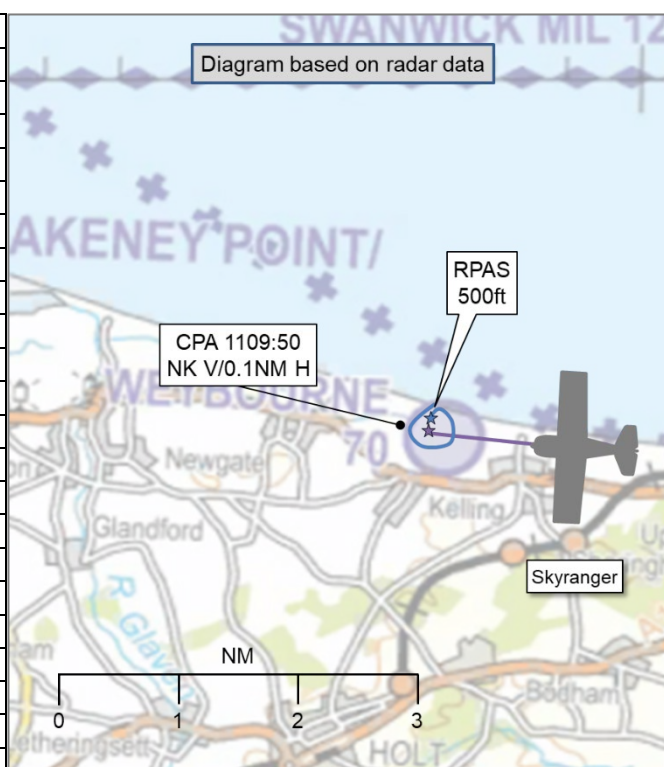


AIRPROX REPORT No 2021203

Date: 12 Sep 2021 Time: 1109Z Position: 5256N 00107E Location: Weybourne

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	RPAS	Skyranger Swift
Operator	Civ UAS	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VLOS	NK
Service	None	Unknown
Altitude/FL	500ft	NK
Transponder	A, C, S	A, S
Reported		
Colours	Orange, White	NK
Lighting	None	NK
Conditions	VMC	NK
Visibility	<5km	NR
Altitude/FL	700ft	NR
Altimeter	agl	NK
Heading	NR	NR
Speed	65kt	NR
ACAS/TAS	Other	Unknown
Alert	None	Unknown
Separation at CPA		
Reported	100ft V/0.1NM H	NR
Recorded	NK V/ 0.1NM H	



THE RPAS FLYER reports that they were conducting a BVLOS flight within a TDA over the sea, north east of Weybourne airfield. They had a NOTAM area at the airfield 1NM radius and 950ft AMSL. The RPAS returned from the BVLOS flight at 1104Z, using a return to home setting and commenced circling a home point central to the airfield at a diameter of 300m and 700ft agl. The pilot and safety officer were located on the north east runway (RW21) ready to take command of the RPAS for manual landing. At 1108Z, a small microlight aircraft appeared from the east at approximately 750-850ft agl and flew over the centre of Weybourne airfield following a steady course. The RPAS pilot had to put the aircraft into manual mode and steer the RPAS away from the microlight's flight path. Unfortunately they were unable to see the registration of the microlight, and it did not show up on their ADS-B-in fitted to their RPAS nor show on Flightradar24 that they also monitor during their flights. The RPAS was safely landed after the microlight had left the airfield airspace.

The pilot assessed the risk of collision as 'High'.

THE SKYRANGER SWIFT PILOT did not respond to any requests to file a report.

ANGLIA RADAR¹ reports that they were not aware of the Airprox prior to being contacted by the UKAB. They were aware of the operations with the RPAS Operator and maintained telephone communications with them during their operations. They also provided the following background information:

- Anglia Radar did not provide any ATS to the [RPAS Operator], either within a TDA or outside it. The TDA itself had been established to remain offshore and therefore within the Anglia AOR.
- Although the UAS operator was communicating with Aberdeen ATC by phone, this was not direct communication with the Anglia Radar controller (nor did it need to be as no service was being provided). The phone calls were to the Aberdeen ATC Watch Manager and these were limited to the [RPAS Operator] pilot passing position reports to allow Anglia Radar to provide a

¹Anglia radar controllers are located at Aberdeen

Danger Area Crossing Service to other aircraft (only when the UAS was confirmed as not being within that segment of TDA).

