FINAL REPORT

AAIU Report No: 2010-021
State File No: IRL00909123
Published: 18/11/2010

In accordance with the provisions of SI 460 of 2009, the Chief Inspector of Air Accidents, on 27 December 2009, appointed Mr. Thomas Moloney as the Investigator-in-Charge to carry out a Field Investigation into this Accident and prepare a Report. The sole purpose of this Investigation is the prevention of aviation Accidents and Incidents. It is not the purpose of the Investigation to apportion blame or liability.

Aircraft Type and Registration:	Mainair Blade 912S, EI-EHR (Microlight)
No. and Type of Engines:	1 x Rotax 912S
Aircraft Serial Number:	1296-0801
Year of Manufacture:	2001
Date and Time (UTC[1]):	27 December 2009 @ 16.20 hrs approximately
Location:	Near Shinrone, Co. Offaly, Ireland
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - 1 Passengers - 1
Nature of Damage:	Aircraft destroyed
Commander's Licence:	U.K. Civil Aviation Authority (CAA) National Private Pilot's Licence (Aeroplanes) (NPPL(A)) with microlight rating
Commander's Details:	Male, aged 41 years
Commander's Flying Experience:	35 hours, of which 19 were on type
Notification Source:	Shannon Air Traffic Services
Information Source:	AAIU Pilot Report Form, AAIU Field Investigation

SYNOPSIS

The microlight aircraft, with two occupants on board, was returning to land at a private airstrip following a short local flight. The light conditions were fading rapidly as the sun set. The aircraft struck an overhead telephone cable running alongside the boundary wall of the airstrip field, and impacted into the field some 20 metres (m) inside the wall. The two occupants were seriously injured. The aircraft was destroyed. There was no fire.

---

[1] **UTC:** Local time during the winter in Ireland. All times in this Report are UTC.

1. FACTUAL INFORMATION

1.1 History of the Flight

The Pilot carried out a series of three flights from a private airstrip near Shinrone, Co Offaly on 27 December 2009. On each of the flights, a friend or family member accompanied him as a passenger. These were the first flights which the Pilot had undertaken as Pilot-in-Command (PIC) with passengers accompanying him. He described the weather conditions on the day as being "*perfect, quite still at ground level but with a significant breeze at 1,500 ft.*" On the first flight, which was flown between 14.20 hrs and 15.00 hrs and comprised a local sightseeing trip, the aircraft took off and landed on Runway (RWY) 22, i.e. on a southwesterly heading. The Pilot was uncomfortable with landing into what he described as a "*watery sun*". After landing, he discussed the glare from the sun with another pilot who was at the airstrip. The other pilot suggested utilising the reciprocal runway direction, RWY 04, since the wind at surface level was very light. They also discussed the danger of the overhead telephone cables, which ran alongside the boundary wall of the airstrip field at an angle of 90º to the runway heading and at a distance of approximately 27m from the threshold of RWY 04.

On the second flight, which was also a local sightseeing flight lasting approximately 20 minutes, the Pilot took off and landed on RWY 04 with the sun behind him. Although he had carried out a couple of approaches to RWY 04 on an earlier day, he had not previously landed in that direction due to wind conditions, and consequently this was his first time to land on RWY 04. Following this landing, the Pilot discussed his clearance above the telephone cables with the other pilot who was at the airstrip.

The aircraft took off on its third flight at approximately 16.10 hrs, again using RWY 04. The Pilot was aware that the sun was now setting and that the light was fading rapidly, so he had planned that the third flight would only last for about 10 to 15 minutes. Shortly after take-off, the Pilot realised that he could no longer communicate with his passenger through the battery-powered intercommunication system built into their helmets. He was unhappy with this situation so he decided to complete a single tight right-hand circuit and land back on RWY 04. As he flew the base leg, he could see two vehicles parked on either side of the runway at the far (RWY 22) end. As he turned onto finals, he thought that he saw a person walking along the right hand side of the runway, about half way along the runway. He did not want to carry out a go-round, as the light was now fading very rapidly. He therefore flew the approach with the intention of touching down a little earlier on RWY 04 so that he could stop more quickly on the runway. On his approach he could see the road, which adjoined the airstrip field, and he could also see the pair of telephone cables, which ran alongside and parallel to the road. The Pilot thought that he was clear of them but the aircraft struck the upper cable and impacted into the field some 20m from the cables and came to rest approximately 25m from them. At no time during his approach to land did the Pilot consider that there was a possibility of the aircraft striking the cables, and he made no particular effort to make a last moment avoidance manoeuvre. There had been three cars on the road as the aircraft approached and he felt that these might have been a distraction.

