Clash Gour Wind Farm ACP-2021-046

Step 3D – Categorisation of Consultation Responses

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1 Clash Gour Wind Farm ACP

1.1 Introduction

Force9 Energy, jointly with EDF Energy Renewables Limited is developing the Clash Gour Wind Farm (Clash Gour) in the name of its wholly owned subsidiary Clash Gour Holdings Limited.

Clash Gour will be a substantial onshore wind farm in the Moray Council area which will be capable of providing power to approximately 200,000 houses. This Airspace Change Proposal (ACP) does not discuss or consult upon the principle of the development itself. That has been established through an application to Scottish Ministers under the Electricity Act 1989. That application was consented by Scottish Ministers on 21st October 2022.

Two conditions are attached to the grant of consent which are required to be discharged before turbines can be erected and operated on site. Each condition requires the development and agreement of an Air Traffic Control Radar Mitigation Scheme each in respect of both RAF Lossiemouth and Inverness Airport. This ACP is established in response to that requirement and deals solely with proposed airspace solutions as mitigation to any effect the windfarm may have on the Air Traffic Control capability of the two units.

1.2 Current Status of the ACP

Clash Gour Holdings initiated this ACP in September 2021 following the process set down in the CAA publication, CAP 1616. The ACP is currently at Stage 3 (CONSULT) of the ACP process.

The consultation commenced on Wednesday 29th March 2023 and ended on Wednesday 31st May 2023. The consultation was hosted on the CAA's online consultation portal, Citizen Space. During the consultation, 15 responses were received via the portal. Section 2 details the responses received which have been reviewed and categorised and form our submission for CAP 1616 Step 3D Categorisation of Responses.

2 Categorisation of Consultation Responses

2.1 Introduction

Following the consultation period, CAP 1616 requires the change sponsor to carry out a fair, transparent, and comprehensive review and categorisation of consultation responses. The change sponsor must review the responses and categorise them into those that present information that may lead to a change in the design and those that could not, including those raising issues which are outside the change sponsor's control.

It should be noted that this document is not a consultation response document. The consultation response document, which sets out how the change sponsor has acted on the feedback provided during consultation, is submitted at the next stage of the CAP 1616 process.

2.2 Consultation Responses and Categorisation

Robert Tait	Highland Gliding Club Ltd (Chairman)
Do you support the proposed Airspace Change Proposal?	OBJECT – I object to the proposed changes
The proposed TMZ will come near enough to our airfield that it will impact aerotowing to our most common routes. Not all the aircraft on our site are fitted with transponders so this will deny access to pilots who currently access that free airspace. Transponders are expensive items for any pilot to buy and particularly for our older aircraft would constitute a significant percentage of the cost of the aircraft.	

We would far rather that a technical solution was found to this proposal such as improved radar coverage. Clearly, the unintended consequence of this proposal will be denial of access to airspace to glass G airspace users. In addition, I can see this being a test case for other windfarm operators and more of these enormous columns of TMZ's appearing all over the country. This benefits no one. We can provide GPS traces of glider activity in the affected area if required. It is one of our most active areas.	
Preferred option:	Do Nothing
We fundamentally object to this proposal and do not want it to happen.	
I will be attending the in person meeting on the 19th in Forres with some colleagues.	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent has objected to the proposed changes based on the impact a TMZ would have on their operations; however, the response does not provide any suggestions that could lead to an adaptation to the design. **The proposal to implement an airspace solution has been initiated to create a path to satisfy the aviation related conditions attached to the grant of consent for the wind farm. In this part of Scotland, there is no technical mitigation solution currently available which has been tested against wind farms already present in the area. This is a relatively unique set of circumstances where the windfarm is seeking to mitigate 2 separate radar systems operated by 2 separate operators who are in the process of implementing new radar systems with windfarm filtering technology which is unproven in the geography of the area. In other parts of Scotland, proven technical mitigation solutions are already available and airspace change solutions will not be required. The proposal does not therefore set precedent in the manner suggested by the respondent. This airspace solution will allow the necessary financial investment decisions to be made to allow the development of the wind farm to commence in order to achieve an approved grid connection timeline of 2027. In seeking to meet a grid connection date in 2027, turbines are likely to be erected on site during 2026, subject to final programming. Erecting and operating the wind turbines will allow the Change Sponsor to test**	

technical mitigation solutions and build confidence that they work in this part of Scotland in order to fully discharge the conditions attached to the grant of consent.

Alex Ross	Individual
Do you support the proposed Airspace Change Proposal?	SUPPORT – I support the proposed changes
Proposed change seems fair and reasonable to this layman. An apparently minor (on the grand scale of things) inconvenience which can be worked round in this day and age. Ends	
Preferred option:	Option 7(E)
None	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent supports the proposed changes and does not provide any suggestions that could lead to an adaptation to the design.	

Alastair Kennedy	The City & Royal Burgh of Elgin Community Council
Do you support the proposed Airspace Change Proposal?	SUPPORT – I support the proposed changes
This will have no impact on what we do but will have a minimal impact of any kind in the area. The few people it may affect are fliers and there are very few civilian fliers in this area.	
Preferred option:	Option 7(E)
I understand that there is a proposal to have a buffer zone but having no such zone will ensure there is even less of an impact on people flying and would allow more airspace/room for the nearby gliding club. I'm not sure how often the gliders fly but it isn't very often. No buffer zone would allow them room to circle their airfield for landing.	
I imagine the proposal will have to be weighed up between the radar problems and the need to transition to renewables. This proposal seems to accommodate both.	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent supports the proposed changes and has not provided any suggestions that could lead to an adaptation to the design. This response supports Option 7(E) since it covers less area, which may reduce the impact to GA including the local glider club.	

Alastair Kennedy	The City & Royal Burgh of Elgin Community Council
Do you support the proposed Airspace Change Proposal?	SUPPORT – I support the proposed changes
I think such a change will have minimal impact on the area since there are few civilian fliers here. The only time it would have an effect would be on the odd occasion that the gliding club flies. I don't foresee any unintended consequences arising in future.	
Preferred option:	Option 7(E)
I'm assuming 7(E) is the proposal without a buffer zone as that would be our preferred option. We believe that will allow more airspace/room for glider pilots to circle their landing area if necessary but also to approach from the direction of the wind farm if that was required due to the direction of the wind.	
No	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent has supported the proposed changes and does not provide any suggestions that could lead to an adaptation to the design. This response supports Option 7(E) since it covers less area, which may reduce the impact to GA including the local glider club.	

Anonymous	Speyside Community Council
Do you support the proposed Airspace Change Proposal?	NO COMMENT – I have no comment to make on the proposed changes
The Community Council has been involved in consultations about Clashgour for a number of years but this issue is totally outwith our sphere of expertise.	
Preferred option:	No preference
We feel that the CAA is the best organisation to deal with this.	
We would have liked to have seen other windfarms that are either in scoping or consented but not yet built shown on one of the maps. Clashgour cannot be considered in isolation from other windfarms in the pipeline.	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent has no comment to make on the proposed changes and has not provided any suggestions that could lead to an adaptation to the design.	

Colin Thomas	Fulmar Gliding Club, based at Eastern Airfield
Do you support the proposed Airspace Change Proposal?	OBJECT – I object to the proposed changes

I am writing on behalf of both Fulmar and Highland Gliding Clubs to express our strong objection to the proposed Transponder Mandatory Zone (TMZ) near our clubs' location at Easterton Airfield (57.586496, -3.321363). While we recognize the importance of renewable energy and its benefits to the environment, we are concerned about the adverse impact the TMZ will have on our gliding operations.

The introduction of a windfarm with its associated TMZ in the vicinity of our gliding club will severely restrict our operations. Very few gliders currently have transponders installed on board and our non-transponder equipped aircraft would have to either avoid the TMZ or obtain radio clearance to enter. In order to obtain radio clearance from a controlling agency, pilots require a flight radio telephony operator license (FRTOL). Glider pilots do not need an FRTOL to operate using the allocated gliding frequency channels and therefore only a minority of our club pilots hold such a license. Effectively, this will result in the vast majority of glider flights from Easterton having to avoid the proposed TMZ. Gliding is very weather dependant and in order to enjoy challenging and rewarding flying, we have to go where the weather is best for soaring. Quite often this forces us to fly in the area of the proposed TMZ, whether that is the minimum size proposed under Option 7(E) or the TMZ+Buffer Option 7(F). The only way for to us to continue using this airspace is therefore the installation of transponders in every glider based at Easterton. This will impose a significant financial burden on our club and its members, as the installation of transponders is an expensive endeavour. Many of our members are retired or young people with restricted income who have invested their time, effort, and resources into our club to enjoy the unique experience of gliding. Requiring the purchase of transponders, which cost thousands of pounds per unit, will undoubtedly lead to a decline in membership and a reduction in our club's overall activities.