- Aberdeen ATC are not responsible for passing any form of Traffic Information or avoidance action advice in any phase of their flight. Safety is maintained by segregation from other traffic within the TDA.
- The portion of flight onshore and therefore outside the TDA is conducted under VLOS principles.
- The [RPAS] left TDA296A at 1106 and commenced an orbit at 500ft (based on Mode C) – location believed to be overhead Weybourne Airfield.
- An aircraft displaying a 7000 SSR Code with No Mode C but Mode S Aircraft ID of [Skyranger C/S] was following the coastline from east to west.
- At 1109 [Skyranger] passed (presumably overhead) the [RPAS Operator] and continued west.
- At approximately 1112 the RPAS crew member called the Watch Manager to inform them that their aircraft had landed at Weybourne and their flight was complete. No mention was made of the UAS coming into close proximity with another aircraft.

Factual Background

The weather at Norwich was recorded as follows:

METAR COR EGSB 121050Z 29006KT 250V320 9999 FEW018 19/11 Q1019 NOSIG=

Analysis and Investigation

UKAB Secretariat

The operations of the drone were notified in AIC Y 084/2021 within which details of a TDA were established. The TDA was split into sectors (see Figure 1) and the Danger Area required for the activity was advised by NOTAM daily.

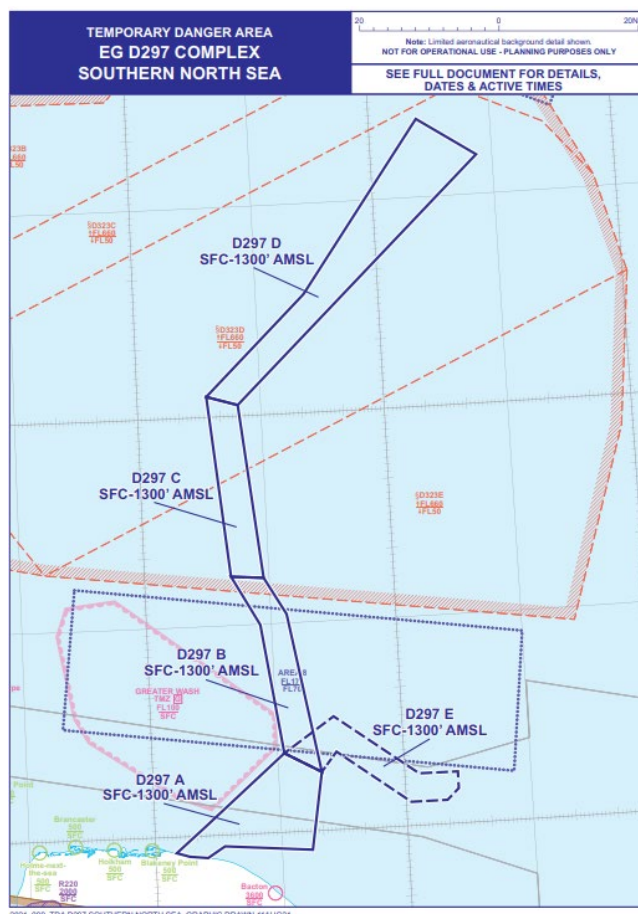


Figure 1 - TDA

The AIC advised that:

1 During the period between 26 August 2021 to 24 November 2021, an Unmanned Aircraft System (UAS) will conduct BVLOS surveying of offshore installations situated up to 110 miles North of Norwich. The UAS will depart from Weybourne Airfield and operate between surface and 800 FT AMSL.

2 As the UAS will be operating Beyond Visual Line of Sight and does not have full Detect and Avoid capability, a Temporary Danger Area complex will be established The UAS is equipped with an ADS-B and Mode-S transponder.

