AUSTRALIAN ROVER CHALLENGE

Founded by Adelaide University

# AUSTRALIAN ROVER CHALLENGE 2026

## SYSTEM ACCEPTANCE REVIEW GUIDELINES

VERSION 1.0 29 OCTOBER 2025

CATERPILLAR®

## About This Document

This document is to be read and interpreted together with the Rules and Requirements document for the 2026 Australian Rover Challenge. It sets out the requirements for the System Acceptance Review, a deliverable of the challenge that is detailed in Chapter 6 of the Rules and Requirements document.

## Contacts

For *any* general enquiries about the challenge, please feel free to use the general inbox which is monitored by a range of the staff involved with the challenge.

**Australian Rover Challenge – General Inbox**
*e:* auroverchallenge@adelaide.edu.au

This is the best way to connect with the technical committee who develop and manage these rules.

**A/Prof David Harvey**

**Henry Lourey**

**Dr Daniel Ricardo**

**Lachlan Holden**

**Georgia Dallimore**

## Changelog

| Date | Version | Change notes |
|---|---|---|
| 29/10/2025 | V1.0 | V1.0 release. Minor changes from 2025 SAR guidelines, namely addition of extra page to describe execution of system design. Teams must accompany their SAR report with a supporting ”proof of life” video showing key rover capability and adherence to minimum requirements. This video content should be filmed in the weeks leading up to SAR report submission. Please read this document carefully in its entirety. Future versions may be issued if any errors are found or areas of clarification are needed. |

## Requirements

1. This document sets out the requirements for the System Acceptance Review (SAR), a deliverable for the 2026 Australian Rover Challenge (ARCh) specified in Chapter 6 of the Rules and Requirements document.

2. The aims of the SAR are as follows:

   2.1. To ensure that the rover produced by a team is of the expected level of maturity and readiness to safely compete in the 2026 Australian Rover Challenge.

   2.2. To convey the technical maturity of your rover, and its current state of readiness through a design report and associated ”proof of life” video capturing field testing and other evaluation.

   2.3. To demonstrate that the rover has met, or intends to meet, your acceptance criteria.

   2.4. To prove that the rover has the capability to compete in all selected tasks.

   2.5. To provide teams with a benchmarking opportunity for rover operation.

3. Teams will receive a mark for the SAR. This mark will contribute a maximum of **70 points** to the team’s 2026 challenge score.

4. Teams will also receive confirmation of the task in which their rover can compete. This will be in the form of a GO/NO-GO for each task nominated by the teams. Judges will primarily review the supporting video for evidence that the system is ready to compete to make this decision.

5. Each SAR report shall contain clear evidence of attempted verification for identified essential requirements with associated ”proof of life” video supporting this verification as entry conditions for the review. All rovers shall be capable of manoeuvring on sand at this point, though additional consideration will be given to new teams at the judges’ discretion. Each report and video pair will undergo an initial review entry conditions check within 48 hours of the submission deadline. SAR report and video pairs addressing all expected elements will receive an “Accepted” message. Any SAR report and video pair missing these elements upon first submission will receive a “Rejected” message, with the team then having a further 48 hours to update and resubmit the report and video. Rejected report and video pairs will incur a 20% penalty for this element.

6. Format and submission details:

   6.1. SAR reports shall be limited to 15 pages with the following restrictions:

      6.1.1. Page 1 shall be a cover page which identifies the competing team’s name, university, the student team lead(s), and an additional optional point of contact.

      6.1.2. Page 2-3 shall discuss your team’s *execution* of your approach to the system development life cycle for your system to date that you outlined in your Critical Design Review.

      6.1.3. Pages 4–12, the body of the report, shall contain text and graphics (images, figures, etc.) The points to cover in the report are discussed in rule 7.

      6.1.4. Page 13 shall contain written descriptions of each test or demonstration in the accompa-

nying ”proof of life” video. Descriptions should include timestamps so that judges know exactly which steps are being referred to. Teams can refer to more detailed testing plans or results in the body of the report or short appendices, where appropriate.