As an important part of the local community, we have fostered an environment that encourages camaraderie, a love for the sport of gliding, and respect for the natural world. We hope to continue our operations in a manner that is safe and sustainable for all involved.

Preferred option:	Do not support either Option 7(E) or 7(F)

In the light of these concerns, we would request that you either reconsider the proposed location of the windfarm and its associated TMZ or provide adequate compensation to our club to cover the costs of transponders and any associated equipment. We believe that an equitable solution can be reached that balances the interests of both the renewable energy industry and our gliding club.

Cost of Installation of Transponders in Gliders at Easterton

A typical transponder for use in a glider is the Trig TT22 Modes S

Prices taken from a UK-based glider equipment supplier https://www.navboys.com

TT22 Transponder list price £2,800

TN72 GPS for ADSB out £476.40

Trig TA50 compact GPS antenna with cable £96

Transponder blade antenna £159

4m cable £25.20

fitting £600

Total for transponder package £4,156.60 inc VAT.

In addition, the power requirements of the transponder will require a power source upgrade. Each glider uses a primary and backup 12V battery to power all avionic equipment. These will have to be replaced, along with their associated battery chargers.

Two replacement LiFePo batteries from Navboys

Glider LiFePO4 10Ah battery pre-built with specified polarity £194.80

Optimate 0.8A charger pre-built £70.52

Total for 2 batteries £530.64 inc VAT.

Cost for complete transponder installation and battery upgrade per glider: £4,687.24.

Total number of gliders requiring upgrade: 20.

Total cost to the gliding community at Easterton Airfield: £93,744.80.	
I understand that upgrades to the primary radars at Inverness Airport and RAF Lossiemouth are due during 2023. These upgrades will, in all probability, reduce the clutter from wind turbines to a degree that mitigation requiring the use of a TMZ will not be required. It would be good to have some assurance in the ACP that the TMZ will be removed as soon as upgraded primary radars are installed and tested.	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent has objected to the proposed changes based upon the impact a TMZ would have on their operations but has not provided any suggestions that could lead to an adaptation to the design. **The proposal to implement an airspace solution has been initiated to create a path to satisfy the aviation related conditions attached to the grant of consent for the wind farm. In this part of Scotland, there is no technical mitigation solution currently available which has been tested against wind farms already present in the area. This is a relatively unique set of circumstances where the windfarm is seeking to mitigate 2 separate radar systems operated by 2 separate operators who are in the process of implementing new radar systems with windfarm filtering technology which is unproven in the geography of the area. In other parts of Scotland, proven technical mitigation solutions are already available and airspace change solutions will not be required. This airspace solution will allow the necessary financial investment decisions to be made to allow the development of the wind farm to commence in order to achieve an approved grid connection timeline of 2027. In seeking to meet a grid connection date in 2027, turbines are likely to be erected on site during 2026, subject to final programming. Erecting and operating the wind turbines will allow the Change Sponsor to test technical mitigation solutions and build confidence they work in this part of Scotland in order to fully discharge the conditions attached to the grant of consent. Once the conditions have been completely discharged, it is anticipated that there would be no further need for an airspace solution. However, this cannot be confirmed at this stage.** **The issue of compensation relating to the costs of equipment to enable glider operations to continue in the vicinity of the TMZ is outside the scope of this ACP; however, it is an issue that the Change Sponsor will consider as the project moves forward. Clash Gour wind farm comes with a proposed community fund and shared ownership offering and**	

there is nothing to prevent flying clubs in the area exploring the possibility of using community funding from wind farms to support their activities, like other clubs and organisations in the area.

Anonymous	Ministry of Defence. Defence Airspace & Air Traffic Management
Do you support the proposed Airspace Change Proposal?	OBJECT – I object to the proposed changes

1. What do you believe will be the impact of the TMZ on your operation?

78 Sqn (Swanwick (Mil))

The ATM equipment used by 78 Sqn is provided by NATS and therefore any potential impact on radar sensors – and thus coverage – is captured through NATS processes, in which 78 Sqn are a stakeholder. However, the operational impact is described below.

As a TMZ is a formal airspace structure with certain rules associated, controllers would have to be aware of its presence, so it would have to be plotted on the displays and detailed on the Support Information System. This additional information displayed on the surveillance display has the potential to negatively impact ATS provision due to the surveillance display being busier, and the additional time needed to interpret the surveillance picture, as controllers have to be aware of the meaning of every line on their displays that their aircraft may cross or come close to. This would also mean an increase in controller workload as a result. The vertical extent of the planned TMZ (FL195) seems overly pessimistic and further would impact service provision; if it was to be FL100 or below then it would have less impact to 78 Sqn as they do not routinely provide a service below FL100.

The windfarm would not be visible on the NATS sensors that 78 Sqn use for the provision of an Air Traffic Service as it is below the base of their surveillance coverage; implementation of a TMZ would create an issue for 78 Sqn and from their perspective it is not required as there is no requirement for blanking.

19 Sqn (ASACS).

Minimal impact. Coordinates would be required to allow addition to the surveillance display, to ensure a correct ATS can be provided in and around the TMZ.

RAF Lossiemouth.

The following feedback should be taken in addition to that which was provided at Stage 2 of the ACP process.

Traffic funnelling – Non transponder equipped aircraft will be more likely to funnel through the airspace directly to the south of the Lossiemouth (M)ATZ. This will significantly impact both the RW05 approach and RW23 departures, despite being Class G. Should there be a concentration of non-transponding aircraft in this area (who often do not contact on the published LARS frequency), and Lossiemouth aircraft under a Deconfliction Service, it may prevent recovery to Lossiemouth, potentially forcing them to divert.

Less expeditious radar approaches/Increased risk of MAC – It is likely that aircraft will have to be routed north of the airfield on occasion (particularly any aircraft making a trails approach) to be fed in on a downwind pattern for RW05 as the high ground they would be forced to route over to the south is not compatible with a step height reduction for published radar approaches. As well as increasing the distance to fly into Lossiemouth (and therefore reducing the amount of fuel left for visual circuits or further training patterns) this increases the amount of traffic operating in the airspace West of Lossiemouth, and East/Northeast of Inverness, which leads to an increased risk of MAC.

Reduction in radar service – There is an increased risk to life due to the reduction in service Lossiemouth ATC will have to apply for aircraft transiting the TMZ. As articulated in the Stage 2 response, Lossiemouth is due to transition to Star-NG/WAM in 2023 which is a co-operative system. Not enough is known about the performance of WAM alone operations to be able to safely assess the reliability of Mode A/C returns when operating in that area.

Impact to procedures - The presence of the overland TMZ and associated blanking potentially in such close proximity to (and potentially overlapping) existing published IFR arrival/departure procedures may impact existing published procedures. All IFR approaches to RWY05 will be impacted (PAR, TACAN, SRA) and the blanked area would limit Surveillance Radar Approaches to a northerly feed-in, which would limit flexibility and reduce the effectiveness of the service being provided. It will also impact the TACAN Hold for RWY05 and likely to impact ATS provision for departures on the MID23 South. Aircraft making an SRA approach to RW05 will have to be fed in either from the West, or on a much longer base leg as the TMZ will make SRA approaches from the East impossible due to the TMZ proximity to the extended centreline.

Formation stream departures and arrivals would be affected if any ac has an unserviceable transponder, as track ident of each formation element would not be possible through the TMZ. This would mean avoiding the TMZ to the south which then brings higher terrain into the equation, which is not acceptable for fast jet recoveries where fuel is often at a premium. Occasionally, Typhoons general handle, south of Lossiemouth whereby SSR often drops out (due manoeuvring), this may further limit where fast jets can freely operate. All of these factors would mean an increase in ATC workload, especially if Lossiemouth were to be the authority for the airspace.