While no witnesses on the ground saw the actual impact, several of them heard it and arrived at the accident site almost immediately.

1.2 Injuries to Persons

Both occupants of the aircraft suffered serious injuries[2].

1.3 Damage to Aircraft

The aircraft was destroyed.

1.4 Personnel Information

The Pilot commenced weight-shift flex-wing microlight training in France in July 2008. Over a two-week period he flew a total of 25 hrs 40 mins on two types, the GT450 and the Blade 912. He flew 7 hrs 10 mins solo, all on a Blade 912, during this period. He was issued with a U.K. CAA NPPL(A) with microlight rating in September 2008. This Licence contained a series of restrictions and conditions.

He did not fly again until the following summer when he returned to France in early July 2009. Over a four-day period he flew another 7 hrs 10 mins including solo cross-country flights and navigation exercises. On 31 July 2009, he was issued with a U.K. CAA NPPL(A) with microlight rating with no remarks or restrictions.

The Pilot first flew EI-EHR on 25 October 2009, after it had received its Flight Permit from the Irish Aviation Authority (IAA) on 22 October 2009. On that flight he flew solo for 30 minutes and carried out two take-offs and landings on RWY 22 at Shinrone. He flew solo for a further 30 minutes on 13 December 2009. Due to inclement weather, these were the only flights he carried out on EI-EHR prior to 27 December 2009.

1.5 Aircraft Information

The Mainair Blade 912S is a two-seat flex-wing, weight-shift microlight aircraft with a maximum take-off mass of 390 kg, **(Appendix A)**. The pilot and passenger are seated in tandem in a trike, which comprises a triangulated aluminium frame containing a fibreglass pod to form the cockpit. The wing is attached to the top of the vertical member of the aluminium frame (the monopole), which is located behind the rear seat. The wing can be pivoted by the pilot via a control bar that provides pitch and roll control. The aircraft is fitted with an opposed 4 cylinder, 4-stroke liquid/air cooled petrol engine, mounted directly behind the occupants in a pusher configuration. The Rotax 912-ULS, 100 HP[3] engine, running at a nominal 5,000 rpm[4], has two carburettors, a mechanical fuel pump, electronic dual ignition and an electric starter. A carbon fibre warp-drive three-bladed propeller was installed on EI-EHR.

---

[2] **Serious Injury:** Includes injuries requiring hospitalisation for more than 48 hours (Ref S.I. No. 460 of 2009).
[3] **HP:** Horsepower
[4] **rpm:** Revolutions per minute

Engine power on the Blade 912S is controlled by means of a hand throttle lever close to the Pilot's left hip and also by a foot throttle. An experienced microlight pilot informed the Investigation that, on approach to land, only the foot throttle is used for power adjustment. He also stated that, on final approach, the pitch attitude of the Blade 912S is quite nose-high and that the lowest parts of the aircraft are the rear wheels.

The aircraft had been registered and flown in the U.K. between 2001 and 2009 and had accumulated a total flying time of 566 hrs before it was sold to the Pilot in March 2009. Thereafter it was shipped to Ireland and put into storage at the Pilot's premises while he completed his flying training and awaited its transfer to the Irish Register. In Ireland, inspection of microlight aircraft for first and subsequent Flight Permits, along with completion of flight test procedures, has been delegated by the IAA to the National Microlight Association of Ireland (NMAI), which makes a recommendation to the IAA for issue of a Permit. An NMAI Inspector carried out the required inspection and flight test on 8 October 2009 and the IAA issued the Flight Permit on 22 October 2009. The NMAI Inspector who carried out the initial inspection and flight test described the aircraft to the Investigation as being "*in immaculate condition*". Photographs and video recording of the microlight taken on the day of the accident also show that the aircraft was in good condition and serviceable.