The following NOTAMs were issued on the day of the Airprox:

AFP4069 100946

GG EGUBZGZX EGUBZXAO EGULYWYO EGULZXAG EGULZXBO EGULZXCG EGUNYWYO EGUNYWYP
EGUNZXAS EGUNZXCO EGUUYVYX EGUWYWYO EGUWZXDF EGVAYWYO EGVEZGZW EGVNYWYF
EGVNZXBO EGVNZXCO EGVNZXDO EGVNZXFO EGVOYWYO

100946 EUECYIYN

(J3682/21 NOTAMN

Q) EGTT/QRDCA/IV/BO /W /000/013/5308N00152E013

A) EGTT B) 2109120945 C) 2109121500

E) TEMPO DANGER AREA (TDA) ESTABLISHED (EG D297E) WI AN AREA

BOUNDED BY: 531120N 0013134E - 531616N 0014344E - 530726N 0020323E

- 530724N 0021237E - 530502N 0021236E - 530325N 0020947E -

530325N 0020110E - 531111N 0014400E - 530824N 0014016E -

531120N 0013134E (NE OF WEYBOURNE, NORTH SEA) BEYOND VISUAL LINE OF SIGHT UAS OPERATIONS CONTAINED WHOLLY WITHIN THE TDA. A DANGER AREA

CROSSING SERVICE (DACS) WILL BE AVAILABLE FM ANGLIA RADAR 125.275

MHZ. AIC Y084/21 REFERS. 2021-08-0702/AS2

F) SFC G) 1300FT AMSL)

AFP3995 100940

GG EGUBZGZX EGUBZXAO EGULYWYO EGULZXAG EGULZXBO EGULZXCG EGUNYWYO EGUNYWYP
EGUNZXAS EGUNZXCO EGUUYVYX EGUWYWYO EGUWZXDF EGVAYWYO EGVEZGZW EGVNYWYF
EGVNZXBO EGVNZXCO EGVNZXDO EGVNZXFO EGVOYWYO

100940 EUECYIYN

(J3679/21 NOTAMN

Q) EGTT/QRDCA/IV/BO /W /000/013/5303N00123E013

A) EGTT B) 2109120945 C) 2109121500

E) TEMPO DANGER AREA (TDA) ESTABLISHED (EG D297A) WI AN AREA

BOUNDED BY: 525707N 0010759E - 525743N 0010455E - 530134N 0011229E

- 531120N 0013134E - 530824N 0014016E - 525718N 0013712E -

525823N 0011626E - 525649N 0011218E - 525707N 0010759E (NE OF

WEYBOURNE, NORTH SEA) BEYOND VISUAL LINE OF SIGHT UAS OPERATIONS

CONTAINED WHOLLY WITHIN THE TDA. A DANGER AREA CROSSING SERVICE

(DACS) WILL BE AVAILABLE FM ANGLIA RADAR 125.275 MHZ. AIC Y084/21

REFERS. 2021-08-0702/AS2

F) SFC G) 1300FT AMSL)

AFP4025 100943

GG EGQSZXGO EGQSZXHO EGTZDZM EGTZRZN EGUBYWYO EGUBZGZX EGUBZXAO EGULYWYO
EGULZXAG EGULZXBO EGULZXCG EGUNYWYO EGUNYWYP EGUNZXAS EGUNZXCO EGUUYVYX
EGUWYWYO EGUWZGZX EGUWZXDF EGVAYWYO EGVAYWYP

100943 EUECYIYN

(H6313/21 NOTAMN

Q) EGTT/QWULW/IV/BO /W /000/010/5257N00107E002

A) EGTT B) 2109120945 C) 2109121500

E) UAS OPR WI 1NM RADIUS OF 525657N 0010725E (WEYBOURNE AD,

NORFOLK). MAX HGT 700FT AGL. WEYBOURNE AD CLOSED DURING ACTIVITY.

FOR INFO 07792 957849. 2021-08-0702/AS2

F) SFC G) 950FT AMSL)

Analysis of the NATS radars displayed both the RPAS and the Skyranger. The RPAS indicated an altitude of 500ft, but the Skyranger was not displaying Mode C. At 1106:35 the RPAS, squawking 7430 could be seen returning to Weybourne, Figure 1.