Increased workload vs resource – Lossiemouth ATC is not configured personnel-wise to be the controlling authority for this TMZ. Any requirement to be so would require an uplift in personnel due to the potential additional workload. Temporary Reserved Area - Lossiemouth ATC are an Enhanced Air Traffic Service Unit and are therefore permitted to provide ATS in the TRA. If the TRA is active and the TMZ only goes up to FL195, there is the potential for non-transponding gliders to operate over the TMZ in the supressed area and therefore be invisible to Lossiemouth controllers. Equally, traffic operating in the TRA within the lateral confines of the TMZ would not be visible on primary radar to Lossiemouth, thereby reducing the effectiveness of ATS provision. 2. How often do you think these impacts will occur? Daily. 3. Do you have any suggested mitigations or design changes you think should be considered? It was suggested that there is the potential for a technical solution, with the sponsor providing a NATS feed into Lossiemouth (ORRD is provided to many other airfields across the country), The base of cover over the area is such that the windfarm isn't visible, so the PSR doesn't need to be blanked. Therefore the TMZ only needs to be up to a very limited altitude. The vertical extent of the planned TMZ (FL195) would impact service provision; if it was to be FL100 or below then it would have less impact to 78 Sqn as they do not routinely provide a service below FL100. It would also have less impact to aircraft under the control of Lossiemouth ATC. However, this would conversely impact ATS provision up to and including the top of the TRA. 4. Do you think there may be any unintended consequences of the TMZ? See answer to question 1.	
Preferred option:	Do not support either Option 7(E) or 7(F)
It must be noted that the MOD airspace user preference is for no windfarm or associated TMZ. However, of the limited options presented, 7F presents the least-worst option.	
Overall, it is shown that each of the options would have a negative impact on Lossiemouth operations, with the potential to negatively impact air safety, hence the objection to the ACP. It is crucial that the solution mitigates not only the direct effect of the wind turbines, but how its existence impacts traffic outside solution itself e.g. through traffic displacement, re-routing traffic from	

a benign area to one that could have safety implications. The Sponsor should also be aware that the solution may exacerbate the cumulative effect of existing wind turbine installations that are without mitigations. However, the MOD recognises that for the short term there will need to be airspace mitigation, until a permanent solution is determined by the Sponsor, and MOD will continue open and honest conversations throughout the ACP process.	
CAP 1616 Categorisation	**Response which may impact the final proposal - the content of this response has the potential to impact on the proposal; it contains ideas that could lead to an adaptation in a lead design option.**
The respondent has objected to the proposed changes based on the impact a TMZ would have on MOD operations. **The respondent has suggested that providing Onward Routed Radar Data (ORRD) from alternate NATS radar sources into RAF Lossiemouth ATC could reduce the required top height of the TMZ, therefore reducing the impact on MOD operations. This, plus other ORRD options from other sources, is being actively investigated by the Change Sponsor as a technical mitigation.** **The proposal to implement an airspace solution has been initiated in direct response to the uncertainty about the performance of the new Air Traffic Management Systems being installed at RAF Lossiemouth. In this part of Scotland, there is no technical mitigation solution currently available which has been tested against wind farms already present in the area. This is a relatively unique set of circumstances where the windfarm is seeking to mitigate 2 separate radar systems operated by 2 separate operators who are in the process of implementing new radar systems with windfarm filtering technology which is unproven in the geography of the area. This airspace solution will allow the necessary financial investment decisions to be made to allow the development of the wind farm to commence in order to achieve an approved grid connection timeline of 2027. In seeking to meet a grid connection date in 2027, turbines are likely to be erected on site during 2026, subject to final programming. Erecting and operating the wind turbines will allow the Change Sponsor to test technical mitigation solutions and build confidence they work in this part of Scotland in order to fully discharge the conditions attached to the grant of consent.** **The Change Sponsor acknowledges the respondents concerns regarding flight safety primarily caused by the displacement of non-transponding traffic from the area of the TMZ. The Change Sponsor considers that this issue may be exacerbated by the inclusion of the buffer zone to the TMZ. Without the buffer zone, Option 7(E) is the smallest area required to be able to blank the wind turbines from the radar displays. The area is considered small and without a**	

concentration of traffic. There is already traffic operating outside the proposed area and the displacement of traffic is not considered to cause a significant increase.

Paul Jenkins	The Light Aircraft Association of the United Kingdom
Do you support the proposed Airspace Change Proposal?	OBJECT – I object to the proposed change

Force9 Energy

for Clash Gour Wind Farm ACP

272 Bath Street

Glasgow G2 4JR 20 May 23

Dear Sirs,

LIGHT AIRCRAFT ASSOCIATION RESPONSE TO CLASH GOUR AIRSPACE CHANGE PROPOSAL CONSULTATION

Reference: ACP-2021-046 Issue 1 dated 6th March 2023

1. I am writing in response to the referenced ACP on behalf of the UK-national Light Aircraft Association (LAA), and also on behalf of the local GA pilots of the Highland and Islands Strut of that LAA. Please acknowledge that the views that I express are principally those of our national Association.

2. The LAA is a national representative body for light aviation, which has some 7,800 members and regulates over 4,300 recreational and amateur-built aircraft on behalf of the CAA (2,700 of them active, the remainder as projects). Its aircraft fleet ranges from historic examples through homebuilt aircraft to modern high-performance aircraft with sophisticated navigation systems. Its members' experience and qualifications cover the full spectrum of professional to amateur, but they fly mainly in day-VFR conditions. The LAA is a member of the National Air Traffic Management Advisory Committee, and supports many other airspace safety initiatives.

3. The Highland and Islands Strut of the LAA is a long-established group of private pilots and aircraft builders, presently comprising over 60 members. The licences they hold vary between PPL(A)/LAPL and NPPL(A), and the ratings between IR and none. The aircraft that they fly include simple homebuilt aircraft such as the Evans VP1, high performance aircraft such as the Vans RV-6, and factory-built aircraft such as Jodels. Group ownership of aircraft is common. Some of the LAA aircraft are based at Inverness airport, the remainder at local private airstrips.

4. The Highland and Islands Strut is a particularly active and successful LAA Strut, and was in 2014 awarded the Faulkner-Bryant Shield, an annual LAA award that recognises the most active Strut within the LAA strut system.

Reason for Submission

5. First, we do not seek to argue that windfarms such as Clash Gour should not be built; that decision is a matter of national government policy. We would note, however, that the proposal to build the Clash Gour installations so close to a major air defence facility which is essential to the defence of the United Kingdom, is questionable. There are clearly other sites in the same (very large) geographical area where the wind turbines could be erected with much less impact on the radar capabilities of RAF Lossiemouth and Dalcross airport. It would be good to view the evidence for the choice of the Clash Gour site(s) as compared to other possibilities, and the sponsors are requested to produce that data.

Note: The proposed turbines would be erected on 3 adjacent sites to the south west of RAF Lossiemouth. In this response they are referred to collectively as "the windfarm."

6. Our main and strong objection to the ACP is the proposal that a wide and high TMZ should be imposed around the wind farm. Our reasons for this formal objection are explained below.

ACP Rationale for mitigating the effect of the windfarm turbines on radars.

7. It is well known that wind turbines will affect the on-screen data of earlier radars by producing "clutter" and thus making the detection of aircraft unreliable. The solution proposed in the ACP is to "gate" the data being presented on screen to remove that clutter. That, of course, has the effect of making aircraft within the gate effectively invisible to the radar operator. This is not safe.

8. There is another method for eliminating the clutter, and that is to upgrade the radars through the use of software so that the clutter is eliminated, and visibility of aircraft is sustained. This can be done, and has been in other locations. There is a cost to these modifications of course, and we seek information on whether the sponsors have established that cost, and whether they have offered to pay for the necessary upgrades. We observe that although the cost may be substantial, considering the many millions of pounds of profit that are likely to be made by the sponsors over the 30-year life of the windfarm, that cost may be considered trivial to the overall business case.

9. We request information on:

a. Whether the necessary radar upgrade costs have been established by the sponsor.

b. Whether the sponsors have had discussions with the RAF and with HIAL as to whether they would consider taking the upgrades, and

c. Whether the sponsor has made the offer to fund the upgrades.

d. Notwithstanding the ACP, whether there are plans by the MoD and HIAL to upgrade their radars, and if so, when will the improved radars become operational.

e. If there are plans for new radars, will they be able to "declutter" the effects of windfarms.

f. When the first turbines at Clash Gour will become operational.

10. Self-evidently, if the radars at RAF Lossiemouth and Dalcross airport are upgraded in this way, there is no need for a TMZ.

Frequency of light aircraft flights through the area.

11. The survey data on light aircraft in the windfarm area and beyond is scant and incomplete. Carried out over just a fortnight, and relying on data from aircraft transponding in Mode S, the ACP itself acknowledges that 60% of light aircraft are not equipped with Mode S transponders. The data thus fundamentally underestimates the true volume of traffic, both through the Mode-S cut-off and because of the limited duration of the survey. It is sensible to regard the data as unconvincing and invalid. The flights of gliders in that area will prove a very significant factor.

