ Excluding allowance for a lateral margin, the current width is 222.5 m (255 – 20 – 12.5) m where a half wing-span allowance of 12.5 m is made at the northern end of the approach area. A reduction in the useable width by 20 m due to the proposed cottage amounts to 8.99% of the total (20 / 222.5). If a lateral safety margin of 10 m were applied to both the north and south ends of the field a 20 m reduction in useable width amounts to 9.88% of the total (20 / 202.5).

5 Undershoot Risk Assessment

5.1 BACKGROUND

- 5.1 The predominance of undershoot as a concern of the SGU is evident from the majority of their submissions. The letters of objection dated 10 June 2009 and 4 July 2009, whilst making no reference to the SGU's safeguarding criteria, state the following:

"It is a well-established principle that buildings should not be constructed in the undershoot to landing areas and the overshoot of take-off areas and runways."

- 5.2 The email from Alan Boyle, Vice Chairman of SGU dated 21 September 2010 further emphasises the concerns about "landing short". It goes as far as to say the following:

"The height of the building is not a critical issue: any building of whatever height is liable to be hit by a glider that lands short of the airfield. Most gliders will of course overfly quite safely: it is the one that fails to do so that we need to cater for."

It would seem from this statement that the objection has nothing whatsoever to do with the safeguarding of airspace, an issue which gets no mention in this email. The email concludes by stating the following:

"Our considered judgment with years of safe operations behind us is that a house of any height at the site proposed by Mrs Dick is not a safe or sensible use of the land given the very close proximity to a very busy gliding site."

- 5.3 The safeguarding of airspace is subsequently raised as an issue in the SGU's submissions, for example in response to the safeguarding assessment in the Hedge Report. However, undershoot appears to remain their dominant concern though they seek to use the available safeguarding criteria to restrict development in order to mitigate undershoot risk. The SGU's safeguarding document makes reference to "surface obstructions" as distinct from "vertical obstructions" and states the following in that context:

"The options available to a pilot abandoning a take off or landing on a strip or runway is dependent in measure upon the unobstructed surface available to his aircraft. Surface obstructions such as fences, walls, ditches or buildings close to airfields constitute real hazards and can dramatically undermine the safety of an airfield and its operations."

- 5.4 The safeguarding document provides a specification for "limitations of vertical obstructions" which have already been discussed in Section 2. In relation to "limitations of surface structures" no specific prescriptions are identified and, after identifying a list of surface structures that includes buildings and other items which would evidently also represent vertical structures, the safeguarding document states the following:

"Clearly there is a question of degree and proximity with all of these, but there would be certain scenarios which would be less favourable than others, and should be assessed appropriately."

The safeguarding document would therefore seem to indicate that some safeguarding of clear areas on the ground for the purposes of undershoot and overrun mitigation is intended but is not explicit about the nature of restrictions. It is not clear when buildings or other structures should be treated as "vertical structures" or "surface structures". The wording of the SGU safeguarding document would seem to require that the proposed cottage may need to be treated as a "surface structure" and "should be assessed appropriately". A detailed assessment follows, taking account of the estimated level of risk.

- 5.5 At licensed aerodromes, the physical characteristics identified in CAP 168 include a Runway End Safety Area (RESA) located beyond the runway end, the purpose of which is to provide mitigation in respect of both undershoot and overrun risk. The RESA should comprise part of the operational area of the airfield and be contained within its boundary. At Code 1 runways the CAP 168 recommendation is that a 90 m RESA should be provided. The RESA is located at the end of the “runway strip” which is located 30 m from the runway threshold. The end of the runway strip also serves as the origin for the approach surface. In simplistic terms, if a 90 m RESA in accordance with the CAP 168 requirement were to be provided at Portmoak Airfield, this would imply that the notional runway threshold or aiming point should be located 120 m from the boundary, in order that the required obstacle free space between the runway threshold could be provided within the airfield boundary. The origin of the approach surface would be located at a distance of 90 m from the airfield boundary, as compared with the distance of 10 m assumed in the ASD report and the distance of approximately 25 m derived from the SGU’s safeguarding document.
- 5.6 In summary, a licensed aerodrome operator is required to make an appropriate level of provision for undershoot and overrun risk mitigation within the airfield boundary and cannot rely on declaring a safeguarded area extending into the adjacent property of others for this purpose. Given the nature of the specifications of the physical characteristics of the aerodrome on the ground and the safeguarded airspace, this requirement will inevitably place a constraint on the location of the approach surface relative to the airfield boundary. If these requirements were to be applied at Portmoak and the 1 in 20 slope of the approach surface in CAP 168 were to be adopted, this would imply a height limit of approximately 7.2 m at the western end of Causeway Cottage, as compared with the proposed height of 4.9 m. It is not proposed that the CAP 168 standards should necessarily be adopted without a broader consideration of undershoot risks which is provided below.

5.2 ANALYSIS OF RISKS TO GLIDER PILOTS

- 5.7 A list of accidents and incidents associated with Portmoak operations for the period 1961 to 1999 and a further list of accidents and incidents in the period 2005 to 2010 have been provided by the SGU. The 1961 to 1999 listing comprises a total of 70 incidents (numbered 2 to 77 with some numbers missing) and 52 of these are identified to be undershoots. The SGU have also provided a list of accidents that took place between 2005 and 2010 which includes one undershoot. Information provided by the applicant identifies a further undershoot incident that occurred within her land in 2003.
- 5.8 The Scougall Report identifies 11 undershoot incidents as having occurred at Portmoak within the area occupied by the stables, paddocks and proposed house over a 38 year period. It may be noted that the period 1961 to 1999 inclusive would represent a 39 year period, assuming incidents for the whole of 1961 and 1999 are covered in the list provided. On that basis an annual undershoot incident rate for the airfield as a whole of 1.33 (= 52 / 39) per annum is estimated. A fraction only of these incidents occurred in the vicinity of the proposed Causeway Cottage site. Review of the plan of the incident locations shows that these 11 incidents occurred along a 350 m length of the western boundary of the applicant’s property that borders the airfield and that the majority occurred in the paddock area. The location of one incident is shown to be immediately to the north of but not within the site of the proposed cottage.
- 5.9 The overall width of the cottage from north to south is shown on the available plans of the proposed development as being 16.2 m. For an assumed 15 m glider wingspan,

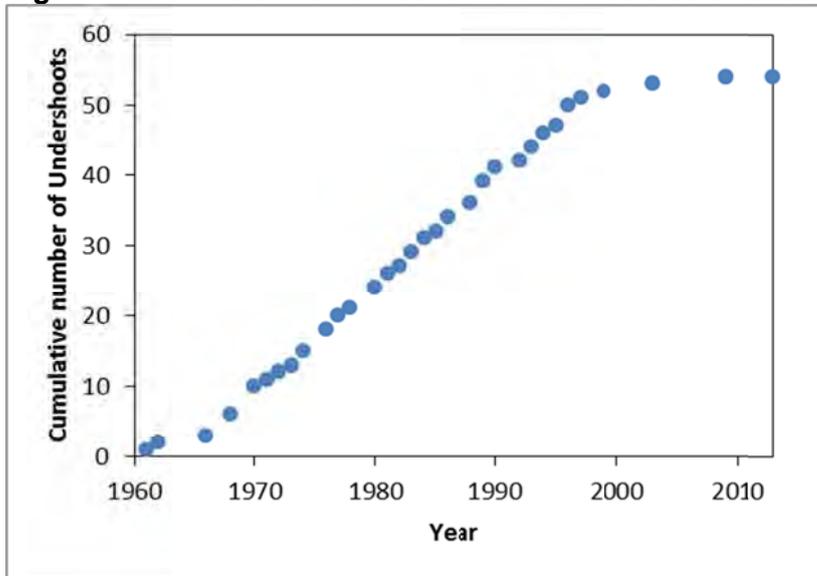
collision with the cottage could result from an undershoot across a north to south distance of 31.2 m and this width would increase to 42.2 m for a 25 m wingspan. Assuming initially that undershoots are equally distributed across the 350 m length containing the 11 incidents would imply a rate of collision with the cottage during undershoot of around 0.025^5 per annum, or 1 in 40 years if the historical incident rate for 1961 to 1999 were to be continued into the future. In practice, wing collisions are likely to be survivable whereas impacts of the fuselage directly on the side elevation of the house are expected to involve a fairly high probability of causing a fatality. A more realistic estimate of the probability of fatality from impact with the cottage during an undershoot, based on the 1961 to 1999 incident rate, that takes account of this potential survivability is 0.013 per annum, or 1 in 76 years.

