



# SCHOOL INFORMATION PACK 2024-2025

## Net Zero Superheroes Competition



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# 1. Background

AtkinsRéalis is a world-leading design, engineering and project management consultancy firm. We are **passionate** about **Engineering Net Zero** because we want to protect future generations from the threat of climate change. Collaborating with our clients, we're driven to make our world a better place.

The UK government has passed a law requiring the UK to reach Net Zero emissions of greenhouse gases by 2050. The generation currently at school will be our future leaders responsible for reaching this target, so we want to talk to schools about it.

We want to **inspire younger generations to make an impact** and **consider careers in engineering** by teaching them about the challenges of meeting Net Zero, particularly from an engineering perspective. To meet this goal, we are running a UK-wide schools competition called "**Net Zero Superheroes**".

Refer to the AtkinsRéalis Engineering Net Zero website for further information: [Time to step up! - Engineering Net Zero](#).

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## 1.1 Competition aims

We are running our Net Zero Superheroes competition to meet the following key objectives:

- Inspire younger generations to pursue careers in STEM to play a vital role in meeting Net Zero in the UK.
- Provide school pupils with role models by meeting first hand with engineers, scientists and industry experts through AtkinsRéalis mentoring and competition judging process.
- Provide teaching support and/or materials to help with education on important topics such as Climate Change, Carbon Footprint, Net Zero, Energy Demand, Energy Supply.
- Raise awareness amongst younger generations about how these topics relate to them.
- Encourage pupils to think about, and make, small changes to their lives to reduce their energy demand and carbon footprint, which will have an overall impact on the Net Zero target.
- Improve knowledge about the government's Net Zero targets, the choices and challenges we are facing, and the importance of STEM in meeting these targets.
- Improve understanding of the energy system and energy trilemma, and the important role that nuclear will play in the UK's energy system.
- Create a fun, interactive and applicable challenge to maximise engagement and learning about Net Zero.
- Encourage children to use their imagination and "blue sky thinking".
- Help school pupils develop their team working and presentation skills.

## 1.2 Previous school outreach

We have engaged with schools across the UK and Northern Ireland to spread the Net Zero message. Figure 1 shows the locations of the schools across the country who have participated in the competition.

AtkinsRéalis first launched the competition in 2020, seizing the opportunity to use the extensive knowledge held by AtkinsRéalis employees to help inspire young pupils to consider a career in STEM and engineering Net Zero. The competition has since run each subsequent year, engaging with schools across England, Scotland, Wales and Northern Ireland to spread the Net Zero message.

The outreach in the 2023-2024 competition was a huge success. AtkinsRéalis worked with over 50 schools and received over 375 entries to the competition. Our employees from across the AtkinsRéalis business volunteered to mentor the pupils at each school.

Over the course of the competitions first four years we have experienced significant growth. Between 2021-2024, we have engaged over **8,000 children** nationwide, generating **1,000+ ideas** for Net Zero solutions in schools and local communities. 1-1 shows the locations of the schools across the country who have participated in the competition from 2021 - 2024.