12. There are many reasons why a pilot may wish to transit through the area of the proposed TMZ:

a. To enter and leave the RAF Lossiemouth MATZ if based at RAF Lossiemouth (as are those aircraft of the Moray Flying Club).

b. To land at and depart from Shempston, which is within the MATZ and hard by the main runway at RAF Lossiemouth.

c. To transit the area to route to and from the gliding site at Easterton, just 5 Nm north-east of the north-eastern boundary of the proposed TMZ.

d. To transit the area to route to and from Dalcross.

e. To transit the area routing to and from more distant destinations such as the airfield at Insch.

13. Given that – as the ACP acknowledges – 60% of light aircraft are not Mode S transponder equipped, the proposed TMZ would constitute a wide and high block to that volume of airspace for such aircraft. We consider that unacceptable.

14. The above discussion does not speak for glider pilots, whose Association will make their own case.

Disruption to the flow of light aircraft.

15. The ACP notes that if a light aircraft was equipped with a Mode S transponder, then transit through the TMZ would be allowed. If the aircraft was not, however, then the very large volume of the TMZ must be avoided, and the ramifications of that avoidance are discussed here:

a. It should be borne in mind that whilst it is commonplace and courteous for light aircraft in Class G airspace to take a Basic air traffic service from local air traffic controllers/radar operators, it is not mandatory and pilots can legitimately fly in Class G airspace without radio contact.

b. What the proposed TMZ would do is to impose a 5 Nm corridor between the northern edge of the TMZ and the boundary of the RAF Lossiemouth MATZ. It will be noted that this corridor crosses the approach path to the main runway at RAF Lossiemouth. In addition, routing through the corridor will cause conflict with the major gliding site at Easterton.

c. With such a relatively narrow corridor and the proximity of Easterton, the margin for intrusion into either the TMZ or the MATZ or the gliding site is small, and the likelihood of a controlled-airspace breach would be significantly increased.

d. It might be argued that in good VMC following the corridor is not too difficult. This argument does not allow for poor and marginal weather conditions.

e. Those pilots who must divert south of the proposed TMZ are faced with other issues. By flying further south they encounter higher ground rising to 1,802ft and a little further south still, 2,330ft – a significant challenge if the weather is poor and the cloudbase is low.

16. The ACP does not explain that should a non-Mode-S aircraft wish, or need, to transit the TMZ, who would authorise the transit. It would be helpful to know whether this requirement has been discussed with the RAF and HIAL. We request information on:

a. Whether the procedures for transit have been discussed with RAF Lossiemouth and HIAL at Dalcross Airport.

b. What protocols have been agreed for control of such aircraft.

c. What light aircraft conspicuity aids other than Mode-S (for example, SkyEcho, etc) can be displayed on the RAF Lossiemouth and Dalcross radars.

d. For those conspicuity aids that can be displayed, whether the controllers at each site are authorised to act on that information.

e. Whether, as quoted in the ACP, the . . . "minor cost associated with controller training and that a cost shall be incurred for the staffing and management of the TMZ" . . . has been quantified.

f. Whether these costs have been agreed with the RAF and with HIAL.

g. Whether the ACP proposer will fund these staff costs.

The costs of installation of Mode-S transponders

17. If the TMZ was imposed, then those LAA aircraft owners operating in the area that were not Mode-S equipped would have to instal the missing equipment or replace the lower-capability (Modes A & C) transponders if they foresaw a need to transit the TMZ. This is not a cheap matter. A typical cost for purchasing the equipment and self-installing would be £2,545 at current prices; much more if professionally installed – around £5,000.

18. A quick survey of 23 locally based LAA aircraft showed that 15 presently have Mode-S transponders, and 8 would have to upgrade if needing to transit the TMZ.

a. Although within the LAA we do not operate certified aircraft (such as flying school aircraft) the cost of upgrading them to Mode S, given that they are not allowed to self-instal, will be of the order of £5,400 per aircraft.

19. We request information on whether the ACP sponsor is willing to pay for the installation of Mode-S transponders on our LAA aircraft. Our limited survey indicates that the overall one-time cost would be in excess of £40,000, assuming professional installation.

The extent of the proposed TMZ

20. The argument for a 2 Nm "buffer" around the polygon described in Option 7F of the ACP is not convincing. It is our opinion that should the TMZ be authorised, then there is no need for a buffer, as pilots who are aware of the TMZ will naturally route to avoid intrusion. The buffer simply serves to increase the degree of inconvenience, and it also serves to reduce the safety margins for GA flights.

21. Similarly, the concept in the ACP of excluding non-Mode-S aircraft from the proposed TMZ up to FL195 is very far from convincing, being founded on absolutely zero data on high-level movements in the area. (Particularly gliders). Furthermore, in

imposing this very high flight level limit the proposal generates an exclusion volume for non-Mode-S aircraft of around 180 cubic nautical miles. This is very far from the "small scale" described in Para 5.2 of the ACP. More realistically, it is a major (and in our view completely unnecessary) intrusion into what is presently Class G airspace.

Lack of precedent for use of TMZs with windfarms

22. There are many, many windfarms in the north of Scotland. On Edition 35 (2022) of the 1:500,00 Aeronautical Chart of the north of Scotland, there are 13 windfarms within a radius of 20 Nm of each of RAF Lossiemouth and HIAL Dalcross. None of these windfarms have a TMZ associated with them.

23. One of these, the Berry Burn windfarm, is within 6 Nm of the RAF Lossiemouth MATZ and has been operating there for 8 years. It has 29 large turbines reaching up to 99.5 metres AGL, and in total has a maximum output of 66.7MW. Berry Burn is closer to RAF Lossiemouth than Clash Gour, and it does not have a TMZ associated with it.

24. The ACP seeks to play on safety concerns as justification for the proposed TMZ. From standpoint of a GA pilot, all they need to know is the location of the windfarm and the spot height of the highest obstacle there. These are marked on aeronautical charts, and translated into navigation aids such as SkyDemon. Far from enhancing safety as argued in the ACP, the introduction of a TMZ will reduce safety for GA pilots by restricting their Class G airspace routing options. This reduction is exacerbated in poor weather conditions.

Summary of the LAA view on the Clash Gour ACP

25. It is the view of the Light Aircraft Association of the UK that this ACP is poorly constructed, and that the imposition of a TMZ would be inappropriate, and unnecessary.

26. The safety case attempted by the sponsors of the ACP lacks essential supporting data. There are many unanswered questions, as explained above. In particular, the proposal that the data on radars should be gated to exclude windfarm clutter is inherently unsafe. There are also alternative solutions such as the upgrading of radars, where relevant questions are not asked in the ACP, let alone answered. In our view, the argument that the ACP would enhance safety is, in Scottish legal terms, "not proven."

27. The Light Aircraft Association wishes to formally and strongly object to the imposition of a TMZ through this ACP.

Paul Jenkins

On behalf of the LAA CAA Airspace Change Portal LAA HQ, fao: Ian Sweetland Programme Manager, General Aviation Alliance LAA Highland and Islands Strut for circulation	Cc (by email):
Preferred option:	Do not support either Option 7(E) or 7(F)
Neither option is acceptable to us (see Section 8 response above). We strongly object to the whole concept of imposing a TMZ.	
We believe that a TMZ is inappropriate and unnecessary. It would be helpful if this portal gave the ability to attach a PDF of our Objection letter.	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent has objected to the proposed changes based on the impact a TMZ would have on GA operations but has not provided any suggestions that could lead to an adaptation to the design. **The size and location of the proposed Clash Gour wind farm was considered as part of the development consent process. That process included engagement with relevant aviation stakeholders to determine the impact of the wind farm on aviation radar systems and operations. The grant of consent to develop the wind farm, granted by Scottish Ministers, included two conditions that require the development and agreement of an Air Traffic Control Radar Mitigation Scheme each in respect of both RAF Lossiemouth and Inverness Airport. This ACP is established in response to that requirement and deals solely with proposed airspace solutions as mitigation to any effect the windfarm may have on the Air Traffic Control (ATC) capability of the two units.**	

The proposal to implement an airspace solution has been initiated to create a path to satisfy the aviation related conditions attached to the grant of consent for the wind farm. In this part of Scotland, there is no technical mitigation solution currently available which has been tested against wind farms already present in the area. This is a relatively unique set of circumstances where the windfarm is seeking to mitigate 2 separate radar systems operated by 2 separate operators who are in the process of implementing new radar systems with windfarm filtering technology which is unproven in the geography of the area. In other parts of Scotland, proven technical mitigation solutions are already available and airspace change solutions will not be required. The proposal does not therefore set precedent in the manner suggested by the respondent. This airspace solution will allow the necessary financial investment decisions to be made to allow the development of the wind farm to commence in order to achieve an approved grid connection timeline of 2027. In seeking to meet a grid connection date in 2027, turbines are likely to be erected on site during 2026, subject to final programming. Erecting and operating the wind turbines will allow the Change Sponsor to test technical mitigation solutions and build confidence they work in this part of Scotland in order to fully discharge the conditions attached to the grant of consent.