- 5.10 A range of undershoot incident and accident locations at various distances from the airfield boundary are evident from the available map provided by the SGU. It is not clear whether the points shown represent the initial touchdown locations or final resting locations. In the event of a touchdown sufficiently in advance of the cottage there is a possibility of collision being avoided altogether or involving a sufficiently low impact speed not to result in any fatalities. Allowing for that factor, a lower fatality rate than indicated above would be expected. On the other hand, it should be recognised that, due to the height of the cottage, some approaches in which touchdown just inside the airfield could have been achieved may result in a fatal collision. In the absence of suitable data on the longitudinal distribution of undershoot locations it is not practical to evaluate these factors in any detail. Taking account of the tendency to over-estimate the risk due to the failure to assess the one factor and to under-estimate the risk due to the failure to assess the other, the simplified approach employed here which neglects both factors is expected to provide a reasonable estimate overall, given the practical difficulties and inherent uncertainties associated with this sort of risk assessment.
- 5.11 By comparison, two fatalities involving glider pilots at Portmoak over the 39 year period from 1961 to 1999 are identified, neither of which involved undershoot. The Scougall report identifies two fatalities involving tug aeroplanes. In total, these 4 fatalities over the 53 year period from 1961 to 2013 inclusive give a fatality rate for operations at Portmoak of 1 in 13.25 years. This fatality rate, which is almost 6 times greater than the above preliminary estimate for the undershoot collision risk, provides a reference for evaluating the significance of the undershoot fatality risk. The preliminary undershoot collision fatality risk estimate includes some significant elements of pessimism and an improved estimate is considered further below.
- 5.12 During the six year period from 2005 to 2010 only one undershoot incident is recorded anywhere at the airfield in the information provided by the SGU, corresponding with a rate of 0.167 per annum and representing an 8 fold decrease compared with the rate for the period 1961 to 1999. Another undershoot is identified to have occurred within the applicant's land in the period from 2000 to 2004 but a comprehensive list of accidents around the airfield as a whole is not available for that period. None have been reported for the period 2011 to 2013 and it is assumed for the purpose of this assessment that none have occurred over that period. On that basis, it may be concluded that there were at least two undershoots at the airfield over the 14 year period from 2000 to 2013 inclusive which gives an estimate for the rate of 0.143 per annum. The total of 54 undershoots over 53 years for the period from 1961 to 2013 inclusive gives a rate of 1.02 per annum.
- 5.13 The incident data therefore appear to indicate a considerable reduction in the rate of occurrence of undershoot events over the past 15 years or so. The slowing in this rate

⁵ $(16.2 + 15) / 350 \times 11 / 39$

is evident from the graph of the cumulative number of incidents with time shown in Figure 5.1. The graph shows that the number of incidents increased fairly steadily from 1961 to 1996 with three undershoots occurring to the last year of this period: a steady increase in the cumulative number of incidents with time indicates a constant annual rate. In the 17 year period from 1997 to 2013, there have been four events, providing an estimated rate of 0.235 per annum.

Figure 5.1: Cumulative number of undershoots as a function of year



- 5.14 Incident rate estimates based on small numbers of incidents will have a limited statistically reliable. Standard practice in these circumstances is to apply Poisson statistics to take account of the uncertainty associated with the small data sample. Based on the observed value, this approach provides an estimate of the probability of the “true” value lying within a defined range. Based on the time periods over which the last two, three and four incidents occurred, 95% upper confidence limit estimates in the range of 0.54 and 0.6 per annum are estimated: i.e. there is a 95% chance of the “true” rate not being more than these values. These cautious estimates of the recent rate represent a reduction by around a factor of two and a half compared with the historical rate for 1961 to 1999. The 50% confidence limit estimates of the “true” value lie in the range of 0.24 to 0.28 per annum, representing a reduction of around a factor of five. On that basis, it may be concluded there has been a statistically significant reduction in the incident rate in recent years. In assessments of this sort it is normal practice to err on the side of caution and adopt the 95% confidence limit value, whilst recognising that this is likely to be pessimistic. Applying that annual rate and applying the factors identified earlier in respect of the probability of the incident involving collision with the proposed new house, a 95% confidence limit estimate for the current collision rate of 1 in 190 years is derived, which compares with the 50% confidence limit estimate of 1 in 372 years.
- 5.15 Undershoot risk might be reduced by aiming further into the field from the start of the approach operation, essentially equivalent to providing an undershoot RESA. In principle, shortening the landing field length would increase the likelihood of occurrence of an overrun beyond the airfield boundary: i.e. it would shorten the available overrun RESA. Selection of the preferred touchdown point within any given length of field will therefore involve a balance between the undershoot and overrun risks. Review of the accident and incident data from 1961 to 1999 indicates that practice at Portmoak over that period has not involved an appropriate balance. As noted earlier, the list provided by the SGU identifies 52 undershoot incidents. It is found to include just one overrun or

overshoot incident. A ratio of 52 to 1 in the numbers of undershoot to overrun incidents is indicative of a substantially lower safety margin being adopted in respect of undershoot compared with that available in respect of overrun.

- 5.16 In the absence of more specific and detailed data on how the distributions of glider touchdown points vary with the distance from the intended landing point it is not possible to provide a precise estimate of the net safety benefit that might be gained by adjusting the balance between the respective safety margins provided for undershoot and overrun. The exponential relationships that have been determined in studies of overrun and undershoot incidents involving powered aircraft would seem to suggest a general rule that the undershoot risk might be halved if the overrun risk were to be doubled, or perhaps reduced by a factor of four if the overrun risk were to be increased by the same factor. This exponential distribution of incidents beyond the safe limit is consistent with these incidents representing the tails of a normal distribution or broadly similar distribution function. The potential safety benefits to be gained from an improvement in this respect would seem to be substantial.
- 5.17 It is evident from the map of the 1961 to 1999 incidents that the large majority of undershoots are located relatively close to the airfield boundary such that they could be safely accommodated if some undershoot provision, equivalent to the CAP 168 minimum standard 90 m RESA, were to be provided. The SGU currently seem to be expecting that provision for undershoot risk mitigation should be provided within neighbouring land beyond the airfield boundary to provide this safety margin. As noted earlier, under CAP 168 standards, licensed aerodromes would be required to provide a RESA within the airfield boundary. The 1961 to 1999 accident data suggests that effective undershoot mitigation could be provided within the airfield boundary without significantly increasing overrun risk.
- 5.18 The single overshoot incident that occurred in the 1961 to 1999 period involved an approach from the West into the Centre Field. The location of the farm towards the west end of the Centre Field and the trailer park immediately to its east raises the question as to whether this single incident may have been influenced by the need to overfly these obstacles, remaining airborne until the aircraft was well inside the field by perhaps 350 to 400 m. The extent to which this single incident is representative of the overrun risk for landings from the East into the North Field is therefore questionable. Whether the ratio of undershoot to overrun incidents is 52 to 1 or 52 to 0 will not substantially alter the general picture of imbalance in the respective safety margins. The overall conclusion is therefore that the undershoot risk could be reduced by a non-trivial amount, perhaps by a factor of two to four, if landing practices were modified to allow for an increased safety margin within the airfield boundary.
- 5.19 As has been noted earlier in relation to consideration of the preferred approach and landing alignments and the existing physical constraints on them, approach directly over the Causeway Cottage site would appear to be less frequent than the average for locations along the East boundary of the North Field. If operational procedures specifically designed to minimise overflight of that area were in place, it is expected that the relative frequency of overflight could be considerably less than average. For the purposes of this risk assessment, a factor of at least five and up to ten is nominally proposed to be achievable. The initial assessment of undershoot risk assumed an equal distribution of flight paths along the Eastern Boundary and will therefore overstate the risk in the event of a differential rate of overflight being achieved.
- 5.20 It is well-recognised in aircraft risk assessment, as adopted in a number of different contexts, that pilot avoidance behaviour can significantly mitigate the consequences of accident scenarios. A recent review of en-route incidents affecting light aircraft in the

UK over the six year period from 2007 to 2012 that ended in ground impact has found that around 80% involved controlled forced landings in most of which the occupants survived. Of the three cases that resulted in fatalities, two involved collision with apparently unseen power cables during the attempted forced landings and the third involved ditching in the sea and subsequent drowning. The circumstances of the 20% of incidents which did not involve controlled forced landing typically precluded continued control of the aircraft: these incidents involved mid-air collision, loss of control during aerobatic manoeuvres, controlled flight into terrain, obstacle collision; disorientation in cloud and fire.

- 5.21 Pilots attempting to land along a flight path directly over the proposed Causeway Cottage would, in the event of an impending undershoot, be expected to have good control of their aircraft, albeit that they will be below the intended height. If faced with a choice they would seem likely to elect to undershoot into an area where obstacles can best be avoided rather than to continue along that line towards the most significant obstacle in the vicinity. An existing area of open space is available to the south of the Causeway Cottage site. A pilot avoidance success rate of at least 80% (1 in 5 failure rate) and up to 90% (1 in 10 failure rate) is nominally proposed for the purposes of this risk assessment.
- 5.22 Based on the initial undershoot risk estimate derived from the historical data, an estimate for the risk of pilot fatality from collision with the proposed cottage can be determined, taking further account of the various additional risk mitigation factors that have been identified. A pilot avoidance factor will apply whatever. It is understood that the flight path differential mitigation factor will already apply to some extent and might be enhanced if appropriate operational procedures were to be adopted. The analysis of historical undershoot and overshoot rates indicates that there is the potential for a non-trivial risk reduction if appropriate operational practices involving relocation of the aiming point used for landing were to be adopted. A cautious estimate and a best estimate for the pilot fatality risk from collision with the cottage in the event of an undershoot have been determined, taking account of the potential uncertainties in magnitudes of these different risk mitigation factors. The estimates, together with the assumptions on which they are based, are summarised in Table 5.1. The overall rate of occurrence of a fatal accident due to collision with the proposed cottage is estimated to be from around 1 in 150,000 years to 1 in 9,450 years.