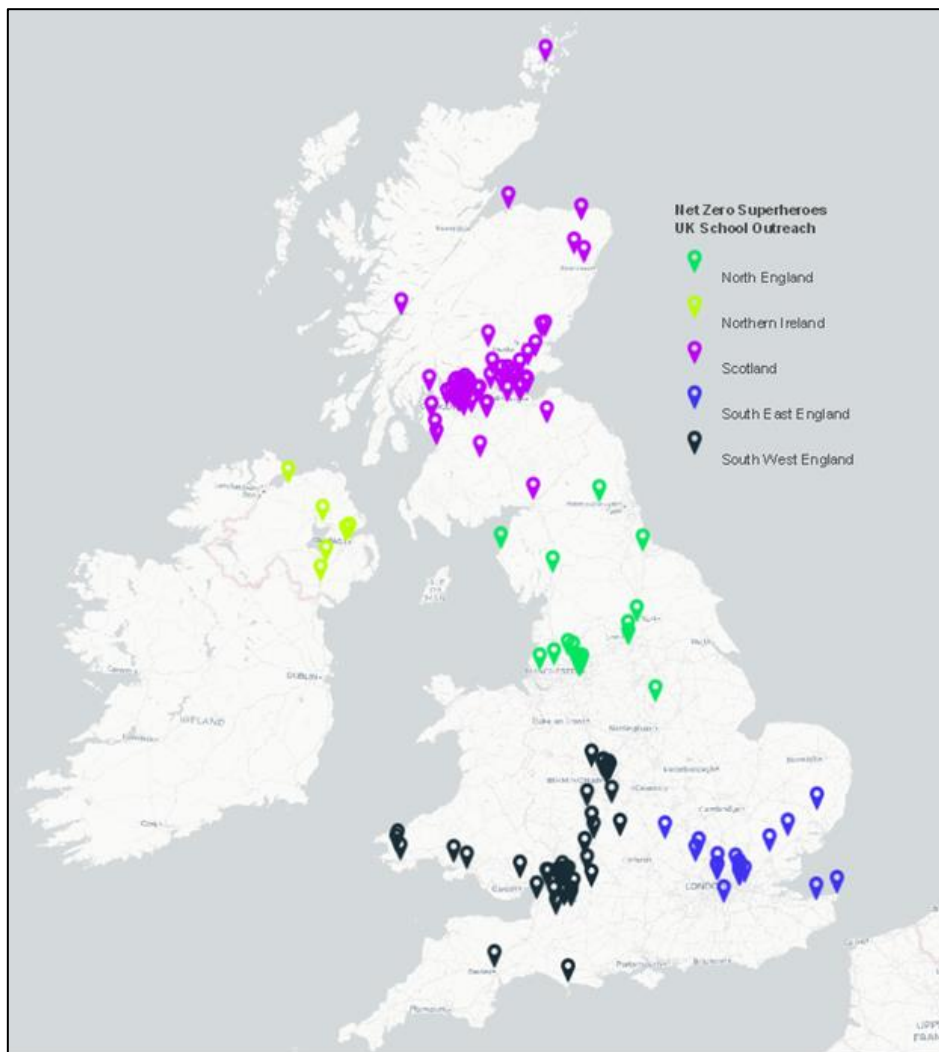


Figure 1-1 - Schools Registered for the Competition from 2021 - 2024

## 2. Competition Details

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### 2.1 Competition task

Pupils can either work individually or in teams of up to five (through running the competition in previous years, we've found limiting teams to five children gives more opportunity for all team members to contribute).

**Each team or individual should propose and present one or more creative inventions to help their school or local community contribute to Net Zero.**

The children should be encouraged to focus their inventions on the following key areas:

#### 1. Energy

How could the energy demand of the school or local community be reduced?

How could the energy supply to the school or local community be made “greener”?

#### 2. Transport

How could travel to and from the school be improved to reduce pupils' carbon footprint?

#### 3. Infrastructure

How could the school building itself be improved to be more energy efficient?

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### 2.2 Age group

The competition is aimed for school pupils in **Year 5** (England / Wales) and **Primary 6** (Scotland / Northern Ireland). Please email us at [ENZSchools@atkinsrealis.com](mailto:ENZSchools@atkinsrealis.com) if you are interested in alternative STEM activities for older or younger pupils.

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### 2.3 Competition registration

If your school would like to take part in this year's competition, please complete the [Net Zero Superheroes Competition 2025 – Schools Registration Form](#).

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### 2.4 Competition timeline

The competition opens in September and sessions can be run at any point that suits the school and volunteer. The submission window will run from will run from **3<sup>rd</sup> March – 4<sup>th</sup> April 2025**. The submission deadline is at **12 noon on Friday 4<sup>th</sup> April** (Figure 2-1). This deadline is strict; however, schools can begin working on submissions earlier if this suits their timetables better. The judging panel will run on Wednesday 30<sup>th</sup> of April.

