Regional Launch Event

Event Details – 2025

SITE: ***Westcott Venture Park, Bucks***

Introduction:

Congratulations on entering a team in the 2024 - 2025 UK CanSat Competition! The exciting climax of your project is an invitation to a regional launch day to see your CanSat launched onboard a real rocket. Even if your CanSat isn't fully functional by the time of the launch day, the experience of attending this event and working in the field to get your CanSat loaded in the rocket, launched and then recovered by parachute is an incredible practical learning experience that really should not be missed.

Ahead of your attending this regional launch day, we want to provide you with detailed information regarding the site you have booked to attend and what to expect on the day.

NOTE: For legal, safety and insurance reasons all teams MUST be accompanied by a member of YOUR staff at ALL times when at the event. Our event staff are not able to take legal responsibility for your students whilst you leave site. Please bring enough staff to support the number of students you are bringing.

Is Your CanSat Ready?:

CRITICAL! PLEASE READ!: Although your CanSat will not be 'judged' at the regional launch event as part of the competition, the Launch Access team WILL have to check it to be sure it can fly safely before it can be launched. ***Due to the extremely busy nature of the launch sessions at Westcott, your team may well not have time to make any changes needed to their CanSat to meet these requirements. You MUST arrive with your CanSat ready to fly and meeting the below requirements!*** Whilst the team will try to give you immediate help to fix any smaller problems to allow your CanSat to then fly, if there are major safety problems at that stage, it is possible you may simply not be allowed to fly. To avoid this risk, we ask that you bring your CanSat already in a state that meets our basic safety requirements:

1: Is your parachute too big? Due to the higher wind and smaller launch sites in the UK we need to insist on a much higher descent speed for your CanSat than ESERO Europe do. Ideally it needs to have a descent speed of at least 15m/s, ideally more like 18m/s or more. As a guide, if your CanSat is over 300g in weight, then the parachute must be no larger than 450mm diameter (or equivalent surface area if a non-circular design is used). If your CanSat is lighter than this then the size/area of the parachute must be reduced accordingly. A 350mm to 400mm diameter round parachute is ideal for recovery of a 300g – 350g CanSat. This rule will be strictly applied as many sites have buildings and other obstacles around them which we CANNOT risk landing a CanSat on, so the CanSats MUST drop to the ground within the site boundaries even in high winds.

2: Is your parachute and attachment method strong enough? Your parachute should be made from ripstop nylon or a similar low porosity/high strength fabric, not plastic bags, paper or other unsuitably weak materials. The shroud-lines must be attached by them being sewn on or, if attached via holes or eyelets, the shroud lines must pass through those reinforced holes and be tied back onto themselves. A knot tied on the top so it won't pass back through an eyelet is not sufficient and will break in flight. Your shroud lines should be strong nylon line or an aramid fibre like Kevlar. String might be acceptable if of good quality, sewing cotton, wool and plastic fishing line are not suitable. Your parachute must be attached to your CanSat very well. Heavy duty nylon line, 100lb+ rated

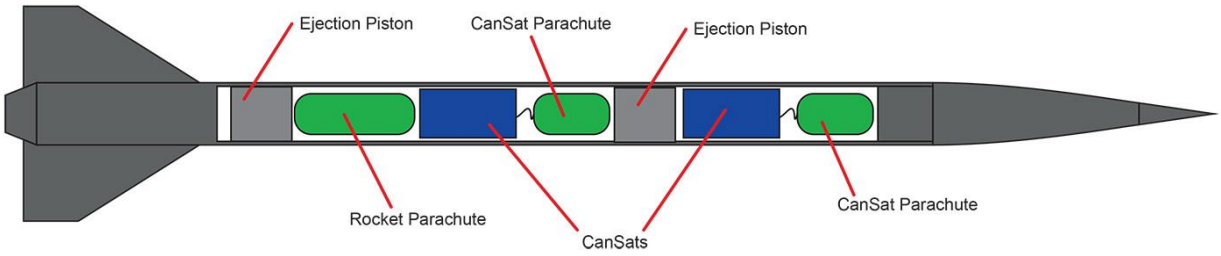
fishing swivels, screw-gate quick-links etc are acceptable but keyrings and eyelets that can open out and fail under limited force, single pieces of thin nylon line (as used for shroud lines), wire, etc is not suitable. The shroud lines should ideally come to a single point and be secured to the CanSat via a single strong connection point. If the shroud lines attach individually to the outer edge of the CanSat body then these attachments must be individually strong enough that you can't manually pull one out with all your strength. Tying the lines through a hole and back on to themselves is ideal.