**6.1.5.** Page 14 shall discuss your team’s planned activities to prepare the rover for the challenge, making reference to the schedule on page 15 where appropriate.

**6.1.6.** Page 15 shall contain a schedule of activities (Gantt chart or similar) depicting the expected activities to be carried out by the team from the due date of the SAR until the competition. Tasks on the critical path should be highlighted. This page may be A3 in size to accommodate more detail, however it should be concise, neat and with a font size that is readable at normal levels of zoom.

**6.1.7.** Pages of references in your elected referencing format do not count toward the page limit. Please only include a reference list, not a bibliography.

**6.2.** Pages should be A4 paper size with margins no smaller than 2cm, contain page numbers, use text in Calibri or similar 11-point font, and be single spaced.

**6.3.** You may choose how to structure the body of the report (e.g. style of headings, titles of sections, etc.) freely, so long as it follows some standard technical/academic practice, and your report comprehensively covers every point in rule 7. A simple Word Document template has also been provided as an optional starting point for teams.

**6.4.** All content and ideas not created by the submitting team must be cited in a standard referencing style (i.e. Harvard, IEEE, or similar) on the pertinent page where appropriate or in a references section. Reports must comply with expectations of academic honesty at your host university. Plagiarism concerns are taken very seriously and are grounds for disqualification.

**6.4.1.** Teams are reminded that self-plagiarism will also be taken seriously. The content for this report may be inspired from previous reports prepared for any competition, but the exact content must be developed specifically for this delivery.

**6.5.** A supporting ”proof of life” video no longer than 2 minutes in duration shall supplement the report with the following restrictions:

**6.5.1.** Videos must contain new footage, filmed in the weeks leading up to the submission and not previously submitted to any other competition.

**6.5.2.** Videos should be simple, contain little editing, and cover as many points as possible in rule 8.

**6.5.3.** The video shall be accompanied by written descriptions in the report, including video timestamps, which describe what is being shown, as detailed in rule 6.1.4.

**6.6.** Electronic submissions are required for both the report and supporting ”proof of life” video. Reports are required in PDF file format, while videos are required as a YouTube link (which may be unlisted).

**6.6.1.** Files will be uploaded via a form on the ARCh website that will be sent directly to team leads.

**6.6.2.** SAR reports and supporting ”proof of life” videos must be submitted no later than 23:59

Australian Central Daylight Saving Time (ACDT) UTC+10.5 on the due date (11 February 2026) and may be submitted at any time before this point.

**6.6.3.** Multiple submissions are allowed. The most recent submission before the deadline from each team will be judged.

**7.** The report shall, in an order of your choosing:

**7.1.** Convince the panel that your *integrated system* has met the requirements for the challenge. While your rover needs to meet *all* the rover requirements in the latest version of the challenge rules, only key requirements (as identified by your team) in addition to the minimum requirements need to be directly addressed in the SAR.

**7.1.1.** You must address the following minimum requirements: size, weight, E-STOP, status LED, communications, and safe carry.

**7.1.2.** Failure to demonstrate adherence to the minimum requirements, with no planned corrective action described in the report, may result in your team's entry to the 2026 challenge being cancelled.

**7.1.3.** You may also, as your team sees fit, identify any other requirements as key requirements for discussion.

**7.1.4.** Please note the subtlety in the difference between the SAR and Critical Design Review (CDR) requirements. In the CDR you were asked to show how your *design* met the requirements, whereas in the SAR you are required to show how your *integrated system* meets the requirements.

**7.2.** Present an overview of the final technical design for your system. This should show all of the elements that make up your design such as the rover, base station and any other pertinent system elements.

**7.3.** Present the final technical design for your system elements. This should provide an overview of every subsystem, and pay particular attention to details that have been updated or changed since the CDR. A successful report will include the following details for each subsystem:

**7.3.1.** The final requirements you used to design the subsystem.

**7.3.2.** How you tested or plan to test the subsystem.

**7.3.3.** How you integrated or plan to integrate the subsystem into the rover system.

**7.3.4.** Results of any subsystem or integrated system level tests. Note that testing failures accompanied by an appropriate plan to remedy the failure and re-test will be viewed more favourably than simply omitting test failures.