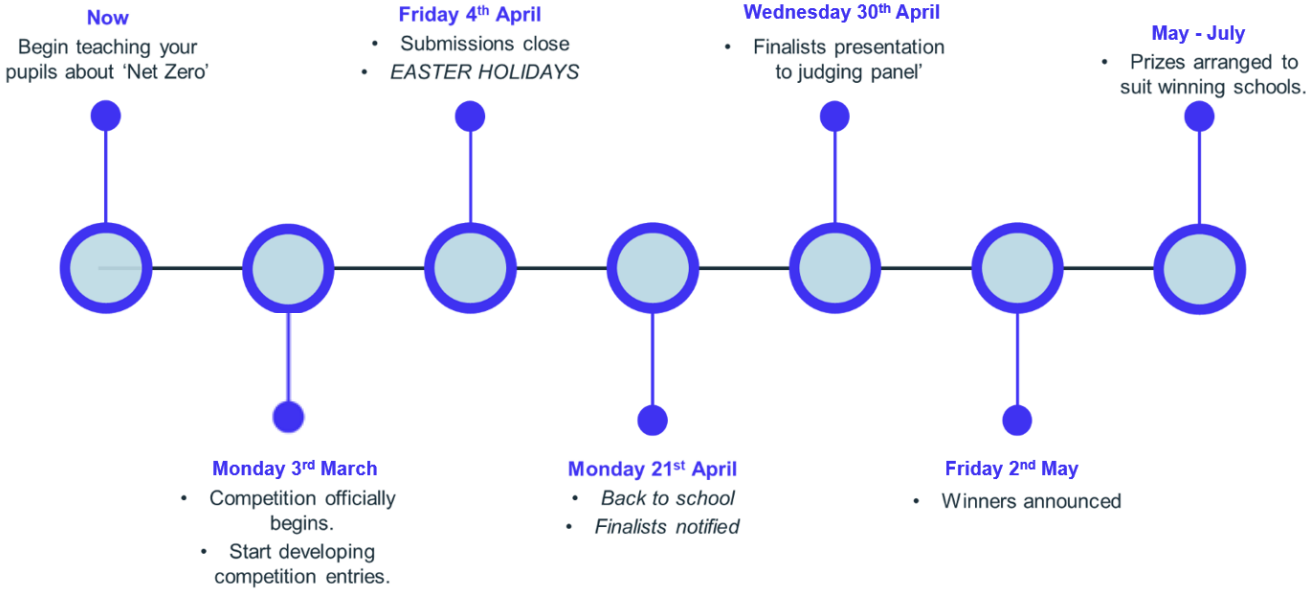


Figure 2-1 - 2024-2025 Competition Timeline

## 3. AtkinsRéalis Support

### 3.1 Lesson Plan

AtkinsRéalis has developed a Net Zero Lesson Plan which is suitable for a Year 5/Primary 6 audience. The Lesson Plan includes presentation slide decks as well as practical and worksheet-based activities. The key topics covered include, but are not limited to, climate change; carbon footprint; Net Zero; energy; transport; role of engineers (see Section 3.1.1 for how our Lesson Plan maps to the National Curriculum). The Lesson Plan consists of four sessions split into two workshops:

- **In-person workshop (approx. 3 hours)**

- *Session 1 – Engineering Net Zero Presentation (50 minutes)*

The volunteer can introduce themselves and how their role is important to meeting Net Zero. This presentation includes multiple interactive activities to engage the students.

- *Session 2 – Net Zero Practical Activity (50 minutes)*

The volunteer can choose one of three practical activities to deliver:

- Build your own onshore wind turbine (using recycled material)
- Build your own shoebox solar oven (using recycled material)
- Climate Change Snakes and Ladders (to play once it is built)

There are guidance documents provided for i) the volunteer and ii) the students.

- *Session 3 – Competition Workshop (50 minutes)*

As an individual or in groups of 4-5, students will develop their competition idea that considers the scoring criteria. Worksheets are provided to help students develop their idea.

- **Virtual feedback workshop (approx. 1-2 hours depending on the number of groups)**

- *Session 4 – Mini-Pitch*

The students have 5 minutes to present their idea to the judge (their volunteer). The judge will provide a feedback sheet to the individual/team which includes positive feedback and constructive criticism.

The session aims to give presentation experience to those who are not shortlisted for the judging panel.

The Lesson Plan is available for schools to deliver independently, or alternatively, AtkinsRéalis can provide a mentor (see Section 3.2) to support your school.

#### 3.1.1 Mapping to the National Curriculum

A study of the curriculum for schools in England has been completed and has demonstrated that the Net Zero Superheroes Schools Competition ties directly into the national curriculum. There is deemed sufficient overlap in much of the key stage 2 curriculum across Scotland, Wales and Northern Ireland for this study to apply across the UK. The following quote taken directly from the national curriculum highlights the links between the aims of the Net Zero Superheroes competition and those of the Department of Education; "The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically".

The Lesson Plan key topics include, but are not limited to, climate change, carbon footprint, Net Zero, energy, transport, and the role of engineers. The topics align with the English, Science and Geography programmes:

- [English programmes of study: key stages 1 and 2. National curriculum in England. \(GOV.UK\).](#)
- [Science programmes of study: key stages 1 and 2. National curriculum in England. \(GOV.UK\).](#)
- [Geography programmes of study: key stages 1 to 2. National curriculum in England. \(GOV.UK\).](#)

## 3.2 AtkinsRéalis mentoring

The role of your AtkinsRéalis mentor can be one or more of the following:

- Answer any queries you have throughout the competition, via email or telephone.
- Deliver Net Zero teaching resources, including lessons, interactive workshops and/or activities, either in person or virtually.
- Help the teacher with the preparation and supervision of Net Zero activities.
- Help support pupils in developing their competition entries and supporting teachers when submitting.