The Change sponsor acknowledges the respondents concerns regarding flight safety primarily caused by the creation of a corridor which increases the likelihood of a controlled-airspace breach. The Change Sponsor also acknowledges the respondents view that there is no requirement for the inclusion of the buffer zone to the TMZ. Without the buffer zone, Option 7(E) is the smallest area required to be able to blank the wind turbines from the radar displays.

The Change Sponsor acknowledges the respondents concern regarding the vertical extent of the proposed TMZ. The Change Sponsor is investigating alternate technical mitigations that may allow the required top height of the TMZ to be reduced.

The issue of compensation relating to the costs of equipment to enable glider operations to continue in the vicinity of the TMZ is outside the scope of this ACP; however, it is an issue that the Change Sponsor will consider as the project moves forward. Clash Gour wind farm comes with a proposed community fund and shared ownership offering and there is nothing to prevent flying clubs in the area exploring the possibility of using community fund grants to support their activities, like any other clubs and organisations in the area.

Robert Tait	Highland Gliding Club Ltd
Do you support the proposed Airspace Change Proposal?	OBJECT – I object to the proposed changes

The Highland Gliding Club is based at Easterton Airfield just south of Elgin in Scotland. We are the closest active airfield to the proposed TMZ being only 5nm from its nearest point.

The British Gliding Association and General Aviation Alliance are producing a response which we at Highland Gliding Club wholly agree with so this response is focussed more on the direct impact your proposal will have on our airfield and users.

The Highland Gliding Club has been operating from Easterton Airfield since 1991. We have approximately 30 aircraft based on our site split between gliders and power. About half of the fleet is equipped with transponders. Gliding is usually but not exclusively carried out at weekends and powered aircraft operate 7 days a week routinely. Gliding competitions are held occasionally involving up to 25 gliders and we can have visiting aircraft at any time of the year. Only about half of the glider pilots on site have RT licenses.

On many flying days, gliders are aerotowed to the southwest of the airfield in order to access the better soaring conditions found there. From release, they will usually operate in and around that area until established in lift and then move on once they have gained height. Light aircraft based at Easterton are equally likely to route through this area on a regular basis. Our data analysis of glider flights indicates about 1/3 of all soaring flights take place in the proposed TMZ and in the last year alone (1st March 2022 - 1st March 2023), 113 (glider) flights were logged in the proposed TMZ and there were 1021 logged flights from Easterton.

Powered aircraft based on site do not electronically log flights routinely but operating 7 days per week regularly will exceed these numbers considerably. However, we do have evidence from Skydemon heat maps that clearly show this airspace is regularly crossed by light aircraft. We can provide all this evidence separately as attachments.

The proposed TMZ will deny access to Class G airspace that we have been using regularly for over 30 years and which is essential to the club as a primary soaring area. For us, this is not a small area, it would become a significant barrier which would prevent many people from soaring cross country. Clearly, this will have a significant and detrimental effect on the club for no discernible safety benefit to us or any other user. Indeed, it is likely to reduce safety for us as pilots are forced to avoid this TMZ to the west taking them over higher and wider unlandable terrain. GA traffic that is unable to access this TMZ will be forced north or south of

it. Any traffic routing north, over the lower ground will have no choice but to pass within 3 miles of our airfield as it squeezes between our airfield and Lossiemouth's MATZ further reducing separation from what can be a busy airfield. The argument made in your document does not make sense to us. Both Lossiemouth and Inverness are based at sea level and have high ground to the south of them. As a result, the area behind the hill is blank to radar cover already. We know from experience that radar cannot see any aircraft anywhere in the Spey valley up to about 2000' amsl and radio communications are unreliable at best. This does not seem to have been a cause for concern for the last 30 years. It has been accepted that pop up traffic can appear from behind the hill. This proposal will have a significant and detrimental effect on our safety, operation, income and membership. We can foresee no benefit whatsoever to us or indeed any other airspace users. We would like to help in terms of finding other, less impactful solutions that can address the concerns raised by Inverness and Lossiemouth radar.	
Preferred option:	Do not support either Option 7(E) or 7(F)
We do not believe that this is the right solution to the problem. Every effort should be made to find a technical mitigation to the radar coverage issue rather than creating the precedent of large areas of transponder mandatory zones for the convenience of commercial, non aviation related, gain.	
Highland Gliding Club Ltd is not opposed to the development of windfarms. Our objection purely relates to the unnecessary imposition of airspace which will have a significant and detrimental effect on our club. We do not have large financial resources to call on to mitigate these impacts and as a volunteer run, not for profit organization.	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent has objected to the proposed changes based on the impact a TMZ would have on their operations but has not provided any suggestions that could lead to an adaptation to the design.	

The proposal to implement an airspace solution has been initiated to create a path to satisfy the aviation related conditions attached to the grant of consent for the wind farm. In this part of Scotland, there is no technical mitigation solution currently available which has been tested against wind farms already present in the area. This is a relatively unique set of circumstances where the windfarm is seeking to mitigate 2 separate radar systems operated by 2 separate operators who are in the process of implementing new radar systems with windfarm filtering technology which is unproven in the geography of the area. In other parts of Scotland, proven technical mitigation solutions are already available and airspace change solutions will not be required. The proposal does not therefore set precedent in the manner suggested by the respondent. This airspace solution will allow the necessary financial investment decisions to be made to allow the development of the wind farm to commence in order to achieve an approved grid connection timeline of 2027. In seeking to meet a grid connection date in 2027, turbines are likely to be erected on site during 2026, subject to final programming. Erecting and operating the wind turbines will allow the Change Sponsor to test technical mitigation solutions and build confidence they work in this part of Scotland in order to fully discharge the conditions attached to the grant of consent.

Nicholas Norman	British Gliding Association
Do you support the proposed Airspace Change Proposal?	OBJECT – I object to the proposed changes

This response is submitted on behalf of the British Gliding Association. The British Gliding Association (BGA) is the governing body of sport gliding in the UK and represents the interests of some 6500 members of the UK's 78 gliding clubs including the operators of some 2200 sailplanes.

1/ The sponsor has not interest in aviation, its safety or utility. The sole purpose of this ACP is to enable planning consent to be gained so that a profitable commercial project can be built regardless of any detriment to others.

2/ No attempt has been made to consider the exportation of risk from within the proposed TMZ, into the area around it. No attempt has been made to evaluate the levels of non-SSR traffic using the area of the TMZ. The only traffic data is from SSR equipped aircraft, and of course such aircraft will anyway not be affected by a TMZ.

3) No analysis has been attempted as to the likely detriment to Inverness and Lossiemouth primary radars, and the possible reduction in safety arising from rotating blade interference and whether such a reduction in safety requires action to improve it. These radar heads are some distance from the windfarm site and probably don't have line of site to near ground level. Certainly VHF radio contact at levels near the top of the proposed blades is difficult.

The windfarm is to be built on fairly high ground and there is low ground beyond it, so the situation has always been that there is a radar "blind spot" in the valley, and pop up traffic has always been a probability.

4) The safety case for requiring a TMZ has not been made, and cursory review strongly suggests that there is no such valid case.

5) No analysis has been attempted of the detriment created by a TMZ to GA aircraft, especially light aircraft and gliders flying from Highland Gliding Club at Easterton, which is sited very close to the proposed TMZ. Most gliders do not have SSR, those that do have limited battery capacity, and most glider pilots do not hold a FRTOL. Even for those glider pilots that do have an FRTOL, contacting ATC is a major distraction that reduces soaring efficiency and thus increases the probability of a land-out.