3: Is your CanSat strong enough? The other major issue we often face is 3D printed CanSats where the shock-loads of parachute deployment are taken through 3D printed attachment points or bulkheads. 3D printing is great but we have found that, unless extremely thick and very well designed, it is not a good material for taking the 60G+ shock-loads of a parachute opening at 80mph+ and trying to rip the top off the CanSat. You need to consider not just how well the parachute is attached to the top of your CanSat but also how well the top of your CanSat is attached to the body. 3D printed threads on a cap, or lugs, will almost always break off leaving the heavy body of the CanSat and its contents to fall without a parachute. The very best design is to have a forged steel eye bolt/nut on the top of your CanSat which the parachute attaches to with a single bolt or length of threaded rod that extends from that eye-nut all the way through to the bottom bulkhead of the CanSat where it is secured with a nut and large washer on the bottom, to take all the shock loads directly through that steel spine.

The test you must do (or at least consider WE might do) is to hold your parachute in one fist, your CanSat in the other, and tug the two apart as hard as you physically can. If anything breaks, or you think it might break, then it won't be strong enough to survive the flight. Worst case, wrap your can in gaffer tape or similar to hold it structurally together.

4: Is your CanSat too big to fit in the rocket? The interior of the rocket is around 74mm diameter. We have found many teams make a CanSat which complies with the 66mm maximum diameter but then tie massive, heavy duty shroud lines in knots to the outside rim of it and don't realise that those lines/knots are big enough to make the whole can unable to fit into the rocket. The outer dimensions of your can (including ANYTHING on the outside, even fabric, lines, cord, antennae etc) must not exceed about 72mm or it may be too tight to safely fit and be deployed from the rocket.

Below is a diagram of how your CanSat fits inside the rocket during launch. Note: there is only a couple of millimetres gap between the outer case of the CanSat and the inside wall of the rocket tube. Some launches will carry one CanSat only but most will now carry two.



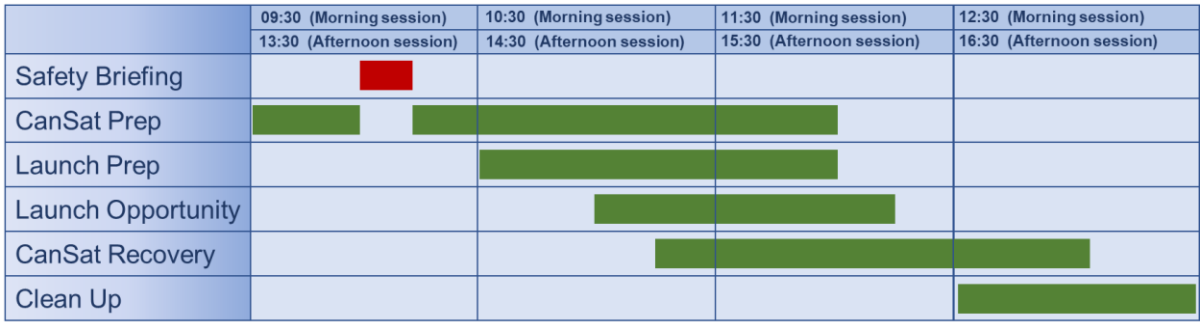
On the day:

In order to ensure we are able to get as many teams launched as possible, we are splitting each launch day into two sessions, a morning session and an afternoon session. You will have booked a specific session when you selected your regional site and date. Please arrive before your session begins, but do not arrive more than 30 minutes before the start of your chosen session as parking may be limited and staff may not have prepared the prep-area for your team if you arrive too early.

Morning sessions: *You should arrive between* ***9:30am*** *and* ***10:00am*** *and the session begins between* ***10:00am*** *and* ***10:30am*** *and your team need to have packed up by* ***1:00pm***

Afternoon sessions: *You should arrive between* ***1:00pm*** *and* ***1:30pm*** *and the session begins between* ***1:30pm*** *and* ***2:00pm*** *and your team must have packed up by* ***4:30pm***

overleaf is an approximate timetable for the launch sessions.



On the following page is a map of the site showing where you will be able to park when you arrive at the site. ***You will need to enter via the security gate onto the site, please state you are here for the 'CanSat Competition' and the gate staff will be able to direct you where to go.*** There will be Launch Access Ltd staff in high-vis jackets at the launch location to assist you with parking and with where to go when you arrive. Upon arrival you will be allocated a prep-table in the marquee where you will have a table and a few chairs for your team's use to prepare your CanSat. ***Due to the restrictions of the Westcott site there will be no mains power available in the marquee.*** We will have a 'power station' table set up where there will be power banks that can be shared by teams to recharge laptops, phones, LiPo batteries etc, however these can NOT be used to power mains soldering irons or other larger equipment. ***We will have gas soldering irons on site for emergency repairs but time on these busy sessions will not allow for significant electronics work to be undertaken. You MUST arrive with your CanSat pretty much ready to be launched and with ALL of your equipment charged and powered.***

Within the first hour of your session a safety briefing will be held which your entire team will be asked to gather for with all other participants. This briefing is mandatory and will not be repeated, you MUST arrive in time for this briefing. This will be given by the Range safety Officer for the day and you must adhere to the safety rules given by the RSO during this briefing and at any other times when needed during the day. Although rocketry is generally a safe activity, strict rules must be adhered to and any participants not adhering to those rules will be asked to leave with their team immediately.