AtkinsRéalis requires that all volunteers complete an enhanced DBS / PVG check. DBS / PVG requirements state that these volunteers should not be alone in a classroom with school pupils. Therefore, a teacher must always be present, and the responsibility of the pupils will remain with the class teacher. As part of AtkinsRéalis' risk management, schools will be required to sign a safeguarding letter, available on request, if they would like mentors to make an in-person visit to the school.

## 3.3 Schools feedback

AtkinsRéalis received very positive feedback from previous year's competitions on the support provided to various schools.

- **All Saints C of E Primary, participating school in England**, stated that "The Atkins engineers came in and provided a fantastic lesson to the children".
- **Barsail Primary school, participating school in Scotland**, said that 'the children were engaged with the presentations at school. This prompted lots of research and engagement from the children. When they created the wind turbines, there was a good buzz around the class and every group made a different design. It was good to see the plan and the teamwork.'
- **Bardsey Primary School, participating school in England**, provided the following feedback: "Great competition to encourage teamwork and a collective collaboration thinking about the issues in dealing with achieving net zero. Allowed the creative ideas of the children to flow and for them to think about tackling a real-life global issue."
- **Lorne Street Primary, participating school in Scotland**, said "This competition is a great initiative to help the children think about Net Zero. As teachers we don't always know enough about the topic to teach it properly so having mentors from Atkins has helped so much."
- **Law Primary School, participating school in Scotland**, said 'It was great to have the mentors visit the school and for the children to meet people who worked in the sector and could give a different perspective from their teacher.'
- **Tormead Prep School, participating in England**, said 'The opportunity for engineers to come into school and run workshops was an incredible opportunity for the pupils to work with real engineers. It was very aspirational for them.'
- **Robert Gordons College, 2024 prize winner from Scotland**, said that their prize, enjoyed by the whole year group 'was a brilliant day out and the pupils really enjoyed the experience. We went to a Bee/honey workshop, an Energy Workshop and saw lots and lots of animals and interesting things.'
- **Whiteshill Primary School, participating school in England**, told us that "The children have learnt a lot about Net Zero carbon. The help from Atkins staff was fantastic."



## 4. Competition Submissions and Judging

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### 4.1 Competition submission guide

The deadline for submitting entries to the competition is **12:00 noon** on Friday **4<sup>th</sup> April 2025**.

On Monday 3<sup>rd</sup> March, all registered schools will receive a link from [ENZSchools@atkinsrealis.com](mailto:ENZSchools@atkinsrealis.com) to the AtkinsRéalis File Transfer System. This link will allow your school to upload your submissions.

AtkinsRéalis File Transfer System allows AtkinsRéalis staff to share files with its external clients and customers around the world. Your files remain private and only available to people you share them with. Please select to share / store your files on the system for the maximum number of days (14 days) to allow our organisation team to download your submission. Access is restricted and no individual right of privacy is intended. AtkinsRéalis reserves the right to monitor and control its use.

Your submissions will be shared with our shortlisting team for the purposes of initial judging. If successful, they will then be shared to our judges, and only externally where we have received permission from the school.

*Please note, 4<sup>th</sup> April is the final submission deadline but if your school's entries are ready before then, please upload them to the AtkinsRéalis File Transfer System any time between the 3<sup>rd</sup> of March and 4<sup>th</sup> of April 2025.*

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### 4.2 Submission criteria

Submissions can be made in any format that the pupils wish, however we ask that they comply with the following criteria. If the format is not indicated below please contact us to clarify the specific criteria.

Entries must meet the following criteria:

- Posters should be submitted in PDF format.
- Posters should ideally be A3 to A0 size with maximum word count of ~1000.
- Posters should be scanned in for submission to ensure quality.
- Videos should be a maximum of five minutes long.
- Only one entry per team or individual can be submitted for judging.

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### 4.3 Judging criteria

Judging will be completed with consideration of the following criteria:

1. Creativity (this is the most heavily weighted criterion).
2. Impact to the school and overall Net Zero goals.
3. Feasibility (considering ease of implementation, resources, time, etc.).
4. Presentation (no preference will be given to the format of the submission; however, we will be considering how well the idea is presented and how easily the design can be understood).

The scoring matrix and weighting used to judge submissions is shown in Table 4-1.