Table 5.1: Fatality Risk Estimates, including operational mitigation

	Cautious estimate	Best estimate
Initial historical data estimate	1 in 190 years	1 in 372 years
RESA risk mitigation factor	2	4
Flight path differential factor	5	10
Pilot avoidance factor	5	10
Overall annual fatal accident rate	1 in 9,484 years	1 in 148,686 years
Individual member fatality risk	1 in 1.5 million years	1 in 35 million years

- 5.23 This fatality risk will be shared between active members using the Portmoak Airfield and, to a lesser extent, by visiting pilots. The ASD Report gives a figure of 230 current members. On that basis, the average fatality risk for each member is estimated to be between 1 in 35 million years to 1 in 1.5 million years. In the context of industrial safety and public safety more generally, UK Health & Safety Executive guidance⁶ identifies an individual risk of 1 in a million to be “broadly acceptable”. In identifying that value, the HSE recognises that we live in an environment of appreciable risks of various kinds

⁶ Reducing risks, protecting people: HSE’s decision-making process. Health & Safety Executive 2001

that contribute to a background level of risk and that a risk of one in a million per year is extremely small when compared to this background level of risk.

- 5.24 The additional risk can be seen to be relatively small compared with the historical fatal accident rate of 1 in 13 years for operations at Portmoak. If the safety improvement of a factor of five indicated for the undershoot rate were to be applied to operations overall, this fatality rate would reduce to 1 in 65 years which would still be a factor of over 100 greater than the cautious estimate for the fatality rate associated with collision with the cottage.
- 5.25 It should also be noted that there is currently a risk of fatality from undershoot associated with the existing obstacle environment. As well as the existing structures at the Causeway Cattery and Equestrian Centre, potentially hazardous features include the drainage ditch that runs along the entire eastern boundary of the airfield. Any additional risk that might arise from the proposed cottage should be viewed in the context of this existing risk. Operations should, where possible, already avoid this area for the purposes of minimising undershoot risk.
- 5.26 Consideration has already been given in Section 4.2 to the potential additional operational constraints on the width of the approach path from the East to the North Field that might be caused by the proposed Causeway Cottage. For the purpose of mitigating the current undershoot risk associated with the existing buildings the preferred approach path will already be limited to a width of around 175 m. The cottage, located well to the South of this area, would have no impact on operations using this preferred approach area. There may be occasions, for example when the airfield becomes congested due to a change in the weather that requires the return of several gliders in a short space of time, when some pilots may judge an approach directly over the cottage site to be appropriate. However, these occasions are expected to be relatively infrequent and can generally be expected to involve approaches for which there is an adequate vertical margin. Those cases where there may not be an adequate margin have been factored in to the above undershoot risk analysis. The general conclusion reached here is that, taking account of the existing development at the site, the cottage would not have a material impact on the available width of the preferred safe approach area.

5.3 RISKS TO RESIDENTS AND OTHER SITE USERS

- 5.27 Risks to occupants of Causeway Cottage will be a relevant consideration also. Land-use restrictions are placed on development in the vicinity of larger airports through Public Safety Zone (PSZ) policy⁷. PSZ policy seeks to strike a balance between the benefits of reduced risk to the public from development restrictions and the costs of foregoing potential development land. This policy is not applied at smaller licensed airports or at unlicensed airports. It will, nevertheless, provide a useful reference point. The balance point for development restriction is identified to lie at the point where the risk to individuals is at or above the level of 1 in one hundred thousand per annum. PSZs tailored to the level of risks at individual airports are determined on the basis of this risk level by reference to the scale of operations using the Department for Transport model that was developed specifically in support of PSZ policy. There is a presumption against new housing development within PSZs. Where risks exceed one in ten thousand per annum, a level of risk judged to represent the limit of

⁷ DfT Circular 01/2010 Control of Development in Airport Public Safety Zones
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/36536/circular.pdf

tolerability, clearance of existing housing is required. Some relatively low density uses of land within PSZs are permitted, on the basis that it would not be cost-beneficial in terms of the low numbers of individuals to whom protection would be provided for the development potential of the land to be lost altogether. The cost-benefit analysis that underpins PSZ policy is based on the assumption of 62 persons resident per hectare.

- 5.28 The cautious estimate of the risk of collision with the Cottage given earlier is 1 in ten thousand per annum. Given the final approach speed of a glider and its mass, a collision with the roof or the side elevation wall is considered unlikely to lead to fatalities inside the property under all circumstances. The DfT model for determining PSZs assumes that there is a 30% chance of fatality for building occupants in the event of collision by light (General Aviation) aircraft. Applying that fatality factor would give a fatality risk for the cottage resident of 1 in 30 thousand. Taking further account of the limited period of occupancy of the building and of occupancy of its more exposed eastern end, it is estimated that the risk to any individual resident of the cottage is likely to be at or below the level of one in a hundred thousand per annum and, based on the best estimate value for the undershoot collision probability, perhaps around one in a million per annum.
- 5.29 Given the existing development and uses at the site, there is already some risk to site users. By using the same approach as that employed earlier to assess risks to occupants in the cottage, the likelihood of an undershoot anywhere within the Causeway Cattery and Equestrian Centre site can be estimated to be between about 1 in 560 years and 1 in 2,235 years. This estimate is based on the RESA risk mitigation and flight path differential factors identified in Table 5.1 but takes no account of the pilot avoidance factor. Given the wingspan of a glider in relation to the width of the site, perpendicular to the nominal 28 approach path, the probability of a site user being in line with an undershooting glider is estimated to be between about 0.27 to 0.45⁸. There is a possibility of some shielding by structures along the approach path which will provide protection to site users. A risk factor of 30% has been employed here in accordance with the fatality risk factor adopted in the DfT model. The overall fatality risk to site users based on those assumptions is estimated to be between 1 in 6,100 and 1 in 27,000 years. It may be noted that this fatality rate applies to site occupants that are permanently resident during the hours of operation of Portmoak Airfield. Allowance for the limited occupation time is expected to reduce the risk to most users compared with these estimates. Reducing the assumed occupancy to 60% from 100% of the time is sufficient to reduce the risk below the quantitative criteria of 1 in 10,000 years identified in HSE guidance and in PSZ policy. Whilst this current risk might be considered to be relatively high in the context of the standards it should not be considered to be in any way exceptional.
- 5.30 Any additional risk to site users associated with the cottage should be set against the background of the existing risk. The risk estimate for the cottage resident given earlier is a little lower than the risk estimate for the current site user. The difference in the estimates arises primarily from the pilot avoidance factor which has been assumed to apply in respect of the cottage but not to site users, on the basis that an attempt to avoid any obstacle of apparent primary concern might lead to an impact elsewhere on the site where a user may be present. It should be noted that risk assessment cannot be an exact science and will inevitably involve some judgement. In that context the difference in the magnitudes of the two risk estimates is not considered to be

⁸ The site width perpendicular to the Runway 28 approach varies between about 20 m and 90 m and is therefore identified to be 55 m on average. A glider wingspan is assumed to be between 15 m and 25 m. The probability of an individual at the site being in line with the approaching glider is therefore between $15 / 55 (= 0.27)$ and $25 / 55 (= 0.45)$.

significant. The key conclusions to be drawn from the analysis are that, whilst the current risks to site users and the predicted risk to future residents of the cottage may not be entirely negligible they are by no means exceptional. If the construction of the cottage were to increase the periods of time for which the site is occupied it would be expected to increase the risk to the individuals concerned. However, an objective analysis of the relevant factors determining the risk indicate that any additional risk will not be large when compared with safety criteria identified for the protection of the public and will not be large compared with the risks currently associated with use of the site.

5.31 The Causeway Cattery and Equestrian Centre site is estimated to cover an area of around one hectare in total. Compared with the 62 persons per hectare assumed in determining the point at which housing development should be restricted, the density of occupation is relatively low. It is understood that the current use of the site is consistent with low density use as identified in the DfT circular 01/2010.

5.32 In identifying exceptions to the restrictions on development that apply within PSZs, the DfT circular 10/2010 provides the following guidance.

“First, it is not considered necessary to refuse permission on Public Safety Zone grounds for the following forms of extension or change of use:

- (i) an extension or alteration to a dwellinghouse which is for the purpose of enlarging or improving the living accommodation for the benefit of the people living in it, such people forming a single household, or which is for the purpose of a 'granny annex';*
- (ii) an extension or alteration to a property (not being a single dwellinghouse or other residential building) which could not reasonably be expected to increase the number of people working or congregating in or at the property beyond the current level or, if greater, the number authorised by any extant planning permission; or*
- (iii) a change of use of a building or of land which could not reasonably be expected to increase the number of people living, working or congregating in or at the property or land beyond the current level or, if greater, the number authorised by any extant planning permission.”*

5.33 The DfT guidance cannot be expected to have anticipated all circumstances where refusal of permission relating to an extension or change of use is not considered necessary and it does not address the specific situation that applies in relation to Causeway Cottage and its link to the current permission for use of the site as a cattery and equestrian centre. An exception in respect of the Causeway Cottage application would nevertheless appear to be consistent with the intention of the guidance. Whilst noting that PSZ policy does not apply in this case, the overall conclusion is that, if it did, it would not preclude the proposed development.

