SERIOUS INCIDENT

Aircraft Type and Registration:	MBB-BK 117 D-2, G-SASS
No & Type of Engines:	2 Turbomeca Arriel 2E turboshaft engines
Year of Manufacture:	2014 (Serial no: 20022)
Date & Time (UTC):	4 May 2020 at 1255 hrs
Location:	Knockenkelly, Whiting Bay, Brodick, Isle of Arran, North Ayrshire
Type of Flight:	Commercial Air Transport (Passenger)
Persons on Board:	Crew - 2 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Section of static caravan roof partly lifted
Commander's Licence:	Commercial Pilot's Licence (H)
Commander's Age:	53 years
Commander's Flying Experience:	5,865 hours (of which 953 were on type) Last 90 days - 36 hours Last 28 days - 9 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

A caravan roof was partly lifted by the downwash from a helicopter taking off from a nearby landing site on an air ambulance flight. The accident demonstrates the potential for downwash to cause damage during helicopter operations.

Background

The helicopter was departing a landing site at Sandbraes, which was used for military, coastguard and air ambulance operations to the island. It consisted of a grass sports field measuring 90 m x 140 m and was surrounded by several buildings and other obstructions, as well as several static caravans situated close to, but not immediately next to, the landing site.

The site was secured by local members of the coastguard when being used and, whilst it complied with regulatory requirements, operators were responsible for ensuring it was suitable for their use. The managers of the playing fields were unaware of any previous incidents associated with its use as a helicopter landing site.

History of the flight

The helicopter had been dispatched from its base at Glasgow Airport to transfer a patient from the Isle of Arran to a hospital on the mainland. It arrived at the landing site without

incident and the patient was loaded onboard for the return flight.
Owing to the nature of the site, on takeoff the helicopter was required initially to climb whilst moving slowly rearwards until reaching its take-off decision point (TDP). This defines the height above which, in the event of an engine failure, the helicopter can safely fly away. By using the described profile, in the event of an engine failure below TDP it is able to carry out a landing on the site it has just departed.

The helicopter took off facing into wind, which was easterly at about 10 kt. The TDP for the flight was calculated to be at a height of 210 ft, which the pilot estimated was reached with the helicopter over the western edge of the landing site. The helicopter then transitioned to forward flight, departing to the east.

Witnesses report that as the helicopter increased power to transition away, part of the roof of a static caravan parked near the landing site to the west lifted, allowing some of the insulation underneath to be blown out.

Analysis

The position of the helicopter at the time it transitioned into forward flight, combined with the associated increase in applied power, resulted in sufficient downwash affecting the caravan roof to partially lift it. It was not possible to ascertain the condition of the roof before the incident and this may have been a contributing factor.

The site had previously been used by larger helicopters with no apparent issues. The operator had also surveyed the site as part of its operating procedures and had not identified the caravans as being an issue. As a result of the incident it was however able to adjust the TDP to a lower height in order to reduce the area affected by downwash for future flights.

The issue of downdraft has become more significant as operators switch to using larger helicopter types in the air ambulance role. It is important that operators remain aware of the potential for damage that may be caused beyond the landing site and ensure their procedures and choice of location take this into account.