6) Should a TMZ be created, there has been no indication as to who would be the controlling authority. Our understanding is that neither Inverness nor Lossiemouth want to take on this responsibility, and so far in answer to the direct question at this late stage, the sponsor is unable to say who the responsible ANSP would be. The BGA strongly opposes any TMZ without a related

ANSP to grant access to non-SSR traffic, as per CAA's policy on RMZ/TMZ. Such airspace becomes prohibited airspace to non-SSR traffic. 7) Inverness will have the Terma Scanter 4002 windfarm mitigation radar installed shortly, expected to be operational by the end of this year, and a significant upgrade of primary and secondary radar in 2024 so it is highly likely that, even if there would currently be some intolerable interference, that post these upgrades the problem would become insignificant. We believe Lossiemouth is also having significant radar upgrades in the near future. Meanwhile the Clash Gour windfarm will not have blades turning for another 2 to 3 years at best. By this time it is likely that both airfields' radars will have been modernised to cater for, amongst other things, windfarm generated interference. 8) As far as we can tell, there has been minimal contact between Clash Gour Holdings and either Lossiemouth or Inverness. Faced with the planning hurdle, CGH have gone straight for the ACP to establish a TMZ, rather than any significant attempt at negotiations with either of the airfields. 8) If we hypothesise that despite the objections and lack of rationale, the TMZ is approved, then there is a large risk that the TMZ will remain extant even after all reasonable grounds for its creation have ceased to exist. There will be no motivation within Lossiemouth or Inverness to have it disestablished or even to agree to its disestablishment since it will not be any burden to them, and there are no criteria agreed for the level of radar clutter that can reasonably be tolerated. Certainly Clash Gour Holdings will have no desire to get the TMZ removed when it becomes superfluous. Once they obtain their planning permission that will be the last of their interest in the matter. 9) It should once again be pointed out that the interests of big business are attempting to run roughshod over the "little guy" at Easterton with his sub-£10k glider, no professional resources to fight this ACP, and faced with either a bill of around 50% of the value of his aircraft to install SSR, or the establishment of a significant area of prohibited airspace very close to the airfield over prime soaring terrain. As such the BGA is strongly opposed to this ACP. In addition to the detriment to local GA and in particular Easterton airfield, we are very concerned about the precedent set that would enable many other TMZs to be established at any of the very many and increasing number of windfarms in Scotland.	
Preferred option:	Do Nothing

CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent has objected to the proposed changes based on the impact a TMZ would have on GA operations but has not provided any suggestions that could lead to an adaptation to the design. **Clash Gour is a strategically important project in the context of Scottish national targets for renewable energy production (12GW on new onshore wind capacity by 2030 set out in the On Shore Wind Policy Statement December 2022. Clash Gour is expected to produce sufficient electricity annually to power up to 193,000 homes.** **The size and location of the proposed Clash Gour wind farm was considered as part of the development consent process. That process included engagement with relevant aviation stakeholders to determine the impact of the wind farm on aviation radar systems and operations. The grant of consent to develop the wind farm, granted by Scottish Ministers, included two conditions that require the development and agreement of an Air Traffic Control Radar Mitigation Scheme each in respect of both RAF Lossiemouth and Inverness Airport. This ACP is established in response to that requirement and deals solely with proposed airspace solutions as mitigation to any effect the windfarm may have on the Air Traffic Control (ATC) capability of the two units.** **The proposal to implement an airspace solution has been initiated to create a path to satisfy the aviation related conditions attached to the grant of consent for the wind farm. In this part of Scotland, there is no technical mitigation solution currently available which has been tested against wind farms already present in the area. This is a relatively unique set of circumstances where the windfarm is seeking to mitigate 2 separate radar systems operated by 2 separate operators who are in the process of implementing new radar systems with windfarm filtering technology which is unproven in the geography of the area. In other parts of Scotland, proven technical mitigation solutions are already available and airspace change solutions will not be required. This airspace solution will allow the necessary financial investment decisions to be made to allow the development of the wind farm to commence in order to achieve an approved grid connection timeline of 2027. In seeking to meet a grid connection date in 2027, turbines are likely to be erected on site during 2026, subject to final programming. Erecting and operating the wind turbines will allow the Change Sponsor to test technical mitigation solutions and build confidence they work in this part of Scotland in order to fully discharge the conditions attached to the grant of consent.**	

Robert Tait	**Individual (Air Ambulance Captain** **Fixed Wing Kingair Aberdeen)**
Do you support the proposed Airspace Change Proposal?	OBJECT – I object to the proposed changes
I am responding separately from the Highland Gliding Club submission because in my professional role as a fixed wing Air Ambulance Pilot flying the Kingair fixed wing out of Aberdeen, I am familiar with routing through this airspace. We regularly route from Aberdeen to Inverness or the West Coast islands and back which takes us straight through this area. I do not believe that the imposition of this airspace will have any positive effect on safety and will therefore be unnecessary. The reason for this is we already have radar clutter in that area from the existing windfarms so regularly get informed by ATC of possible traffic ahead. If we are in VMC conditions, we just ask for a Traffic Service and can choose to follow avoidance vectors or usually fly straight through. In IMC and at night on a deconfliction service, we will get minor course correction vectors of about 10 degrees for a few minutes at most adding a maximum of 60 seconds to our flight time. Creating this relatively small but massive vertical extent TMZ will only create extra workload for us in the cockpit with pointless radio calls announcing a traffic/deconfliction service against transponding traffic only for the 2 minutes it will take to cross the area. This at what is often a busy time in the cockpit when we are getting weather information for our destination or briefing for landing, especially when landing at Inverness.	
Preferred option:	Do not support either Option 7(E) or 7(F)
Imposing the airspace above will force more light aircraft to the peripheries of this TMZ increasing its density at pinch points and therefore increasing the risk to us when we are flying VFR. The proposed airspace will simply increase workload in the cockpit at a busy time and will serve as an unnecessary distraction which leads to lowering of situational awareness and consequent reduction in safety.	

Given this is currently class G airspace. Surely a better solution would be for the two air traffic centres (Lossiemouth and Inverness) to put the area bounded by the TMZ on their screens and simply direct IFR traffic around it or offer them a traffic service and they can go through at their own risk. It has a negligible impact on routing or fuel burn. VFR traffic can route through at their own risk. Exactly as happens just now with the existing clutter. As highlighted by Clashgour in their own consultation documents, very few IFR aircraft operate in this area so why create a complex and vastly oversized TMZ that no one wants which will not improve safety for anyone and indeed will reduce safety for both GA traffic and IFR traffic.	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent has objected to the proposed changes based on the impact a TMZ would have on their operations but has not provided any suggestions that could lead to an adaptation to the design. **The Change Sponsor acknowledges the respondents concern regarding the vertical extent of the proposed TMZ. The Change Sponsor is investigating alternate technical mitigations that may allow the required top height of the TMZ to be reduced.** **The Change Sponsor acknowledges the respondents concerns regarding the creation of pinch points caused by the displacement of non-transponding traffic from the area of the TMZ. Without the buffer zone, the proposed area is considered small and without a concentration of traffic. There is already traffic operating outside the proposed area and the displacement of traffic is not considered to cause a significant increase.**	

Anonymous	Manager Operation Policy
Do you support the proposed Airspace Change Proposal?	NEUTRAL – I neither support nor object
No impact.	
Preferred option:	Option 7(F)
Although the ACP recognises that there will be an impact on non-transponding a/c and you discuss glider exemptions; however, please can you confirm which unit you are anticipating providing the TMZ crossing service to non-transponding a/c?	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent neither supports nor objects to the proposal based on the impact a TMZ would have on their operations and has not provided any suggestions that could lead to an adaptation to the design.	

Marc Macrae	Individual
Do you support the proposed Airspace Change Proposal?	OBJECT – I object to the proposed changes
The introduction of a TMZ will have a very negative effect upon general aviation not just those operating here in Moray but those transiting through the area from recreational airfields. The northeast has long been a well known gliding base, with the Highland Gliding Club originally operating from the old wartime former RAF Dallachy airfield and since 1991 Easterton Airfield near Elgin which is only a few miles away from the proposed TMZ. Random following of Flightradar demonstrates a significant number of flights from Easterton Airfield by both cable launched gliders and microlight, self launching gliders and other light aircraft. It is clear to the enthusiast eye that many of these flights are operating in or through the proposed TMZ area, and I was greatly surprised when attending the in-person event at Elgin Town Hall that the statistics on display demonstrated very little traffic overflying Moray at less than 20,000ft. I commented at that time that I was unable to accept the statistics on display as accurate. I am aware that several gliding clubs regularly visit the area, some annually, Edinburgh University Gliding Club etc, with in the better days gliding taking place on almost a daily schedule, yet all done voluntarily by member organisations. I understand from the in-person event that MOD are looking at radar upgrades for RAF Lossiemouth which may or may not mitigate the need for such a TMZ to be introduced. With gliders having slightly less ability to remove themselves if a TMZ is introduced alongside the neighbouring MATZ covering RAF Lossiemouth this would greatly reduce options should the need arise to land away for any reason. Aircraft of whatever type without a transponder or radio equipped with a licensed operator will be brought closer together and an increased risk as they funnel through the area. A suggested mitigation would be the relocation of further windfarm developments to other areas of Scotland, given the vast geographical area available.	
Preferred option:	Do not support either Option 7(E) or 7(F)