5.34 Overall, the analysis in respect of risks to potential future residents of the cottage supports the simple statement at paragraph 1 of the summary in the applicant's submission dated 10 June 2011 which is as follows:

“The risk to me, Mrs Rhonda Dick, can be calculated as being no greater than I am currently exposed to and have been for the past 15 years.”

It is evident that the applicant finds the risk small enough to be acceptable.

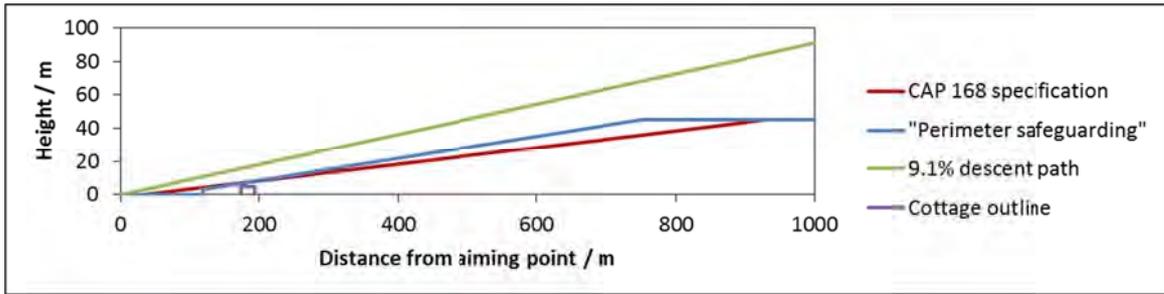
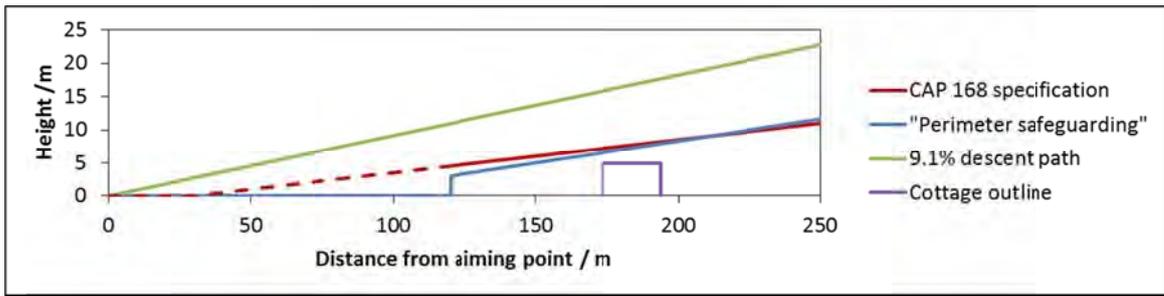
5.4 SUMMARY ASSESSMENT

5.35 In summary, the SGU have identified a hazard associated with undershoot and it is entirely appropriate that the risks associated with that hazard should be put in the balance when determining the application. The SGU have provided historical evidence

which confirms the presence of the hazard but have not demonstrated that the risks to either pilots or future residents associated with it would be materially significant. Detailed analysis undertaken as part of this review indicates that the risks are at a level where they are not necessarily an over-riding factor that would require refusal of the application.

- 5.36 As noted earlier in paragraphs 5.5 and 5.6, undershoot risk is not an issue that is normally addressed by the safeguarding of airspace outside the aerodrome boundary but, at licensed aerodromes, is addressed by provision of a Runway End Safety Area within the aerodrome boundary. The additional technical analysis undertaken as part of this review indicates that undershoot risk could be substantially reduced by adoption of an operational practice of aiming slightly further into the airfield which would be essentially equivalent to providing additional RESA within the airfield boundary. Those conclusions have been reached having regard to the locations of undershoots at Portmoak Airfield, the balance between undershoot and overrun risk at the airfield, as indicated by the historical accident record, and the identified practice at Portmoak to aim for a point that is only 40 m inside the airfield boundary.
- 5.37 Aiming further into the airfield would inevitably reduce the extent of the obstacle restriction at the airfield boundary and beyond. The proposed Causeway Cottage would not be a penetration of the approach surface according to the CAP 168 specification which takes account of the RESA requirements. It is instructive to consider these implications further in relation to both the CAP 168 specification and the perimeter safeguarding surface approach proposed in the Hedge Report. The respective height restrictions for these two specifications are shown schematically in Figure 5.2. It can be seen that the height restrictions associated with the CAP 168 specification are less demanding at the airfield boundary and at the Causeway Cottage location. Given the greater slope of 1 in 15 adopted in the perimeter safeguarding surface approach compared with the CAP 168 slope of 1 in 20 the former approach becomes less restrictive at distances further from the airfield. There is evidently not much difference between the restrictions associated with the two options over the Causeway Cottage site but the vertical clearance margin would be reduced from about 32.5 m to 23.5 m compared with the 9.1% descent path at the point where the 45 m horizontal surface becomes limiting.
- 5.38 The conclusion reached in this assessment is therefore that the locations of the notional runway thresholds shown in the SGU safeguarding document that are employed as the basis for the approach surface specification are inappropriate since they fail to provide adequate undershoot provision within the airfield boundary. If adequate provision for undershoot were to be made the origin of the approach surface would be relocated such that the Causeway Cottage would not be a penetration of the surface. In operational terms, if a more appropriate aiming point within the airfield were to be adopted then the vertical margin with respect to the cottage at a height of 4.9 m would be more than the minimum prescribed in CAP 168 and could therefore be expected to be adequate.

Figure 5.2: Safeguarding surface option profiles



6 Other Issues

- 6.1 In accordance with the outline in Section 1, the following additional issues have been raised in the material presented by the parties and are considered here:
- Risks during take-off;
 - Risks associated with other reasonably foreseeable non-standard operations and more severe accident scenarios;
 - Turbulence impacts.
- 6.2 As regards take-off, it is understood that winch and tug launch operations are organised such as to avoid flight directly over the Causeway Cottage site. Given the extent to which accident locations associated with take-off operations are generally concentrated along the take-off flight path it is expected that the Causeway Cottage site will not be subject to significant levels of risk from accidents that might occur during take-off, albeit that the consequences associated with crashes involving a tow aircraft with a fuel load may be relatively severe. It is concluded that take-off accidents will make a small contribution overall to the risks to residents of the cottage and users of the site more generally, compared with the risks that have been estimated to arise from glider approach and landing accidents. For the purposes of assessing the application, it is considered that the undershoot accident risk estimates will make the dominant contribution to the total risk and provide an adequate basis for evaluating the overall safety implications of the proposed Causeway Cottage.
- 6.3 Similarly, given the operational practices that are understood to be in place at Portmoak Airfield, the proposed cottage is expected not to have a material impact on the safety of take-off operations and the survivability of an accident. No specific safeguarding or other restrictions on development at the site are identified to be required in order to protect take-off operations.
- 6.4 As regards risks associated more generally with non-standard reasonably foreseeable incident and accident scenarios and more severe accident scenarios, it is expected that crash sites might be located more-or-less anywhere in the general vicinity of the airfield. Crashes might occur at the Causeway Cottage site but can be expected not to be concentrated there. Such scenarios are therefore judged not to add significantly to the overall risks to potential future residents of the cottage and there is no apparent need to restrict development there on those grounds. For example, PSZ policy places restrictions only along the flight paths close to the runway ends at busier UK airports where risks are more specifically concentrated and not more generally around airports.
- 6.5 The SGU have drawn attention to possibility of increased turbulence associated with the proposal. For example the Scougall Report at para. 6.7 states the following:
“Any obstacle on an approach is undesirable due to the turbulence and wind gradient it causes. Nor does the obstacle need to be directly under the flight path to cause problems. The majority of aircraft approach over the eastern boundary where the existing buildings already pose a significant hazard.”
- It is not clear whether Captain Scougall means to say that there is already a significant “risk” associated with turbulence along the eastern boundary. If there is it has not been shown that proposed cottage would have a material impact upon the risk arising from the turbulence hazard. The SGU submissions have not shown that measures over and above those associated with reasonable requirements for airspace safeguarding would be required to avoid a significant increase in turbulence.

7 Specific Questions Raised by PKC

7.1 Perth & Kinross Council has identified the following specific questions which have also been addressed as part of the review:

1. What safeguarding criteria may reasonably be applied to an unlicensed aerodrome?
2. Does the objection of the SGU contradict the SGU's own criteria, as set out in Policy 49, appended to the Kinross Area Local Plan 2004 and which provides technical guidance on safeguarding of Portmoak Airfield?
3. Is the logical conclusion to be drawn from the calculation in respect of the height limit at the site of the proposed dwellinghouse presented in the assessment by Richard Vousden of ASD that a similar buffer zone is applicable all around the aerodrome boundary and, if so, is that contrary to the Technical Guidance?
4. Have any technical criteria been applied in the Pager Power assessment undertaken on behalf of the applicant that would provide a justification for the opinion presented in it?