You will have up to three hours on site in total and up to two hours to prepare your CanSat for flight. Due to the time constraints on the day we STRONGLY suggest you arrive with your CanSat ready to fly! During the prep time a member of Launch Access staff will speak with your team and inspect your CanSat for flight readiness. We won't be looking to check if your CanSat meets the rules or is working correctly, we will only be checking for the strength of the CanSat, and the parachute size, to check it is safe to be launched. Your team may be asked to make modifications to your CanSat to meet the launch safety requirements, such as reducing the size of your parachute if it is too large for the weather conditions on the day, reinforcing the CanSat shell with tape if it is not strong enough to survive the flight. As soon as your CanSat has passed the flight safety review, we will allocate you a rocket and, once we have enough teams ready to fly, we will all make our way to the launch location.

Once at the launch location each team will be called forward to load your CanSat into the allocated rocket. Once two or three rockets are loaded and ready to fly, we will move everyone to behind the safety barriers for the launches. Your team will be asked to then wait at the 'Range-Head', around 30M/100ft from the launch pad, where the Range Safety Officer or Launch Control Officer will then give an audible countdown and launch your rocket using a remote electrical firing system.

Your CanSat will be deployed at an altitude of around 300m/1000ft after an ascent of around six seconds. Once the rocket and the CanSat have been observed to have landed, up to three team members will be permitted to walk out to retrieve the CanSat. On some sites you may need to be accompanied by a member of staff to assist you in navigating the site when retrieving your CanSat. If multiple teams are ready at the same time you may be asked to wait whilst up to six rockets/CanSats are launched and then all teams will be released to begin recovery together.

NOTE: Wind-speed and site safety constraints outside our control may mean we are unable to make all, or potentially any launches during some sessions. If it appears this is likely to be the case we will endeavour to give your team additional staff time to support their CanSat project, and give additional training about how the rockets operate, constraints for future entry in the competition etc.

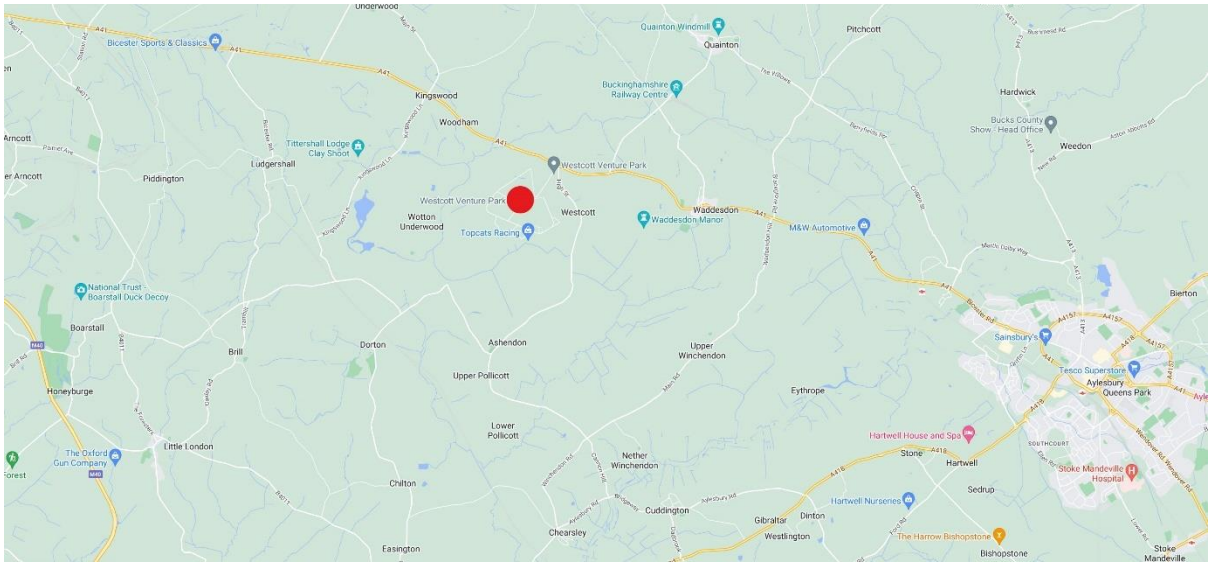
Due to the large number of teams expected at some of the events, we kindly ask that teams are packed and ready to leave promptly at the end of their session to allow sufficient parking and prep space for arriving teams if you have attended in the morning or to allow the staff to clear the site efficiently at the end of the day if you attended an afternoon session.