In my mind this proposed TMZ will set a dangerous precedent and could lead to an end of Class G airspace not just here but across wider Scotland and indeed the UK as a whole. This is not just a local issue to airspace above Moray but a national issue of things to come. As mentioned earlier, the introduction of the TMZ will result in more light aircraft flying on the periphery of the zone which will further increase the potential for incidents to occur as already busy pilots have the potential to lose situational awareness.	
Windfarms have a place in the need for transition to greener renewable energy supply sources. Scotland has a vast geographical space for such development which would take them away from both civil and military aviation areas. A vast landscape where the only aircraft overflying would likely be in excess of 30,000 feet and well beyond the scope of radar clutter from a wind turbine. This proposal puts commercial gain over aviation safety with no thought of the financial penalty this will pose to gliding and light aviation operators who would require expensive updates to transponder and radio equipment to maintain the right to use existing airspace.	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent has objected to the proposed changes based upon the impact a TMZ would have on their operations but has not provided any suggestions that could lead to an adaptation to the design. **The size and location of the proposed Clash Gour wind farm was considered as part of the development consent process and is outside the scope of this ACP. This ACP is established in response to the requirement and deals solely with proposed airspace solutions as mitigation to any effect the windfarm may have on the Air Traffic Control (ATC) capability of RAF Lossiemouth and Inverness Airport.** **The proposal to implement an airspace solution has been initiated to create a path to satisfy the aviation related conditions attached to the grant of consent for the wind farm. In this part of Scotland, there is no technical mitigation solution currently available which has been tested against wind farms already present in the area. This is a relatively unique set of circumstances where the windfarm is seeking to mitigate 2 separate radar systems operated by 2 separate operators who are in the process of implementing new radar systems with windfarm filtering technology which is**	

unproven in the geography of the area. In other parts of Scotland, proven technical mitigation solutions are already available and airspace change solutions will not be required. The proposal does not therefore set precedent in the manner suggested by the respondent. This airspace solution will allow the necessary financial investment decisions to be made to allow the development of the wind farm to commence to achieve an approved grid connection timeline of 2027. In seeking to meet a grid connection date in 2027, turbines are likely to be erected on site during 2026, subject to final programming. Erecting and operating the wind turbines will allow the Change Sponsor to test technical mitigation solutions and build confidence they work in this part of Scotland in order to fully discharge the conditions attached to the grant of consent.

The Change Sponsor acknowledges the respondents concerns regarding the funnelling of aircraft in the area outside of the proposed TMZ. Without the buffer zone, the proposed area is considered small and without a concentration of traffic. There is already traffic operating outside the proposed area and the displacement of traffic is not considered to cause a significant increase.

Anonymous	ATM Professional Support , Highlands and Islands Airports Limited
Do you support the proposed Airspace Change Proposal?	OBJECT – I object to the proposed changes

HIAL objects to the Clash Gour ACP for a TMZ, both with and without a buffer. The justification for the objection is based on the potential for:

increased risk of airborne conflict

increase controller workload

funnelling of non-EC equipped aircraft, unwilling or unable to utilise the TMZ crossing service, into areas that will have an increased impact on the traffic patterns at Lossiemouth and Inverness

Avoidance of aircraft, as per c. above, leading to the rerouting of IFR aircraft and increased noise profile, additional track miles, increased carbon footprint

Justification

The proposed area for the TMZ contains approaches and departures from RAF Lossiemouth and is adjacent to the downwind leg to RW23 at Inverness. The current arrangement for deconfliction of these movements is challenging enough, due to the speeds involved and the performance of the aircraft routinely involved. To add a TMZ to the area that has the potential to move non-EC equipped aircraft directly into the path of aircraft requiring deconfliction from such traffic. The pattern of life (Fig 6 in the consultation document) diagram does not reflect the routine traffic levels at RAF Lossiemouth; there appears to be only one departure or arrival from RAF Lossiemouth during this two week period, and as highlighted this doesn't capture the non-transponding aircraft in that area; the exact traffic that the TMZ will affect. To add useful context the Rwy in use or the predominant wind direction for that two week period would be beneficial to understand how representative the pattern of life is. Additionally, the pattern of life map shows the track over the ground of an aircraft. However, dependent on service provision, the ATCO may need to apply 3nm or 5nm left and right of that track to establish a deconfliction minima. Most of the tracks positioned to RW 23 base leg for an IAP would be within 5nm of the edge of the TMZ buffer and therefore, a primary contact avoiding the TMZ on the western side, would require Inverness ATC intervention and rerouting of the IFR aircraft potentially leading to:

increased noise profile increase in cockpit and controller workload at a critical stage of flight higher risk of unstable approach due to late positioning on final approach due to avoidance action increase in track miles flown increasing carbon footprint. Para 4.2 /5.21 does not explain how ATCO SA will be increased by a TMZ with primary radar blanking and Inverness ATC challenge the accuracy of that statement. The location of the proposed TMZ potentially creates a very tight funnelling effect of aircraft routing East – West and vice versa between RAF Lossiemouth airspace and traffic on Inverness final approach track coupled with high ground that would increase the potential for airborne confliction between light aircraft in the area as they avoid the TMZ (anecdotal evidence that GA pilots, even with a serviceable transponder will still largely avoid the TMZ area rather than fly through it). For non-transponding aircraft requiring a clearance through the TMZ there will be an increase in workload on a single ATCO position, especially during normal day operations and would be a relatively low priority, thus increasing the chance of an airspace infringement. The area of the proposed TMZ is also the area commonly used for the handover of aircraft between RAF Lossiemouth and Inverness. Whilst often this is completed on a freecall basis, the proposed TMZ would increase the likelihood of co-ordination; this has the potential to distract the ATCO from their primary task. The proposed TMZ is on the direct route from Inverness to the Aberdeen entry and exit point for en-route flight into Free Route Airspace, and as such is regularly overflown. Most of these aircraft are transponder equipped and as such will be unaffected by the proposed TMZ. The Local Training Area (LTA), as detailed in the RAF Lossiemouth-Inverness ATC letter of agreement, will be affected. This is a recognised area of Class G for GA aircraft to route via or operate in to avoid the busier part of airspace utilised by both units and facilitates the commonly used route via Kinloss (approved Visual Reference Point) to Grantown-on-Spey to operate in the Grantown on Spey to Loch Morlich/A9 area. The proposed TMZ is also immediately adjacent to Lochindorb Visual Reference Point. These Visual Reference Points are a nationally published navigational waypoints for VFR aircraft that are invariably utilised by GA and they are often non-transponder equipped.

Inverness has been made aware of impacts to the way that RAF Lossiemouth will routinely control traffic for RW05 Surveillance Radar Approaches if the proposed TMZ is in place. This repositioning of the Lossiemouth aircraft would result in an increased likelihood of confliction between aircraft nose to nose when Inverness operate on RW 23.	
Preferred option:	Do not support either Option 7(E) or 7(F)
Inverness airport ATC operations will be affected, as described, by the introduction of a TMZ in the proposed location. The technical solution to mitigate the impact of windfarms on the airport PSR is due to come into operation in Q4 of 2023 and a similar solution is believed to be in the pipeline at Lossiemouth. These technical solutions would negate the requirement for a TMZ.	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent has objected to the proposed changes based on the impact a TMZ would have on their operations but has not provided any suggestions that could lead to an adaptation to the design. **The proposal to implement an airspace solution has been initiated to create a path to satisfy the aviation related conditions attached to the grant of consent for the wind farm. In this part of Scotland, there is no technical mitigation solution currently available which has been tested against wind farms already present in the area. This is a relatively unique set of circumstances where the windfarm is seeking to mitigate 2 separate radar systems operated by 2 separate operators who are in the process of implementing new radar systems with windfarm filtering technology which is unproven in the geography of the area. In other parts of Scotland, proven technical mitigation solutions are already available and airspace change solutions will not be required. This airspace solution will allow the necessary financial investment decisions to be made to allow the development of the wind farm to commence to achieve an approved grid connection timeline of 2027. In seeking to meet a grid connection date in 2027, turbines are likely to be erected on site during 2026, subject to final programming. Erecting and operating the wind turbines will allow the Change Sponsor to test technical mitigation solutions and build confidence they work in this part of Scotland in order to fully discharge the conditions attached to the grant of consent.**	

The Change Sponsor acknowledges the respondents concerns regarding the funnelling of aircraft in the area outside of the proposed TMZ and associated increase in workload and impact on operations. Without the buffer zone, the proposed area is considered small and without a concentration of traffic. There is already traffic operating outside the proposed area and the displacement of traffic is not considered to cause a significant increase.