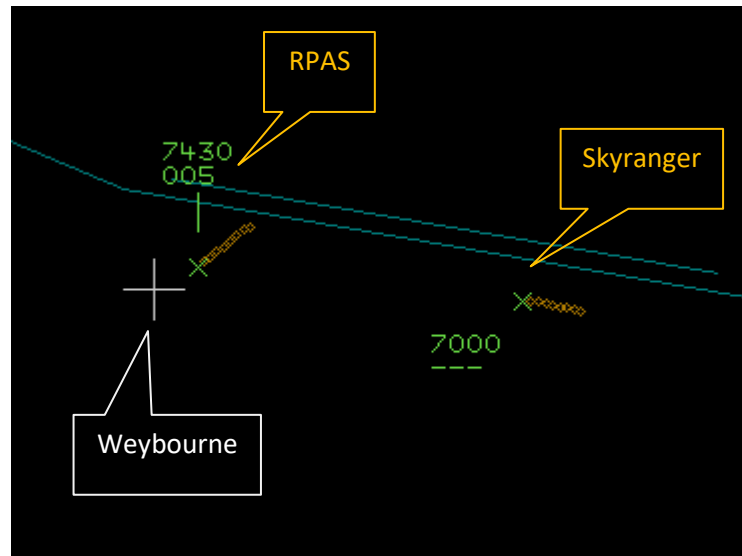


Figure 1: 1106:35

The RPAS established in an orbit overhead Weybourne and the Skyranger continued on track towards the RPAS (Figure 2 and 3), until CPA at 1109:50 when horizontal separation indicated 0.1NM.

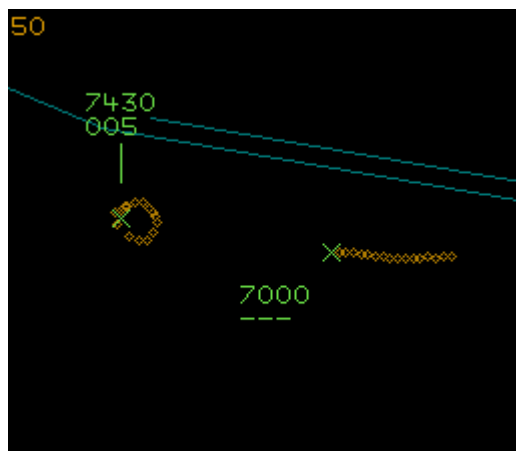


Figure 2: 1108:02

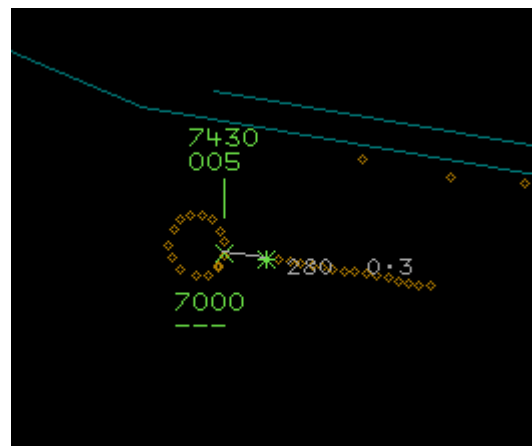


Figure 3: 1109:25

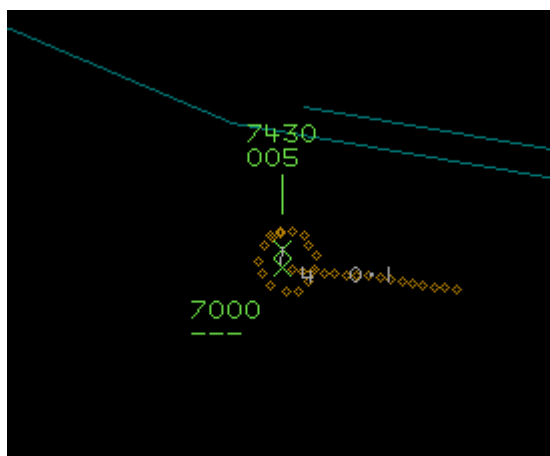


Figure 4: CPA 1109:50

The RPAS was operating under BVLOS when in the TDA but under VLOS during the flight at Weybourne airfield. During the flight [at the airfield], the remote pilot shall keep the unmanned aircraft in VLOS and maintain a thorough visual scan of the airspace surrounding the unmanned aircraft in order to avoid any risk of collision with any manned aircraft. The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, people, animals, environment or property.²

Summary

An Airprox was reported when an RPAS and a Skyranger flew into proximity in the vicinity of Weybourne airfield at 1109Z on Sunday 12th September 2021. The RPAS pilot was operating under VLOS and was not in receipt of an ATS. The Skyranger pilot did not submit a report.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of a report from the RPAS flyer, radar photographs/video recordings and a report from Aberdeen ATC. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