1.6 Meteorological Information

The Investigation requested an aftercast of the weather for Shinrone at the time of the accident from Met Éireann. The following is a summary of the aftercast.

An area of low pressure was resident to the northwest of Ireland leaving the area in an unstable west to northwest flow. The wind at surface level was 270ºM at 5 to 8 kts approximately while at 2,000 ft the wind was 300ºM at 10 kts. Visibility was greater than 10 km. There was no significant weather and cloud was few / scattered Cumulus at 2,000 ft. The surface temperature was +4ºC and the dewpoint was +1ºC. The barometric pressure (QNH) was 1005 hPa[5]. The aftercast summarised that while the region was inherently unstable, archive satellite and radar imagery were clear of any significant cloud/echoes.

The time of sunset at Shinrone on 27 December 2009 was 16.20 hrs.

1.7 Wreckage and Impact Information

The aircraft impacted the airstrip field approximately 20m inside the boundary wall, which ran alongside and parallel to the telephone cables and road. Two telephone cables were supported on poles at a height of approximately 6m (20ft) from the ground. The cable, which had been supported at the upper position on the adjacent poles, displayed a significant droop along with some damage to its insulation. The cable supported at the lower position on the poles remained approximately parallel to the ground. The aircraft appeared to have continued on its approach track until impact and it came to rest in close proximity to the runway threshold.

[5] **hPa:** hectoPascal, a unit of atmospheric pressure

The fibreglass pod had fractured around its entire circumference close to the instrument panel. The forward part of the pod remained attached to the main wreckage only by cables and wiring. A horizontal tubular structure which formed part of the attachment for the nose-wheel assembly had fractured under upward loading close to the nose-wheel. The aft portion of the pod remained attached to the structure supporting the engine, fuel-tank and rear wheels and the monopole also remained intact. Two blades of the three-blade propeller had fractured close to the blade roots. One blade was located 24m from the main wreckage and the other was 8.8m from the wreckage. Witnesses informed the Investigation that the Fire Service had used cutting equipment to remove the wing structure (which had folded over on itself at impact) from the remainder of the wreckage.

Photo No. 1 shows the wreckage of EI-EHR looking back along its approach path towards RWY 04. The telephone cables are visible, with what had been the upper cable drooping considerably, and showing evidence of impact damage.

Photo No. 1: General view of wreckage and telephone cables

Witnesses informed the Investigation that they had cut the shoulder straps at the passenger seat, while the lap straps restraining both occupants were opened normally. There was a considerable amount of wreckage around the Pilot's feet. The witnesses removed this and then pulled the Pilot clear of the aircraft as he was lying on top of the passenger who was in a lot of pain.

A technical examination of the wreckage revealed no pre-impact defects, which might have contributed to the accident. Also, the Pilot informed the Investigation that he had no technical or control issues with the aircraft prior to the moment of impact with the cable.

1.8 Survival Aspects

The two occupants of the aircraft were seriously injured in the accident. Fortunately, several people were in the vicinity of the accident and arrived on-site almost immediately. A close relative of the Pilot informed the Investigation that, immediately after he realised there had been an accident, he phoned the local Doctor. His mobile phone indicated that the call was made at 16.19 hrs. The emergency services were phoned by a passer-by and the ambulance service logged the "999" call at 16.21 hrs. An ambulance departed from Tullamore at 16.23 hrs and arrived on scene at 17.14 hrs. The Garda Síochána called for a second ambulance at 16.43 hrs and it departed from Portlaoise at 16.44 hrs, arriving on scene at 17.44 hrs. There was a prolonged cold spell around the time of the accident with consequent poor road conditions. All emergency vehicles had been advised to travel with extreme caution.

The local Doctor and his two sons, also doctors, arrived at the accident site quickly and tended to the two injured occupants. A fire brigade from Roscrea, Co Tipperary, also arrived on scene and provided assistance including oxygen and drips. The fire service had logged the initial call-out at 16.24 hrs, the fire brigade departed Roscrea at 16.30 hrs and was on scene at 16.41 hrs.