Tom Hardie	Programme Manager, General Aviation Alliance
Do you support the proposed Airspace Change Proposal?	OBJECT – I object to the proposed changes

Summary. Because any TMZ has a negative impact upon general aviation, in particular the reduced safety for all surrounding Class G VFR flights through the displaced flights, and the lack of enough information to be able to reach a fully reasoned assessment, the GAA has no option but to object to the proposal for any TMZ that does not have a proven sustainable need. We find the airspace safety need for the Clash Gour TMZ to be far from proven from the information that is available, and believe that should more of the missing data be available the case would be even weaker.

Objections due to a lack of sufficient information to be able to make a fully reasoned decision:

- The TMZ's Controlling Authority has yet to be defined. Until that is done it isn't possible to assess the full impact of any TMZ upon those aircraft that are not transponder equipped but could use VHF radio to obtain access, e.g. what is the VHF radio coverage from that unit for the whole of the TMZ's volume? We know from practical experience that neither Inverness nor Lossiemouth, nor indeed a combination of the two, have complete VHF coverage for parts of the proposed TMZs south of the windfarm. For what hours will the Controlling Authority be available to facilitate access?
- The proposed dates, even in draft form, for the first potential impact (blades turning) of the windfarm have not been published with the ACP proposal and so it hasn't been possible to assess from when the TMZ will actually be required should it be approved.
- There is no data as to the project dates for the replacement radars for Inverness and Lossiemouth nor any indication as to what testing will be carried out upon those radars to assess their manufacture stated abilities to mitigate the negative windfarm effects that both locations currently experience.
- There are no stated criteria that will be used to confirm that the new radars have acceptable performance with respect to the Clash Gour windfarm.
- There is no acknowledgement let alone assessment of the existing impacts from the windfarms that literally immediately surround the location of the Clash Gour windfarm. From the apparent inaction since these windfarms started operations it would appear that the effects have been acceptable?

- HIAL have not given even one example of an operational issue? Nothing to mitigate can surely only mean that no mitigations are required, and also cannot be assessed by other stakeholders for pertinence and veracity. We do not believe that there are any issues from the Clash Gour windfarm that will affect Inverness ATC.
- Despite a request for details of what radar technical mitigations have been considered no assessment of what is currently available was included in the ACP proposal, or has been forthcoming since.
- The traffic data given in the ACP consultation document is of such poor quality as to render it at best inappropriate and at worst severely misleading. Easterton has compiled markedly more accurate data and this can be obtained from them.

Objections due to the negative impacts of a TMZ:

- There are many aircraft types that currently fly through this area that are physically unable to fit a transponder, e.g. paragliders, paramotors, hang gliders, some gliders, some microlights, some permit aircraft.
- Of the aircraft unable to transpond the majority of them will not have the necessary VHF radio equipment and the licences to request access from the Controlling Authority thus rendering the airspace permanently closed. See also the point about the Controlling Authority above.
- Through aircraft having to route round the TMZ this will lead to reduced safety for those aircraft and the existing traffic through increasing the numbers of aircraft per volume of airspace. This is of significant concern for those non-transponding flights forced into the areas of Lossiemouth's extended centre-line and Inverness's approach path, as well as those forced closer to Easterton than they would otherwise need.
- Even if the radar issues are present until a technical resolution is available it is only a matter of a few degrees of track change and at most a few minutes of flight time by the sorts of aircraft managed by Lossiemouth and Inverness to route round the windfarm and its effects. Whereas for non-transponding GA aircraft it can vary from impossible to reroute, resulting in the increased danger of an outlanding or having to turn around, to having to flying an inhospitable route.
- For the soaring aircraft based at Easterton a TMZ will be a major blockage to their existing normal operations, e.g. with sea breezes the high ground is frequently the only route back home, and the area is considered a valuable local soaring area.
- Even with a grant scheme for aircraft resident within a certain distance of the TMZ to fit transponders that does not help those non-transponding aircraft based further away that wish to visit the area.

Objection due to apparently uncorrected false data in a document submitted to the CAA: • In the "Design Principles Evaluation" dated 04Jul2022, as posted on the CAP1616 Portal, on Page 39 in Paragraph 2.13 it states: DP1 "Safety: Ensure an acceptable level of safety for aircraft within and displaced by any proposed airspace solution" and the Evaluation is "Met". This cannot be true as there is no demonstrable consideration of the reduced safety that will be inflicted between some flights displaced by the proposed TMZ and other flights through increased traffic density, particularly for those non-transponding flights forced into the areas of Lossiemouth's extended centre-line and Inverness's approach path, as well as those forced closer to Easterton than they would otherwise need. The GAA raised the issue of the incorrect document by email on 01Sep2022 with apparently zero results. It had raised the safety issue at two prior meetings that it had attended as part of the engagement process.	
Preferred option:	Do Nothing
This TMZ proposal is a UK wide precedent for onshore windfarm TMZs that cannot be allowed to continue as proposed because it places commercial gain over and above aviation safety, with also negative financial and operational impacts upon existing airspace users. Should the proposed TMZ be approved we believe that it is essential that it is subject to all the following conditions in order to minimise the effects upon as many aircraft and flights as possible: • It is titled as a TMZ(T), i.e. a Temporary TMZ, to indicate that the aim remains to have a technical radar solution as the final outcome. • The TMZ(T) will not commence until blades are turning 24/7. Testing prior to this to be subject to NOTAM action. • That the TMZ is not established where there is insufficient VHF radio coverage for the Controlling Authority to be able to grant access to VHF equipped but non-transponding aircraft	

• That there is a documented specification for the radars to meet to prove acceptable performance • That there is a documented timetable for the testing of the radars for acceptable performance which caters for successive failures to meet the specification • That a Working Group (WG) is established to monitor the progress towards the radars having acceptable performance. The WG to have fixed Terms of Reference and that general aviation is represented on it • To ensure that as many locally based aircraft are transponder equipped prior to the TMZ going live all aircraft based within 50nm of the TMZ(T) are to be immediately offered a grant to cover the total costs of fitting an SSR transponder and running it for as long as the TMZ(T) remains in place. Once the TMZ(T) is removed those having received the grant may, within six months, also claim the costs of having the fit removed should they so choose. For gliders a representative cost is in the order of £4,687.24 per aircraft. This cost can equal the cost of the aircraft in the first place. For a certified aircraft the cost will be higher due to the need to raise a modification with the CAA and to use licenced engineers. Note that these conditions do not minimise the effects for all aircraft, nor do they zero the impacts for any aircraft. Indeed for some affected aircraft and flights they make zero difference to the negative safety and other impacts of the TMZ.	
CAP 1616 Categorisation	**Response which does not impact the final proposal - the content of this response does not include new information or ideas that could lead to an adaptation in a lead design option or a new design option.**
The respondent has objected to the proposed changes based on the impact a TMZ would have on their operations but has not provided any suggestions that could lead to an adaptation to the design. **The proposal to implement an airspace solution has been initiated to create a path to satisfy the aviation related conditions attached to the grant of consent for the wind farm. In this part of Scotland, there is no technical mitigation solution currently available which has been tested against wind farms already present in the area. This is a relatively unique set of circumstances where the windfarm is seeking to mitigate 2 separate radar systems operated by 2 separate operators who are in the process of implementing new radar systems with windfarm filtering technology which is unproven in the geography of the area. In other parts of Scotland, proven technical mitigation solutions are already available and airspace change solutions will not be required. The proposal does not therefore set precedent in the**	

manner suggested by the respondent. This airspace solution will allow the necessary financial investment decisions to be made to allow the development of the wind farm to commence to achieve an approved grid connection timeline of 2027. In seeking to meet a grid connection date in 2027, turbines are likely to be erected on site during 2026, subject to final programming. Erecting and operating the wind turbines will allow the Change Sponsor to test technical mitigation solutions and build confidence they work in this part of Scotland in order to fully discharge the conditions attached to the grant of consent. **The Change Sponsor acknowledges the respondents concerns regarding flight safety primarily caused by the displacement of non-transponding traffic from the area of the TMZ. Without the buffer zone, the proposed area is considered small and without a concentration of traffic. There is already traffic operating outside the proposed area and the displacement of traffic is not considered to cause a significant increase.** **The issue of financial aid relating to the costs of equipment to enable glider operations to continue in the vicinity of the TMZ is outside the scope of this ACP; however, it is an issue that the Change Sponsor will consider as the project moves forward. Clash Gour wind farm comes with a proposed community fund and shared ownership offering and there is nothing to prevent flying clubs in the area exploring the possibility of using community fund grants to support their activities, like any other clubs and organisations in the area.**