

# Space junk removal

Name \_\_\_\_\_ Date \_\_\_\_\_

Source: [https://www.esa.int/kids/en/news/ESA\\_gives\\_go-ahead\\_for\\_the\\_world\\_s\\_first\\_space\\_junk\\_removal\\_mission](https://www.esa.int/kids/en/news/ESA_gives_go-ahead_for_the_world_s_first_space_junk_removal_mission)

## ESA\* gives go-ahead for the world's first space junk removal mission

\*ESA – European Space Agency

22 January 2020

There are nearly two 2000 active satellites<sup>1</sup> in space, orbiting around Earth. They are very helpful for us, providing communication, allowing us to explore space and monitoring our changing world.

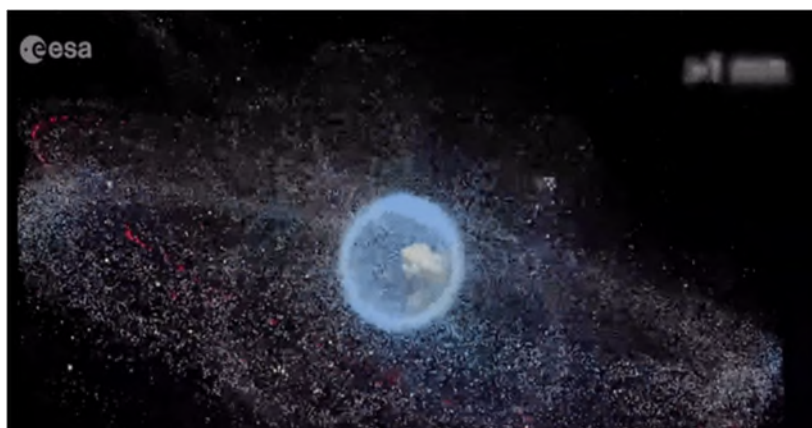


Figure A. Space around Earth is filling up with space junk! © ESA



Figure B. A photo of the Vespa before it was launched. Copyright: ESA/CNES/Arianespace/Optique Video du CSG

However, when satellites break down or malfunction and are no longer useful, they often stay in their orbits becoming what is known as space debris – sometimes nicknamed space junk. This is becoming a big problem. There are more than 3000 broken satellites orbiting Earth right now!

Thousands of new satellites are expected to be launched into orbit over the coming years. They will all eventually become space junk. Even if all space launches were cancelled today, the amount of space junk in orbit would continue to increase. This is because collisions between objects in space can smash them apart, creating even more pieces!

ESA Director General Jan Wörner explains: “Imagine how dangerous sailing the high seas would be if all the ships ever lost in history were still drifting on top of the water. That is the current situation in orbit, and it cannot be allowed to continue.”

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A company called ClearSpace have accepted ESA's challenge to think of a solution to this problem. They have proposed ClearSpace-1, the first space mission with the goal of removing an item of debris from orbit. After launching in 2025, its target will be part of an ESA Vega rocket called a Vespa (Vega Secondary Payload<sup>2</sup> Adapter). The Vespa (figure B) was ejected from its rocket and left in orbit, meaning it is now a piece of space junk. Similar in size to a small satellite, it is the perfect test target for ClearSpace-1.

ClearSpace-1 will first be launched into an orbit 500-km above Earth's surface – a little lower than its target Vespa space debris – where it will undergo tests to ensure it is operating properly. It will then target the Vespa and close in on it, using four robot arms to grab onto the space junk! The combined ClearSpace-1 and Vespa will then be lowered down, hitting Earth's atmosphere and burning up, completely destroying them – a very effective way of clearing up space junk.