7.2 On the basis of the various discussions set out in Chapters 2, 4 & 5, the following opinion is presented regarding the safeguarding criteria that may reasonably be applied to an unlicensed aerodrome:

- a. Any criteria to be applied should be proportionate in respect of the benefits that they provide to aerodrome users compared with the restrictions they may place on the neighbouring community. This principle was recognised many years ago when the international standards for safeguarding were first developed and it remains equally applicable today at licensed and unlicensed aerodromes.
- b. Safeguarding airspace for take-off and landing will generally be of primary importance at any unlicensed aerodrome. The specifications identified in CAP 168 were developed by reference to operational experience, largely in the 1950s. In the absence of any other specifications these may provide a useful guide but, as noted in the CAA's guidance in CAP 793, adoption of these criteria may not be necessary for safe operation at all unlicensed airports. Given the technical issues involved, it may be difficult for individual operators of unlicensed aerodromes to develop their own more appropriate criteria. Adoption of CAP 168 Code 1 criteria will therefore normally be the simplest option. Taking account of previous operating experience, this option can generally be expected to provide an adequate level of safety without being disproportionate in terms of the restrictions it imposes on the neighbouring community, at least at aerodromes serving powered aircraft using a well-defined runway direction with implications for restrictions across a limited area.
- c. Taking account of the possibility, in principle at least, of gliders undertaking approaches in any direction towards the airfield, the Hedge Report has raised the possibility of safeguarding all around the perimeter at Portmoak. The SGU's safeguarding document identifies more limited safeguarded areas which are understood to cover the main practical options for take-off and approach operations. Approaches in some directions are apparently precluded by lines of trees located along the boundaries. It would not be appropriate to adopt a perimeter safeguarding surface that placed restrictions in directions that could not usefully be employed for flying operations because of the presence of existing obstacles. It would appear that the SGU has sought to protect limited areas which recognise at least some of the existing constraints. The location of the farm evidently leads to the safeguarded areas to the West of airfield naturally being split into two separate regions, relating to North Field and Centre Field operations. There is less of an obvious division in relation to operations over the eastern side of

the airfield. Whilst the SGU's safeguarding document identifies a set of separate approach/take-off climb surfaces relating to different notional runways where these overlap it may make sense to identify a single broader surface. For example, a single surface covering the whole of the East side of the airfield might be appropriate: the current area between the Runway 09/27 and Runway 10/28S surfaces on this side of the airfield for which no safeguarding requirement is identified would seem anomalous and is an obvious candidate for rationalisation. These issues have not been researched in any detail so that it possible to make some broader observations only. The general conclusion is that perimeter safeguarding around the whole of the airfield will not necessarily be appropriate and that safeguarding should be limited to areas of potentially useful airspace. The SGU's approach would appear to be reasonable in that respect.

- d. The Hedge Report indicated a slope of 1 in 15 for the approach surface, rather than a 1 in 20 slope that is identified in CAP 168. The analysis undertaken as part of this review indicates that a 1 in 15 slope is likely to be adequate for most purposes and include a reasonable safety margin. It would seem difficult to justify the general adoption of a much steeper slope, given the likely benefits of providing a safety margin. Where it was not seen to be unreasonably restrictive of legitimate development aspirations, adoption of a 1 in 20 slope, which provides a greater safety margin, would seem preferable.
- e. In terms of the land-use restrictions it implies and the operational benefit it provides, the slope of the approach surface cannot be viewed in isolation from its origin and the intended landing point. Clearly, the closer to the boundary that the origin of a sloping 1 in 20 surface is located, the greater the height restrictions associated with it. In establishing the origin of a surface, the selected location would need to be shown to be necessary for safe and efficient operations. The analysis undertaken as part of this review indicates that the origin identified in the SGU's safeguarding document for the surface that rises over the Causeway Cottage site is not appropriate, given operational requirements at Portmoak, and is unnecessarily restrictive as a result. That particular detail of the safeguarding specification for Portmoak Airfield is therefore considered not to be reasonable.
- f. Physical safeguarding of aerodromes, as identified in CAP 738, relates to the safeguarding of airspace at existing licensed aerodromes and seeks to implement criteria, specified in CAP 168 in terms of a set of obstacle limitation surfaces, for maintaining the airspace required for safe operation at these aerodromes. That is not to say that additional safeguarding measures cannot be put in place. There are instances where additional measures are in place, for example for the safeguarding of potential future airport expansion, in agreement with the local planning authority. The process for the safeguarding of licensed aerodromes does not make provision for undershoot and overrun mitigation outside the aerodrome boundary. Appropriate provision is required within the operational boundary of the aerodrome. The inclusion of a reference to safeguarding in respect of "surface structures" in the SGU's safeguarding document is therefore unusual. Safeguarding of this nature is not normally considered to be appropriate at licensed aerodromes and would therefore appear not the appropriate at unlicensed aerodromes. That is not to say that these sorts of measures would necessarily be unreasonable but, in accordance with the general principles outlined in para. 7.2a, any such measures would need to be seen to be proportionate. The analysis undertaken as part of this review indicates that adequate undershoot and overrun mitigation could be provided within the airfield boundary at Portmoak, if appropriate operational practices were to be adopted. In general, the provisions in the SGU's safeguarding document relating to the safeguarding of surface structures are therefore considered not to be reasonable, in particular having regard to the blanket restrictions on practically any structure that they would seem to imply. That having been said, the approach to limitation of surface structures outlined in the document would appear from its

wording to contain an element of pragmatism and, if implemented in a pragmatic manner, any restrictions that were to result need not necessarily be unreasonable. For example, there may be a case for seeking agreement with the land owners concerning the design of fences required in otherwise open areas to minimise the risks to pilots. Licensed aerodromes typically employ “frangible”⁹ fences and other structures and the same approach might be adopted in the areas surrounding Portmoak if this were not considered to be unduly onerous for local land owners. However, given the risks that would result from the ditch that runs along the eastern boundary of the airfield, which would not be addressed by these sorts of measures, there can be no apparent effective substitute for providing for undershoot mitigation within the airfield boundary.

- g. It will usually be beneficial for an aerodrome to maintain the airspace in its vicinity more generally for circuit flying and, in the case of glider airfields, soaring. CAP 793 recommends a height restriction of 150 ft / 45 m above runway elevation within 2 km of the runway midpoint which is considered reasonable given the requirements of these types of flying activities. This safeguarding criterion is identified in the SGU’s safeguarding document and in the PKC airfield safeguarding specification which can be considered appropriate.
- h. In some cases, there may be a case for safeguarding across wider areas, where these areas support flying activities. It would be a matter for individual aerodromes to identify these areas. Hill soaring activities in the vicinity of Portmoak, for example at Kinneston Graigs to the North of the airfield, might potentially benefit from safeguarding in specific areas further than 2 km from the airfield if a potential conflict with the erection of tall masts or wind turbines were identified. This is a matter for the operators of Portmoak to raise with the planning authorities but the establishment of wider safeguarded areas for recreational flying would appear to be reasonable in principle.

7.3 The objection of the SGU would appear not to contradict the SGU’s own criteria, as set out in Policy 49, appended to the Kinross Area Local Plan 2004 and which previously provided technical guidance on safeguarding of Portmoak Airfield. Given the uncertainties associated with the safeguarding specification provided in the SGU’s safeguarding document, the height limit that applies at the Causeway Cottage cannot be identified precisely. Based on the available information, the cottage is estimated to penetrate the surface by about 1 m. In putting forward the safeguarding assessment in the ASD Report in support of their objection, the SGU seeks to rely on criteria that are not consistent with their own. The estimate of a penetration by 2.9 m given in the ASD Report is therefore not appropriate.

7.4 The ASD Report seeks to determine the surface penetration that would arise from the Cottage through an interpretation of the specifications in the SGU’s safeguarding document. It would appear that this approach would consider only the safeguarded areas identified in terms of the take-off climb and approach surfaces in the SGU’s safeguarding document and reproduced at Figure 1 in the ASD Report. The logical conclusion to be drawn from this approach is that a similar buffer zone is applicable under the areas shaded in orange in Figure 1 and not all around the aerodrome boundary. The height restriction in the buffer zone varies according to the distance from the surface origin and, since the different surfaces are shown in the SGU’s safeguarding document to have origins at different distances from the boundary, the height limits at the boundary and any given distance beyond it should vary according to the precise locations of the surface origins. Richard Vousden uses his own interpretation of the locations of the surface origin and the assessment in the ASD

⁹ The ICAO Aerodrome Design Manual Part 6 on Frangibility defines a frangible object as an object of low mass design to break, distort or yield on impact so as to present the minimum hazard to aircraft.

Report is therefore contrary to the Technical Guidance in that respect. The perimeter safeguarding surface approach advocated in the Hedge Report would involve a similar buffer zone being placed all around the airfield boundary. For the reasons discussed in para. 7.2c, it is expected not to be appropriate to safeguard such a buffer zone all around the Portmoak Airfield.