Several witnesses expressed concern to the Investigation at the length of time taken by the ambulances to arrive at the accident site, in comparison with the time taken by the fire brigade. The Investigation was informed by the Midland Headquarters of the National Ambulance Service that, while the Southern Control Centre in Limerick had been contacted, the ambulance at Roscrea, which comes under the Southern Centre's control, was not available. The nearest available ambulances were from the resources of the Midland Division, i.e. at Tullamore and Portlaoise.

1.9 Additional Information

1.9.1 Licensing

The U.K. CAA introduced the NPPL in 2002 in response to a demand in the U.K. for a private pilots' licence (PPL) that was less demanding to attain and maintain than the JAR-FCL[6] PPL. The CAA NPPL is not issued in accordance with ICAO[7] Annex 1 (Personnel Licensing) requirements and it does not require licensees to hold a Class 1 or Class 2 Medical Certificate, but rather to have a medical self-declaration counter-signed by their G.P. The U.K. Air Navigation Order states that an NPPL holder *"shall not fly a microlight aeroplane outside the United Kingdom except with the permission of the competent authority for the airspace in which he flies"*. The Pilot informed the Investigation that he was not aware of this requirement and that he had not approached the Irish Aviation Authority (IAA) for such permission.

The NPPL(A) issued to the Pilot on 31 July 2009 states under the heading "Validity", *"The licence holder is entitled to exercise licence privileges on aircraft registered in the United Kingdom"*.

---

[6] **JAR-FCL:** (European) Joint Airworthiness Requirements - Flight Crew Licensing
[7] **ICAO:** International Civil Aviation Organisation

The Investigation discussed with the Pilot why he had chosen to go the U.K. CAA NPPL(A) route rather than training towards an IAA Licence. The Pilot stated that, at the time he wanted to learn to fly microlights, during the summer of 2008, there was no registered training facility for flex-wing microlights in the Republic of Ireland. He had phoned a flying school in the Republic of Ireland in early 2008, prior to booking his training in France. His understanding from the call was that the school was to shortly commence three-axis microlight training, but had no immediate plans to commence the weight-shift flex-wing microlight training that he required. He stated that this was the basis for his decision to travel to France for his training. While there was an IAA registered training facility in Northern Ireland, he felt that it would be a much better solution to travel to France and to do his training in one period of intense flying. He was unaware that the U.K. CAA licence would not be valid for flights outside the U.K. or on non-U.K. registered aircraft. The Investigation understands that the IAA approved a weight-shift flex-wing microlight training facility in the Republic of Ireland on 20 March 2009.

While several States in Europe accept the CAA NPPL for recreational flying, Ireland does not do so. IAA Aeronautical Information Circular (AIC) 11/04, which dealt with the acceptance of foreign flight crew licences, was in force on the date of the accident.

Under the provisions of AIC 11/04, a PPL issued in accordance with ICAO Annex 1 (Personnel Licensing) and holding at least a Class 1 or 2 Medical Certificate was automatically validated in Ireland for the exercise of PPL privileges, with certain restrictions. However, the holder of a PPL (Microlight or Gyroplane), not issued in accordance with ICAO Annex 1 (such as the CAA NPPL) may have been granted a Certificate of Validation by the IAA for a period of up to twelve months under a number of provisions. These included the holding of a Class 1 or 2 Medical Certificate, having not less than 50 hours total flight experience as pilot of the relevant aircraft class and the holding of a Radio Telephony Rating or Licence.

In 2008, the AAIU published Synoptic Report No. 2008-028 into a microlight accident. That Report stated that the NMAI had informed the Investigation that a number of unlicensed microlight aircraft were flying in Ireland. The Report contained the following Safety Recommendation (SR 24 of 2008), *"It is recommended that the IAA, in conjunction with the NMAI, should review the regulatory and operational framework of microlight operations in Ireland."*

The NMAI also informed the current Investigation of continuing unlicensed microlight flying operations in Ireland.

The Investigation is aware that during 2009 and 2010 the IAA engaged in a consultative process with the microlight community with the view to making the licensing requirements in Ireland less restrictive.