The Board first looked at the actions of the RPAS flyer. They were conducting their BVLOS operations over the North Sea and had a TDA in place to offer some protection whilst operating there. However, Weybourne airfield is situated on the coast and once the RPAS was over the land the flyer would be able to operate as normal within VLOS. There was a NOTAM in place warning other airspace users of the RPAS operation at Weybourne, but members highlighted that a NOTAM provided information only and did not offer any protection or segregated airspace. Once the Skyranger was in sight, normal ROA would dictate that the RPAS flyer needed to move out of the way, as happened here. The Skyranger was not squawking and it was likely that it was not fitted with ADS-B either, therefore, the equipment on the RPAS could not detect the approaching aircraft (**CF3**). It was noted that Aberdeen ATC were not providing any type of ATS at all, but were purely providing a crossing service to other aircraft and communicating via telephone with the RPAS flyer, so they would not have been in a position to pass any Traffic Information. Consequently, the RPAS flyer had no prior information that the Skyranger was approaching (**CF2**) and once they had seen it, they were concerned by its proximity to the RPAS (**CF4**).

Turning to the actions of the Skyranger pilot, the Board were very disappointed that the pilot had chosen not to take part in the Airprox process. Without their report it could not be determined whether the pilot had known about the NOTAM and disregarded it, or whether they had no knowledge of the NOTAM at all, and without such information it became more difficult to draw out the lessons that could be of benefit to other pilots. Members discussed which contributory factors were likely to have played a part in the Airprox, including whether the pilot could have been lost. However, it was noted that Weybourne was

² EASA Part UAS.OPEN.060 Responsibilities of the remote pilot (2)(b).

situated on the coastline and relatively easy to see, and as such, members thought it more likely that the pilot had insufficiently briefed and was unaware of the NOTAM and thus the RPAS operation (**CF1**). The radar replay did not show the Skyranger taking any avoiding action and so members thought it was likely that the pilot had no knowledge that the RPAS was there, but given that this was supposition, agreed that they could not attribute any further contributory factors.

When determining the risk, members agreed that there had been no risk of collision. Some thought that because the RPAS flyer had seen the Skyranger and taken timely action, that normal safety standards had pertained (Risk Category E). Other countered that the Skyranger pilot should have known about the NOTAM and given the airfield a wider berth, therefore safety had been degraded. The latter view prevailed and the Board assessed the Airprox as Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021203			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Flight Elements				
• Tactical Planning and Execution				
1	Human Factors	• Pre-flight briefing and flight preparation	An event involving incorrect, poor or insufficient pre-flight briefing	
• Situational Awareness of the Conflicting Aircraft and Action				
2	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
• Electronic Warning System Operation and Compliance				
3	Technical	• ACAS/TCAS System Failure	An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations	Incompatible CWS equipment
• See and Avoid				
4	Human Factors	• Perception of Visual Information	Events involving flight crew incorrectly perceiving a situation visually and then taking the wrong course of action or path of movement	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: C.

Safety Barrier Assessment³

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

Flight Elements:

Tactical Planning and Execution was assessed as **ineffective** because the Skyranger pilot flew overhead Weybourne despite the NOTAM advising that an RPAS was operating there.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the RPAS flyer had no situational awareness that the Skyranger was in the vicinity.

³ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the ADS-B-in on the RPAS could not detect the Skyranger.

Airprox Barrier Assessment: 2021203		Outside Controlled Airspace		Effectiveness				
Barrier		Provision	Application	Barrier Weighting				
				0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	○	○					
	Manning & Equipment	○	○					
	Situational Awareness of the Confliction & Action	○	○					
	Electronic Warning System Operation and Compliance	○	○					
Flight Element	Regulations, Processes, Procedures and Compliance	●	●					
	Tactical Planning and Execution	●	⊗					
	Situational Awareness of the Conflicting Aircraft & Action	⊗	●					
	Electronic Warning System Operation and Compliance	⊗	●					
	See & Avoid	●	●					
Key:		Full	Partial	None	Not Present/Not Assessable	Not Used		
Provision	●	○	⊗	○				
Application	●	○	⊗	○	○			
Effectiveness	■	■	■	■	□			