- 7.5 The first Pager Power report identifies a number of criteria from CAP 793 under para 5. The only specification for height limits to which reference is made in the report is the recommendation that there are no obstacles greater than 150 feet above the average runway elevation within 2,000 m of the runway mid-point. Para. 16 of the first Pager Power report identifies that this specific height limit requirement is not infringed by the proposed Causeway Cottage. No specific prescriptions for height restrictions to protect take-off or landing operations are identified in the first Pager Power report against which the proposed development may be assessed. Comment has already been made on this omission at para. 2.35 of this review report. The Pager Power report identifies the status at unlicensed aerodromes of CAP 168 criteria which are applicable at licensed aerodromes but does not provide any specific comment on their use at Portmoak. The conclusion in the first Pager Power report that the proposed development would not impact on operations at Portmoak is based primarily on the observation that there is a taller tree in that vicinity that will already preclude the safe operation of aircraft in it. From the perspective of safe operation of aircraft and the need for pilot's to ensure a safe vertical margin respect to aircraft under the flight path, this is a valid reference point and could be considered to be a valid technical criterion. The second Pager Power report gives consideration to the approach angle that gliders fly in practice. A slope of 1 in 8 is put forward as being indicative of the approach angle for "a well-braked approach", considerably steeper than the 1 in 20 slope identified in the SGU's safeguarding document. An indication of the heights of gliders on approach above the location of the proposed development is given by reference to a photograph from which it can be seen that there is a considerable vertical margin with respect to the ground at that point. The Pager Power assessment therefore identifies these indicative heights of aircraft on approach as technical reference points.

8 Discussion and Conclusions

- 8.1 The primary issues raised by the SGU in documents submitted to support their objection to the proposed Causeway Cottage relate to the requirements for the safeguarding of airspace and the risks to both aircraft pilots and residents of the cottage that may arise in the event of an undershoot. During discussions at the time of the site visit the Chief Flying Officer emphasised the SGU's concern about the constraints on approach operations that may arise from development along the eastern boundary of the airfield which again are understood to relate primarily to risks in the event of undershoot. In that context, the need to be able to accommodate a relatively large number of glider landings over a short space of time in the event of a change in the weather has been identified.
- 8.2 In accordance with the reasoning set out in Chapters 2 and 4, this review finds that the safeguarding assessment in the ASD Report is not a reliable basis for evaluating the likely impacts of the proposed Causeway Cottage on the safety of operations at Portmoak Airfield and concludes that no weight should be attached to this report in determining the application. In adopting specifications applicable at licensed aerodromes the ASD Report has not demonstrated that these are appropriate for glider operations and proportionate, given the restrictions that they would impose on others. The height restrictions proposed in the ASD Report are more demanding than those set out in the SGU's safeguarding document and this increased restriction is found not to be justified.
- 8.3 Assessment of the proposed cottage against the specifications in the SGU's safeguarding document shows that the proposed cottage would be a penetration by approximately 1 m of the approach surface with an assumed slope of 1 in 20 and approximate origin as derived by ruler measurements taken from the available plan. In accordance with the assessment of operational requirements set out in Section 4.1, the slope of 1 in 20 adopted in the SGU's safeguarding document, whilst perhaps providing a relatively generous safety margin compared with that required for normal operations, is found not to be unreasonable. However, the proximity of the origin of the surface to the airfield boundary is found to be inappropriate, taking account of the slope of the surface and the height restriction that would apply at the boundary, as compared with the height of the boundary fence and other potential obstacles beyond the airfield perimeter outside the control of the SGU that may need to be accommodated. A relatively modest relocation of the surface origin by approximately 20 m to the West, further from the location of the cottage, would be sufficient to eliminate the estimated surface penetration.
- 8.4 Rather than simply applying safeguarding specifications intended for use at licensed aerodromes, the Hedge Report seeks to identify a safeguarding approach that takes specific account of the requirements of glider operations. In particular it recognises that approach from a wide range of directions rather than along a limited number of runway aligned flight paths may need to be accommodated and that it would be unrealistic to apply restrictions such as those for approach surface slopes applicable to licensed aerodromes all around the perimeter of an airfield. It proposes safeguarding around the airfield perimeter by means of a 1 in 15 sloping surface, referenced against a "screen height" of 2 to 3 metres at the airfield boundary to serve as the origin of the surface. It notes also that it would be advisable for the aerotow runway which accommodates powered aircraft to be safeguarded using conventional criteria normally applied to those types of operations.

- 8.5 Overall, this review concludes that the approach proposed in the Hedge Report is reasonable in general, although it appears questionable whether safeguarding around the whole of the airfield boundary would be appropriate. Analysis undertaken as part of this review indicates that the 1 in 15 gradient proposed in the Hedge Report should generally be adequate to protect glider approach operations but that finding does not necessarily rule out a shallower gradient of 1 in 20 being adopted in respect of the areas used predominantly for take-off and approach operations. Assessment against the 1 in 15 slope proposed in the Hedge Report and a screen height of 3 m at the airfield boundary indicates that the proposed Causeway Cottage would not infringe the surface and would comply with these criteria.
- 8.6 The SGU has rejected the safeguarding approach proposed in the Hedge Report but the SGU's criticisms would appear to be related primarily to the failure of the Hedge Report to consider unplanned landings off the airfield but in the vicinity of the boundary (undershoots). The SGU have identified a hazard associated with undershoot and it is entirely appropriate that the risks associated with that hazard should be put in the balance when determining the application. They have provided historical evidence which confirms the presence of the hazard but have not provided a case to demonstrate that the risks to either pilots or future residents of the cottage associated with it would be materially significant.
- 8.7 Detailed analysis undertaken as part of this review indicates that the risks to both glider pilots and residents of the cottage are at a level where they should not be considered to be an over-riding factor in determining the application. It should be recognised that any new object in the vicinity of an aerodrome may carry with it some additional risk and such a possibility should not be taken lightly. However, some risks can and indeed must be accepted under some circumstances but only in return for an appropriate benefit. If there were to be no benefit whatsoever associated with the proposed application then there would be no justification for any additional risk arising from it.
- 8.8 The analysis undertaken as part of this review indicates that additional risks that may arise from the development are likely to be sufficiently small to be regarded to be *de minimis*. In the context of Policy 49 of the Kinross Area Local Plan 2004, the development need not be regarded as one that is likely to have an impact on the safe operation of aircraft from Portmoak Airfield and refused on that basis. The overall planning balance is not a matter for consideration in this report but is one for later consideration by the local planning authority. In that context, the overall conclusion is that limited weight should be placed upon the possible additional risks to pilots and future residents of the cottage since these can be considered small and within acceptable levels. These risks should be weighed appropriately in the balance with other factors.
- 8.9 In any event, UK practice in respect of undershoot provision at licensed airports is that the provision of Runway End Safety Areas to mitigate this risk is the responsibility of the aerodrome operator. RESA provision must be made within the airfield boundary and aerodrome licence holders cannot rely on the safeguarding of areas outside the operational area of the aerodrome for that purpose. Additional technical analysis undertaken as part of this review indicates that there is scope for effective undershoot risk mitigation through the adoption of appropriate operating practices. These operating practices primarily involve aiming further into the airfield which will effectively provide a RESA within its boundary. Such measures would be appropriate in any event along the whole of the eastern boundary of the airfield to mitigate potential risks associated with undershoot into the drainage ditch that runs along this boundary.

- 8.10 Development that would introduce the additional constraints on approach operations that may arise from development along the eastern boundary of the airfield is a legitimate concern of the SGU. Taking account of the constraints that arise from the existing development at the Causeway Cattery and Equestrian Centre site, the proposed cottage is not expected to add materially to those constraints. Operational practices should be such as to avoid over flight of the cottage site wherever practicable. In the event of a requirement for over flight of this area under some circumstances the impacts of the cottage on the safety of operations overall at Portmoak Airfield can be expected not to be significant.
- 8.11 The letter from the CAA dated 12 December 2007 provided with one of the SGU's submissions states the following:
"The question which the planning authority must consider is the extent to which the aerodrome would need to act in order to mitigate the effects of the development. The crucial question is whether or not that mitigation action would amount to a loss of established amenity. Safety will be a major consideration ..."
The findings of this assessment are that there are no new actions required by the aerodrome to mitigate the effects of the development. The existing development requires various mitigation actions to be taken, as set out in paras 8.9 and 8.10 above, and these should be sufficient to mitigate any additional effects that would arise from the proposed Causeway Cottage. Any additional operational and safety impacts associated with the new development are considered not be materially significant.
- 8.12 Some loss of amenity in terms of the availability of obstacle free approach areas along the eastern boundary of the airfield has arisen from the previous permissions in relation to the Causeway Cattery and Equestrian Centre. Given the location of this existing development at the end of the farm track that divides the North Field and Centre Field and where some restrictions on operations already apply, it is understood that development in this position will have limited the scale of the amenity loss that was caused. Further development at that location such as the proposed Causeway Cottage is judged not to add materially to that previous loss of amenity.
- 8.13 A considerable proportion of the original amenity associated with take-off and approach areas along the eastern boundary of the airfield has been retained. From the perspective of future operations at Portmoak it would be better if the current unobstructed areas to the East of the North Field and Centre Field could be retained. It is appropriate that there should be a safeguarding process in place to support that objective. This review finds that the current specifications provided in the SGU's safeguarding document are not fit-for-purpose in that they do not adequately specify the safeguarded areas (i.e. the thresholds of the notional runways are not defined) and they have not been shown to be proportionate in terms of the balance that they strike between the protection of airspace and the impacts any restrictions may have on the neighbouring community. The use of CAP 793 guidance, as identified under policy EP 13, will be dependent upon interpretation in some respects and is therefore subject to some uncertainty. Development of an agreed revised safeguarding specification that addresses these deficiencies would therefore seem to be of benefit.