Following this process, on 26 August 2010, the IAA issued several new or revised documents relating to microlight licensing. AIC 11/04 was replaced by Aeronautical Notice P.21. Aeronautical Notice P.17 was re-issued, and included a reduction in the flying hour requirements for applicants for Irish PPL (Microlight) licences. A new General Advisory Memorandum No. 06-10 was issued titled "*Temporary Operation using a Foreign Microlight Aircraft and/or Microlight Pilot Licence*".

This memorandum states that it is necessary for holders of non ICAO compliant microlight licences (such as the CAA NPPL) to obtain agreement from Ireland before flying in the State, and it sets out the criteria for obtaining such agreement.

Also on 26 August 2010, the IAA issued an amnesty of three months duration with the aim of regularising the situation of *"individuals who have been operating microlight aircraft within the Republic of Ireland while not fully complying with the provisions of Irish Aviation Legislation there in force"*.

1.9.2 Flight Permit Conditions

The Flight Permit for EI-EHR includes a number of conditions and limitations including the following: *"16. A permanent placard shall be affixed to the aeroplane in full view of the occupants, and shall be worded as follows:* ***OCCUPANT WARNING: THIS AIRCRAFT IS A MICROLIGHT AEROPLANE AND IS OPERATING WITHOUT A STANDARD CERTIFICATE OF AIRWORTHINESS RELATING THERETO."***

Such a placard was not located in the aircraft by the Investigation at the accident site, nor on subsequent examination of the aircraft. The NMAI Inspector who surveyed the aircraft on 8 October 2009 could not confirm whether the placard had been attached to the aircraft on that date.

The Flight Permit states at condition 13: "*No flight shall be made at night"*. The IAA Rules of the Air Order, 2004 (S.I. No. 72 of 2004) defines night as follows: "*In or over the State, "night" shall be deemed to be, during the period beginning on the 1st day of April, and ending on the 30th day of September, the time between half an hour after sunset and half an hour before sunrise, and during the remainder of the year, the time between sunset and sunrise, and for the purpose of this definition sunset shall be determined at surface level.*"

1.9.3 Airstrip

Witnesses who were close to the private airstrip at the time of the accident informed the Investigation that there was nobody on or close to the runway as the aircraft made its final approach to land. After the aircraft had taken off on its final flight, some members of the Pilot's family had gone into woodland in close proximity to the end of RWY 22. They heard the aircraft approach, and then heard what they thought was a sudden application of engine power followed immediately by the sound of the impact.

The Pilot had placed white-painted rocks alongside the runway, approximately 50 metres from each end, to act as visual aiming points for approaches to land.

1.9.4 Cable Strikes

This accident was one of six cable strike events that occurred in Ireland between 01 April 2009 and 01 May 2010. One of these events was a fatal accident and the AAIU has published Formal Report No. 2010-009 into that accident. That Report contains a large amount of information concerning the dangers of flying in a cable environment, and it makes the following Safety Recommendation to the IAA, *"That the IAA undertake to develop a suitable awareness campaign to inform general aviation pilots on the potential hazards of cable strikes (IRLD2010015)"*.

The IAA responded as follows: *"The Authority accept this Safety Recommendation. As part of the IAA General Aviation Safety awareness training programme a Safety Poster on wire strikes is due to be published in the Flying in Ireland magazine and placed on the IAA website. Additionally, specific wire strike awareness material will be produced and distributed as part of the State safety programme"*. A copy of the IAA safety poster is attached as **Appendix B**.

2. ANALYSIS

2.1 The Accident

From an examination of the accident site and interviews with the Pilot and witnesses who were close to the site, it is evident that the aircraft struck the upper telephone cable while on short finals for RWY 04.

As the Mainair Blade flies its approach to land in a nose-up attitude and since the rear wheels are the lowest part of the aircraft in that configuration, it is probable that one or both of the rear wheels made contact with the upper of the two parallel telephone cables, approximately 6 m above the ground. The cable was stretched by the contact but did not break. The sudden deceleration of the aircraft caused by the cable snagging the wheel(s) caused the Pilot to lose control of the aircraft, which impacted into the field in a nose-down attitude.