The Site:

You have booked to attend the regional launch day at: Westcott Venture Park. The full address of this location is as follows:

Westcott Venture Park, Westcott, Near Aylesbury, Buckinghamshire, HP18 0XB

NOTE: *For SatNav please use postcode:* ***HP18 0PH***



The location of the site is shown on the map above.

The site is a secure space-sector business park with a history of rocket testing and you will enter the park via a security gate with a missile mounted at the entrance. If you tell the security personnel you are there for the 'CanSat event' they will let you in and direct you to the event location further down the main central road. Look for signage showing where to park and follow 'CanSat' arrows.

The above aerial image shows the expected parking area marked as a blue box. The red square denotes the expected location of portable toilets for your use. The expected launch point is marked with the green rocket emblem. These locations/facilities may change slightly on the day and you will be informed on arrival.

ACCESSIBILITY: *This site requires participants to move across grass covered land but there are accessible viewing areas on hard ground. Please contact us if this could cause problems for your team.*

NOTE: *In case of any problems finding the site or once on-site, your primary point of contact will be: via the Launch Access Ltd mobile phone on:* ***07912 604116***

To Bring/Consider:

Your team will need to cross the airfield in order to reach the launch location and to recover your CanSat. All participants must wear boots or suitable waterproof footwear. It is likely to be cold and could be wet during the launch day. All participants should bring/wear layers and a waterproof top-coat. There will be a marquee with tables and chairs for you to prep your CanSat in but space will be limited so please dress in preparation of being outside in the cold for some of the day.

Although the Launch Access staff will have a limited tool-kit available for participant use, assume you will need to bring everything with you that you could possibly require to prepare your CanSat for flight. If anything could break, fail or run out of power, bring spares!

There will be no catering facilities on site. Teams must bring their own food and drink to last the duration of the event.

Safety Rules:

Due to the nature of the rocketry activity being undertaken there are a set of rules that ALL attendees must follow. Anyone seen disobeying these rules and putting themselves or others at risk will be asked to leave the site immediately with the rest of their team. In case of any queries, ask one of our staff in the red/orange hi-vis jackets.

1. *The R.S.O. (Range Safety Officer) is to be obeyed at all times by everyone, adults and students alike. It is the R.S.O's job to conduct the actual launches and to keep everyone on site (and their property) safe from harm/damage. If the R.S.O tells you to do something, or to stop doing something, you do so immediately without question.*
2. *The Westcott site is an active business park which has live rocket engine test facilities on site, which may be active during the event days. Do not leave to retrieve your CanSat without being accompanied by, or having been given express permission from a member of Launch Access staff. Do not enter surrounding land or cross other people's property without express permission from, or whilst being escorted by, a staff member.*
3. *The launch area will be taped off with hazard tape and warning signs. Do not pass that tape barrier or approach the launch pads without the express permission of the RSO or one of our staff. Even if your team/friends are already at the launch pad, you cannot go out without express permission to do so. You will be led out to the launch pad by the RSO when you are ready to load and launch your CanSat and should not pass the barrier at any other time during the day.*

4. *Do not pick up the landed rockets without having been instructed to do so by our staff. It is possible that there may still be live propellant or ejection charge material on board and the rocket could be dangerous. The nozzle will also be VERY hot and can present a severe burn hazard for some minutes after landing.*
5. *Please only take up the minimum space in the prep area that you need to get your CanSat ready. There should be plenty of space for each session but please be respectful to other teams and share the facilities where needed. As soon as your CanSat has flown, please clear your team and all of your belongings out of the prep-area to allow another team to use the space.*
6. *You may be able to take a team photo with the carrier rocket if you want, but this will only be allowed AFTER your CanSat has launched. It is neither safe nor logistically viable for teams to pose with the live rocket on the launch-pad before the flight. We will endeavour to provide you with a lift-off shot of your CanSat from one of our Pad-Cameras, this will be supplied via ESERO after the event.*

EMERGENCIES: In the case of any medical emergencies we have at least two first-aid trained staff on hand, these will be made known to you at the beginning of the event. Should you need to travel to the nearest A&E department due to an accident on site, this is at: **Stoke Mandeville Hospital, Mandeville Road, Aylesbury, Buckinghamshire, HP21 8AL, Tel: 01296 315000**

For any enquiries regarding these events or your attendance, please contact the ESERO UK team via: esero-uk@stem.org.uk prior to the event.

If you have any problems finding the site or need urgent assistance on the day, call Launch Access on: ***07912 604116*** ***NOTE: This number is NOT for use in advance of the events to change your booking or make enquiries related to the competition.***