9 The SGU's Letter of 14 March 2014

9.1 In response to Issue 1 of this review report, the SGU has written to PKC raising concerns about a number of issues as follows:

- 1 Procedure
- 2 Operational Need
- 3 Trees
- 4 Application 13/01858/FLL
- 5 Loss of Amenity

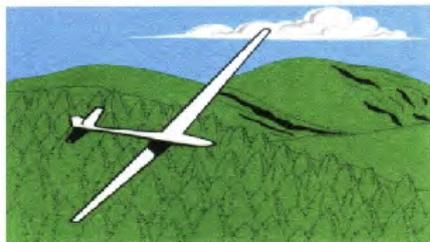
The point raised under item 1 relates to the Kinross Area Local Plan 2004 being superseded by the Perth and Kinross Local Development Plan 2014. Revisions elsewhere in Issue 2 of the review report have addressed this point. As noted earlier, this policy revision does not materially impact upon the overall findings presented in Issue 1 of the review report which are reaffirmed here in Issue 2. Points 2 and 4 are outside the scope of this review which relates to Application 09/00936/FLL only and to impacts on the safe operation of Portmoak Airfield. Responses are provided below in relation to Points 3 and 5.

9.2 The SGU's concern in respect of the planting of a line of trees, believed to be *salix alba* or *salix viminalis*, along the airfield boundary was brought to the attention of Eddowes Aviation Safety Limited during the site visit on 31 January 2014. The SGU is concerned that this planting may have been carried out with the intention that, as they grow, these trees will become obstructions to approaches into the airfield, forcing the landing point to be further and further into the airfield with a corresponding reduction in the landing area available which could eventually sterilise the whole of the North Field. Such a development is evidently a legitimate concern of the SGU since it could, potentially, lead to a considerable loss of amenity at Portmoak Airfield. However, this is an entirely separate matter from the consideration of Application 09/00936/FLL and it was not considered appropriate to address this concern in Issue 1 of the review report. Whether that application is granted or refused can be expected to have no bearing on any potential future loss of amenity that may arise from the growth of the trees. It may be appropriate for the SGU to seek a remedy that addresses this concern but opposing this application would appear not to be an effective approach to be taken in that respect.

9.3 In relation to loss of amenity, the SGU states the following, before restating their continued opposition to Application 09/00936/FLL:

"As we have pointed out before, the loss of amenity inherent in any building along our eastern boundary is a material consideration. The current amenity of the airfield will be significantly reduced both by development if it proceeds and by the growth of the trees planted by the applicant along the eastern boundary of the airfield."

The conclusion reached in this review, after careful consideration of the previous submissions of the SGU, is that the current amenity of the airfield would not be significantly reduced by the development. The SGU's letter of 14 March 2014 has provided no new evidence that would alter that conclusion.



Scottish Gliding Centre

Portmoak Airfield, Scotlandwell, by Kinross, KY13 9JJ

Tel: 01592 840543 Fax: 08707 626543

e-mail: office@scottishglidingcentre.co.uk

website: www.scottishglidingcentre.co.uk

Mr Nick Brian
Development Quality Manager
The Environment Service
Perth & Kinross Council
Pullar House
35 Kinnoull Street
Perth
PH1 5GD

13th March 2014

Dear Mr Brian

**09/00936/FLL and 13/01858/FLL:
Proposed House at Equestrian Centre & Cattery, Scotlandwell KY13 9JQ**

Having now had the opportunity to read the report by Dr Mark Eddowes and the further submission on behalf of Mrs Dick by SAC Consulting, we have the following observations.

1. Procedure

Perth & Kinross Council asked Dr Eddowes *“Does the objection of the SGU contradict the SGU’s own criteria, as set out in Policy 49, appended to the Kinross Area Local Plan 2004 and which provides technical guidance on safeguarding of Portmoak Airfield? “*

His answer was in the negative (para 7.3), but, in any case, the 2004 Local Plan has been superseded by the new Local Plan adopted by the Council on 3rd February 2014. This Plan contains a new policy and new supplementary guidance on airfield safeguarding, and the Council must now test these applications against the new policy and guidance. We assume that the Council considers its new policy and guidance to be better and more relevant than that which preceded it. Therefore, should not Dr Eddowes have been asked how the proposal sits in relation to the new policy and guidance? Our legal advice is clear: the Council’s procedure should have been to ask Dr Eddowes to report in the context of the new Local Plan. This view is supported by the fact that Dr Eddowes criticises the SGU’s 1998 safeguarding report (and by implication the 2004 Local Plan of which it is an integral part) as *“not fit-for-purpose”*. The Council has been found wanting procedurally in the past. We do not relish returning to court to demonstrate once again that it has laid itself open to judicial review, but if we have no other option then we will certainly do so.

2. Operational Need

The new supplementary guidance states that vertical obstructions may be prejudicial to operators of an aviation site (para’s 3.2 and 3.3), and Dr Eddowes comments that *“It should be recognised that any new object in the vicinity of an aerodrome may carry with it some additional risk and such a possibility should not be taken lightly. However, some risks can*

and indeed must be accepted under some circumstances but only in return for an appropriate benefit.

We question whether there is, in this case, any “appropriate benefit” given that Mrs Dick has already built a house on the property, a matter of minutes away from the current application site in a position which does not affect safety. This was permitted on the basis of operational need in conjunction with the establishment of the cattery business (para 2 of your Report of Handling to the Committee on 23 January 2013). Indeed, you also wrote *“The occupancy of this house has not been restricted by condition. It is unclear why this was not conditioned.”* Therefore, it is difficult to see how the application for 09/00936/FLL can progress on the basis of occupational need.

In the last month, Mrs Dick produced a letter from SAC which purports to support her case for operational need by detailing the “labour requirements” for her business. This fails to establish need for an additional dwelling on two counts.

Firstly, it confirms that the only equestrian activity nowadays is livery. Even so, it seems to over-estimate the labour requirements (see the following paragraph) and, in any case, it does not say that any of the presumed requirements need to be accommodated on site.

According to the John Nix Farm Management Pocketbook (2009) and the Equine Business Guide (2005), a Full Livery horse requires 83 Standard Man Days (SMD) a year and a Standard Man Allowance is 275 SMDs a year.* With the SAC’s 30% deduction for multiple horses on site, four full livery horses would need only 232 SMDs, which is less than one full time worker. Regarding DIY liveries, the SAC letter suggests that the equivalent of 2 hours 20 minutes of Loch Leven Equestrian Centre labour is needed per animal every day – yet, typically, DIY livery is where the livery owner provides the stable and turnout facilities, use of the school etc., but the horse owners provide their own feed, hay, bedding and labour.

Secondly, the SAC figures for the cattery aspect of the business are also not helpful. They give neither the typical length of each season (so precluding any calculation of the actual labour requirements over a year) nor the actual seasonal occupancy on site.

Dr Eddowes rightly observes that the overall planning balance should take into account factors other than the aviation considerations on which he reports. In our opinion, material considerations for assessing operational need would include the sort of criteria set out in “PPS7 – sustainable development in rural areas”:

- clear evidence that the enterprise has been planned on a sound financial basis; and
- that any functional need for a house could not be fulfilled by another dwelling on the unit or any other existing accommodation in the area.

We have already commented on the second point – the existence of a house on the property which Mrs Dick built on the basis of “operational need” – and we don’t understand why she needs another house. It will be for the Council itself to consider the question of financial viability and the extent to which it may or may not support the construction and long term running of a house of the style proposed.

3. Trees

As shown to Mark Williamson on 31st January 2014 and as intimated to you by letters dated 5th July and 28th October 2013 (to which we have not had replies), Mrs Dick has planted a

[* as reported by Rural Consultancy Services Limited, 2010]

line of trees along her boundary with the airfield. They appear to be *salix alba* or *salix viminalis*. This planting seems to have been carried out with the intention that, as they grow, these trees will become obstructions to approaches into the airfield, forcing the landing point to be further and further into the airfield with a corresponding reduction in the landing area available which could eventually sterilise the whole of the North Field. The tree planting runs contrary to the Council's supplementary guidance on airfield safeguarding (para 3.3.a), and also contrary to the advice to the Council from Dr Eddowes that "*a considerable proportion of the original amenity associated with take-off and approach areas along the eastern boundary of the airfield has been retained. From the perspective of future operations at Portmoak it would be better if the current unobstructed areas to the East of the North Field and Centre Field could be retained. It is appropriate that there should be a safeguarding process in place to support that objective.*" (para 8.13). (Dr Eddowes appears to have failed to notice these trees during his site visit.) Please let us know how the Council proposes to implement a safeguarding process which will keep the area to the east of the North Field and Centre Field free from such obstructions.

4. Application 13/01858/FLL

Concurrently, Mrs Dick has another application for a dwelling at the equestrian centre and cattery, in a position such that both houses could be built if granted permission. There is no guarantee that she will withdraw one of these applications if the other is granted permission. The applicant purchased this land in the full knowledge that it adjoined an airfield which, at the time, had been operational for 40 years. However, given the subsequent evidence of persistence (17 applications since 1997 for housing and extensions to premises) and aggression (tree planting, and complaints to the police and Civil Aviation Authority) we cannot conclude other than that she is determined to do all she can to interfere with the running of the long-established airfield in order to further the opportunities to develop her land.