It is likely that the sudden application of power heard by witnesses was caused by the Pilot's foot pressing forward on the foot throttle during the sudden deceleration.

There are several factors which are likely to have contributed to the cable strike. The accident happened at approximately 16.20 hrs, just as the sun set. The Pilot stated that the light faded very rapidly during the final minutes of the flight. The reduced light levels are likely to have impaired the Pilot's judgement of his distance to and his height above the cables as he approached them. Poor light is also a probable contributory factor in the Pilot's perception that there was a person walking alongside the runway. The witness statements confirmed that there was nobody alongside the runway at the time of the final approach.

IAA Rules of the Air define night as commencing at sunset during winter, and a condition of the Flight Permit was that "*no flight shall be made at night*". While the accident occurred almost exactly at sunset, the Investigation is of the opinion that it would have been more prudent not to commence a flight which had the potential to infringe Rules of the Air.

The Pilot was relatively inexperienced, having only a total flying time of 35 hrs. The day of the accident was the first day on which he had flown as PIC with passengers. It was also the first day on which he had landed on RWY 04 at Shinrone and he had only made one landing in that direction prior to the accident. Thus he was not familiar with the approach, its characteristics and landmarks.

The Pilot's perception that there was someone close to the runway influenced his decision to make a low approach. If the aircraft had made an approach to land at the aiming point on the runway, which was almost 80 m from the cables, then it is probable that it would have safely over-flown them.

This accident is one of six cable strike events in Ireland, which occurred in a 13-month period up to 01 May 2010. It is clear from this statistic that cable strikes are a major flight safety hazard to Irish general aviation. The AAIU made a recent Safety Recommendation to the IAA concerning a cable strike awareness campaign, which has been accepted and acted upon by the Authority. In this context, the Investigation considers that there is no requirement for a further Safety Recommendation on the matter.

2.2 Licensing Issues

The Pilot had received microlight flight training in France during 2008 and 2009 and had been issued with a CAA NPPL(A), with a microlight rating. However, this U.K. Licence was not valid for flights in the Republic of Ireland. The Pilot stated that he was unaware of the Irish licensing requirements. The Investigation was informed by the NMAI that unlicensed microlight flying has been ongoing in Ireland before and since this accident.

Following a previous microlight accident investigation, in which licensing issues had arisen, the AAIU issued a Safety Recommendation to the IAA, in conjunction with the NMAI, to review the regulatory framework of microlight operations in Ireland. Significant progress appears to have been made in 2010, with new or revised requirements being issued by the IAA, along with a three-month amnesty for non-compliant microlight operators. Again, in these circumstances, the Investigation considers that there is no requirement for a further Safety Recommendation on this matter.

3. CONCLUSIONS

(a) Findings

1. The Pilot held a U.K. CAA NPPL(A) with microlight rating. This Licence was not valid for flights in the Republic of Ireland.

2. The IAA issued a Flight Permit for the aircraft on 22 October 2009, following inspection, flight test and recommendation by the NMAI.

3. The Flight Permit contained a requirement for a permanent occupant warning placard to be affixed to the aircraft in full view of the occupants. The Investigation did not locate such a placard in the aircraft.

4. The aircraft struck a telephone cable while on short finals to RWY 04 at a private airstrip.

5. The Pilot was aware of the telephone cables and could see them as he approached, but he misjudged the clearance of his aircraft in relation to the upper cable.

6. The accident occurred at sunset, with consequent conditions of rapidly fading light.

7. There was no evidence of any technical defect with the aircraft prior to the accident.

(b) Probable Cause

The aircraft struck a telephone cable at a height of approximately 6m (20ft) above the ground, while on short final approach to land.