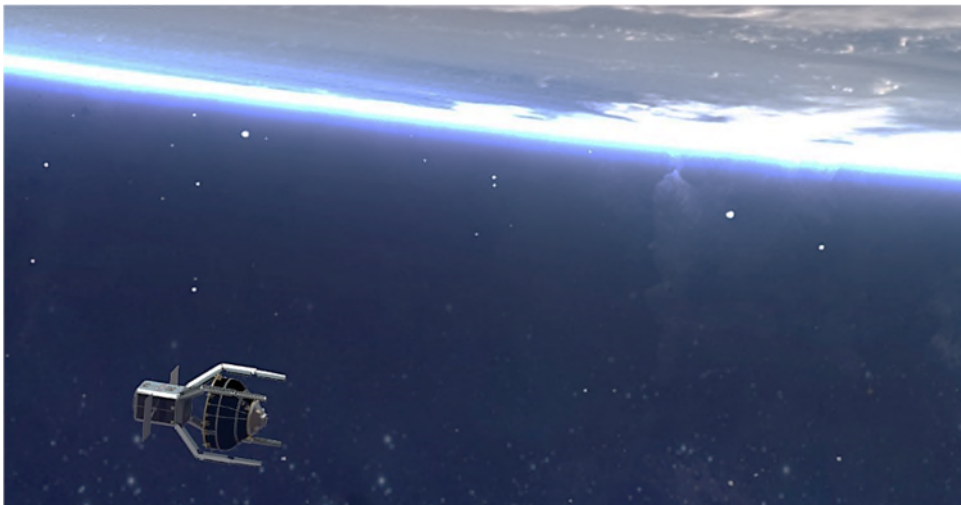


Figure 3: This is a model of what ClearSpace would look like, grabbing onto the Vespa Copyright: ClearSpace

The ClearSpace company are now giving ESA their final proposal, ready to begin the project in March.

*Fact: There are more than 8400 tonnes of space junk orbiting Earth!*

## Notes

[1] In the context of space flight, a satellite is an object that has been sent into orbit. These objects can be called artificial satellites to set them apart from natural satellites such as Earth's Moon.

<https://en.wikipedia.org/wiki/Satellite> adapted

[2] Payload means how heavy the load is that a rocket can carry. A rocket's payload can be a satellite, space probe, or spacecraft carrying humans, animals, or cargo. Payload – Wikipedia, adapted.

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## Reading questions

- 1) How many inactive satellites are going round our planet?

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1.9R, L2.11R. 1 mark

- 2) a. What is the **main** purpose of the text?

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- b. Give **two examples** from the text to support your answer to 2a).

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L1.16R, L2.14R. 3 marks

- 2) Which words mean the same as **eventually**? (See paragraph 3 of the text)

<b>a</b>	soon	<input type="checkbox"/>
<b>b</b>	in the past	<input type="checkbox"/>
<b>c</b>	finally	<input type="checkbox"/>

<b>d</b>	in the end	<input type="checkbox"/>
<b>e</b>	flat and smooth	<input type="checkbox"/>
<b>f</b>	ultimately	<input type="checkbox"/>

Tick (✓) all the correct answers. L1.13R. 2 marks

- 3) Please list here any words in the text that you do not know or are not sure of.  
Look them up or discuss with your teacher.

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L1.13R, L2.15R.

- 4) Which word best describes the style of the text?

<b>a</b>	informal	<input type="checkbox"/>
<b>b</b>	stilted	<input type="checkbox"/>

<b>c</b>	technical	<input type="checkbox"/>
<b>d</b>	casual	<input type="checkbox"/>

L1.16R, L2.17R, L2.19. 1 mark

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5) Which word best describes the writer's tone?

a	sarcastic	<input type="checkbox"/>
b	chatty	<input type="checkbox"/>

c	apologetic	<input type="checkbox"/>
d	serious	<input type="checkbox"/>

L2.19R. 1 mark

6) Provide **two** quotations from the text that helped you decide on your answer to 5).

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L2.19R. 2 marks

7) a. How did Jan Wörner help us picture all this space junk?

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b. What type of language feature is this?

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L1.12R, L2.14R. 2 marks

8) Paragraphs and a title/heading are examples of features used to organise the text.  
**Name two other organisational features and explain why each has been used.**

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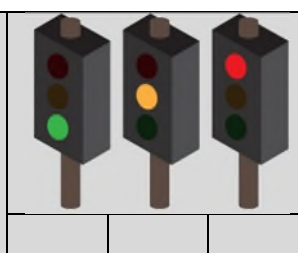
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L1.14R, L2.16R. 4 marks

## Traffic lights – please tick

- green: got it
- amber: got most of it
- red: did not get it.



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8) a. What are they going to do about the bit of junk called Vespa?

Write **2 paragraphs** (about 100 words) in your own words, using proper sentences.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

L1.9R, L2.11R, L1.23W, L2.24W.

b. When will they start?

L1.9R, L2.11R. 1 mark

An **editable Word version** of this document is available, **on a one-to-one exchange basis for your own resource contribution**. At the moment, there is **no answer sheet** for this resource. If you would like to provide one and become a registered resource contributor, please contact Maggie using the [www.skillsworkshop.org](http://www.skillsworkshop.org) site contact link.

R = reading, W = writing. For details of curriculum content refer to *DfE (Feb 2018), Subject content functional skills English (pages 12-16)*: <https://www.gov.uk/government/publications/functional-skills-subject-content-english>

March 2021. Kindly contributed by Helen E. Search for Helen on [www.skillsworkshop.org](http://www.skillsworkshop.org) L1-L2 Reformed Functional English (reading). To find related links and resources visit the download page for this resource at skillsworkshop

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