5. Loss of amenity

We understand that, having been granted permission for her business by the Council, Mrs Dick is entitled to operate that business to the best of her ability. Nevertheless, we cannot adopt a position that would be - or could become - prejudicial to the successful continuation of our business as the largest and most successful gliding club in Scotland.

As we have pointed out before, the loss of amenity inherent in any building along our eastern boundary is a material consideration. The current amenity of the airfield will be significantly reduced both by development if it proceeds and by the growth of the trees planted by the applicant along the eastern boundary of the airfield. As indicated above, Dr Eddowes recognises in his report that we have a legitimate concern in that respect. We accordingly refer again to our letter of 23rd April 2011 where we noted, amongst other things, that "*Legal precedent in relation to development close to airfields that leads to reduced safety margins, loss of amenity and creation of public interest is clearly set out in the attached letter from the Civil Aviation Authority dated 12th December 2007.*"

In these circumstances we have no option but to continue to oppose applications **09/00936/FLL and 13/01858/FLL**.

Yours sincerely



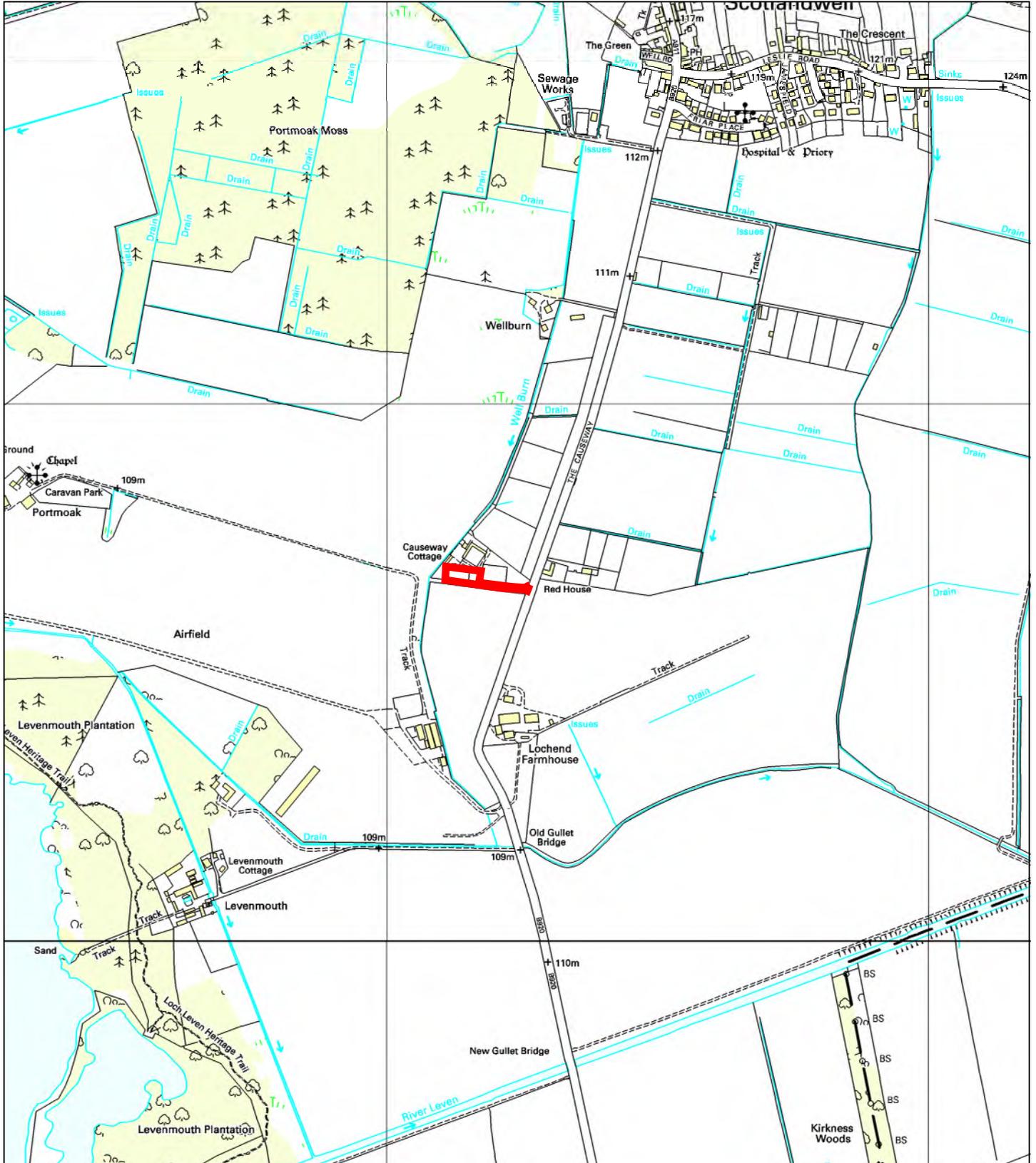
Airfield Safeguarding Officer,
on behalf of the Scottish Gliding Union Ltd

Perth & Kinross Council

09/00936/FLL

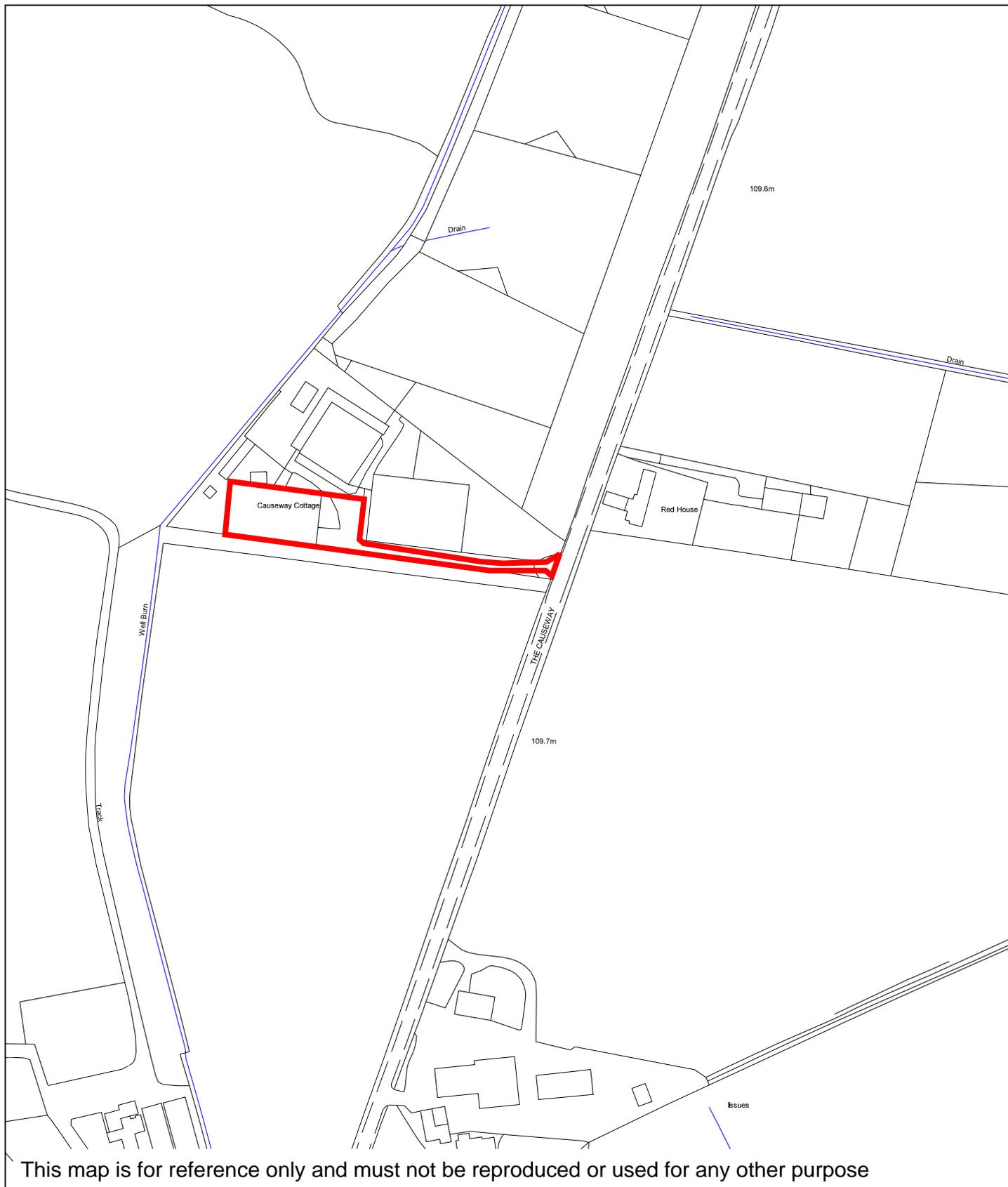
Causeway Cottage, Scotlandwell, Kinross

Erection of a dwellinghouse



This map is for reference only and must not be reproduced or used for any other purpose

Scale
1:10000



Scale
1:2500