(c) Contributory Causes

1. The Pilot's lack of overall flying experience, and his lack of experience of approaches to RWY 04 at the airstrip.

2. The rapidly fading light impaired the Pilot's judgement of his clearance above the cables.

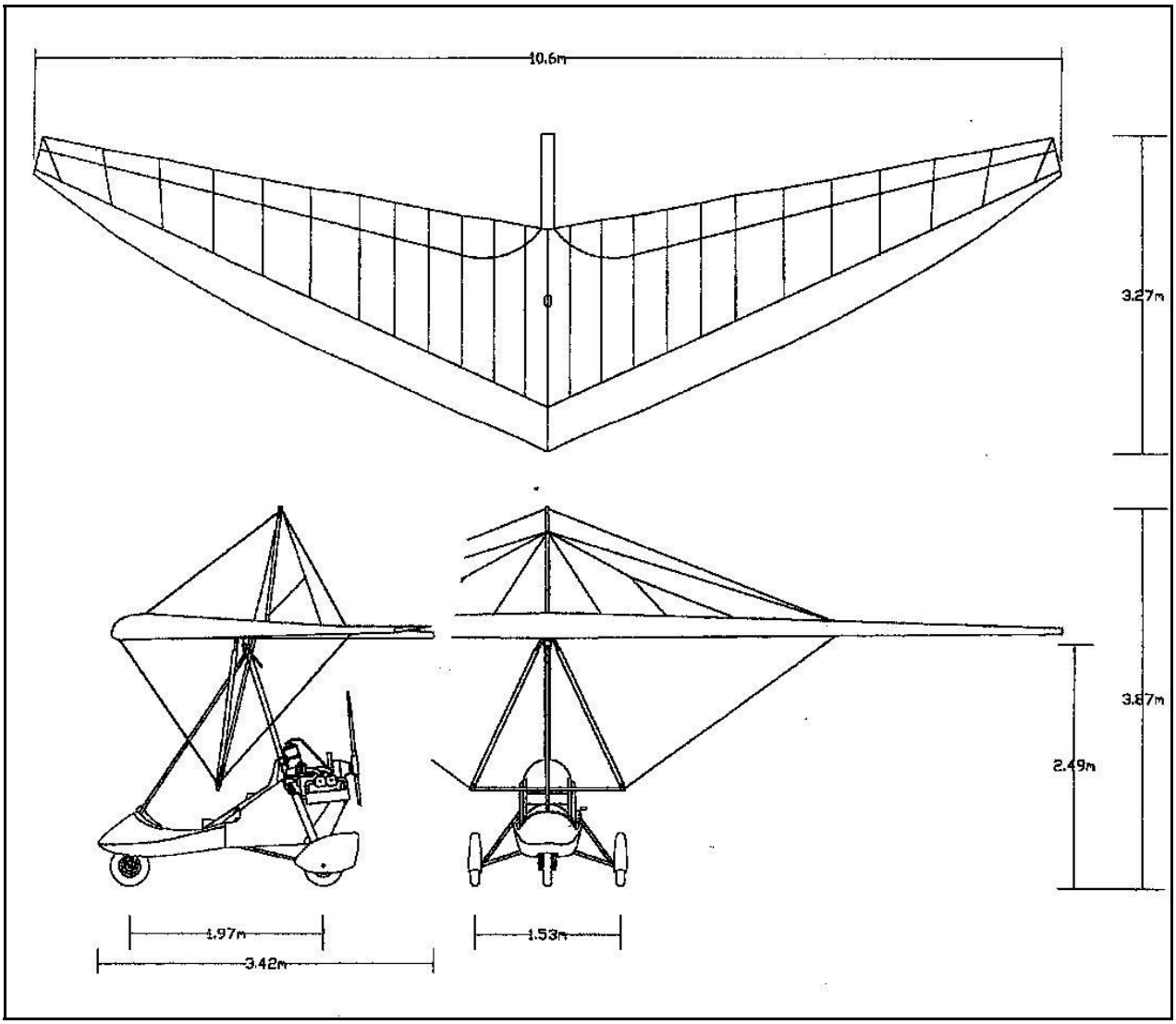
3. The Pilot was making a low approach to RWY 04, as he thought that he had seen a person walking alongside the runway near its mid-point.

4. SAFETY RECOMMENDATIONS

This Investigation does not sustain any Safety Recommendations.

Appendix A

General assembly of a Mainair Blade 912S Microlight



Appendix B

IAA Cable Strike Awareness Campaign Poster

- END -