**7.4.** Confirm the set of competition tasks in which your team intends to compete.

**7.4.1.** Weighing up your team's resources and experience, and making a judgement on which tasks to compete in will be viewed favourably. This confirmation needs to be supported with appropriate proof of capability that would convince judges the rover can compete in the selected tasks.

8. The SAR supporting ”proof of life” video (of no more than 2 minutes in length) is intended to accompany and support the SAR report. Ideally, it should contain:

    8.1. Evidence of capability to compete in each task the team has nominated. This evidence will be reviewed by the judges and form the basis for a GO/NO-GO decision for your team to compete in each nominated task, in accordance with rule 4. Suggestions for appropriate evidence are outlined in the following subsections.

        8.1.1. Post-landing task: rover and base station set up, followed by driving, turning and imagery capture all by a remote team (all commands are sent by a team making decisions based on information only available to them at the base station).

        8.1.2. Space resources task: ANY remote data collection of ANY sample (ice-bearing regolith, ilmenite enriched regolith, or any other sample) from ANY science instrument on board the rover (whilst remotely operated).

        8.1.3. Excavation and construction task: any debris removal using a remotely operated rover OR any excavation of regolith using a remotely operated rover OR the deployment of a paver from a remotely operated rover.

        8.1.4. Mapping and autonomous task: autonomous rover navigation to a pre-determined location (for example, a postcard-sized placard, or another arbitrary location in the rover’s reference frame) OR evidence of autonomous terrain data collection in support of map generation (a map does not need to be generated).

        8.1.5. Please note that these are NOT REQUIREMENTS for the supporting video. These are exemplar evidence suggestions that will guarantee your team receiving a GO decision for each of the above tasks. If you have not reached this level of maturity, presenting video evidence for your current system capability, along with written evidence in the SAR report of your plan to increase the readiness of the system for the challenge may qualify your team to receive a GO decision for the task.

    8.2. Evidence of subsystem or system level testing outlined in the SAR report. Note that this is not all encompassing (not all tests listed in the report need to be shown, there is not enough time for this in the video). Rather, the tests performed that demonstrate the most progress of the system at the time should be presented. For example:

        8.2.1. A fully integrated rover could demonstrate full system tests such as testing communications range in competition conditions.

        8.2.2. A rover which has not had its drive subsystem integrated into its chassis subsystem may demonstrate velocity control of a wheel unit, separate from the rover, to confirm that the wheel unit has met the team’s requirements.

    8.3. Any other footage that supplements key details presented in the SAR report such as E-STOP operation, status LED, safe carry, and size and weight restrictions.

9. Submissions will be marked by a panel of representatives from academia and industry.

10. The weighting of the relevant sections of the report are as follows:

    10.1. Execution of your approach to the system development cycle: 10%, Judges are directed to

consider information in the following categories to make up the overall section mark:

- Requirements
- Scheduling
- Manufacturing
- Testing
- Verification
- Validation
- Rover operation

**10.2.** Final technical design: 60%, Judges are directed to consider information in the following categories to make up the overall section mark:

- System overview (including hierarchy)
- Interface definition (including subsystem and external interfaces)
- Requirements analysis
- Subsystem overview - Drivetrain
- Subsystem overview - Chassis
- Subsystem overview - Perception
- Subsystem overview - Power
- Subsystem overview - Communications
- Subsystem overview - Command and control
- Subsystem overview - Base station
- Subsystem overview - Specific payload
- Procurement/manufacturing progress

**10.3.** Convince the panel that your integrated system has met the requirements for the challenge: 30%. Judges are directed to consider information in the following categories to make up the overall section mark:

- Size
- Weight
- E-STOP
- Status LED
- Communication
- Safe carry
- Other minimum viable product requirements as identified by your team