Table 1 – Scoring Matrix

Scoring Matrix					Score Weighting	
<b>Creativity</b>	Less creative		More creative			40%
/ 5	1	2	3	4	5	
<b>Impact to school and Net Zero goals</b>	Less positive impact		More positive impact			20%
/ 5	1	2	3	4	5	
<b>Feasibility</b>	Less feasible		More feasible			20%
/ 5	1	2	3	4	5	
<b>Presentation</b>	Less clearly presented		More clearly presented			20%
/ 5	1	2	3	4	5	
<b>Total Score:</b>					<b>/ 20</b>	

## 4.4 Judging process

The top entries will be shortlisted based on the judging criteria above. The finalists will be invited to present their ideas to a judging panel of industry experts in a ‘Dragon’s Den’-style pitch. The judging panel will be held on **Wednesday 30<sup>th</sup> April 2025**, once schools return after the Easter Holidays. The winning teams or individuals will be selected by the judges based on the presentation pitch of their idea.

## 5. Prizes

There will be some fantastic prizes available for the winning teams or individuals from the judging panel. The top prize will be a STEM or Net Zero-related school trip for the whole class. There will also be a specific prize for the team or individual whose entry was selected.

All entries will be automatically entered into a random prize draw for four different spot prizes, one per region of the UK. The regions are split as follows:

- Scotland
- Northern Ireland
- North England and East Midlands
- South East England
- South West England and West Midlands
- Wales


See examples of prizes awarded to previous competition winners: [Time to step up! - Engineering Net Zero.](#)



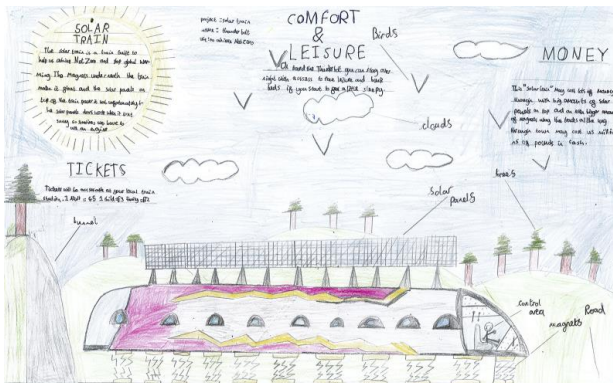
### THE FUNNEL

THE FUNNEL IS A NEW MECHANISM THAT DECREASES CO<sub>2</sub> LEVELS BY SUCKING IN AIR AND SEPARATES THE OXYGEN AND NITROUS OXIDE FROM CARBON DIOXIDE AND RELEASES IT BACK INTO THE ATMOSPHERE. MEANWHILE, THE CARBON DIOXIDE TRAVELS THROUGH A TUBE UNDERGROUND TO A CHAMBER. AFTERSWARDS, IT IS LET OUT OF A WIND TURBINE AND BLOWN INTO A FOREST.

**FUN FACT!**  
TREES EAT CO<sub>2</sub> AND BREATHE OUT OXYGEN



THIS IS WHAT THE FUNNEL WOULD LOOK LIKE IF WE MADE IT. THE FUNNEL WOULD ALSO FIT INTO A WALL IF YOU WOULD LIKE TO HAVE MORE SPACE OUTSIDE OF AN INSIDE WALL.

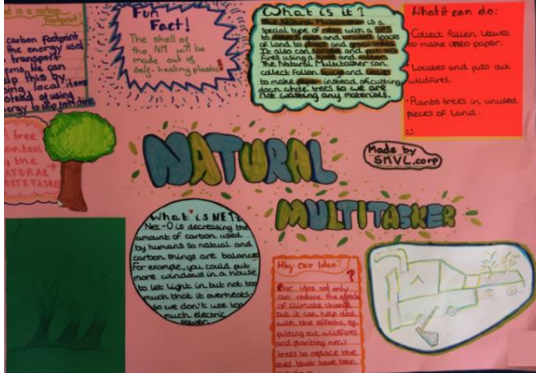


“The Funnel” is designed to separate the CO<sub>2</sub> and nitrous oxides from the air and let the oxygen back into the atmosphere. The diagram shows a CO<sub>2</sub> chamber where the CO<sub>2</sub> is stored underground.

The ‘Solar train’ uses magnets to levitate carriages above the tracks and uses solar panels to charge the trains batteries, allowing for a more sustainable school transport method.



‘The Earth Tree’ (presented in an animation video) takes in CO<sub>2</sub> from the atmosphere and emits oxygen (just like a real tree) – these will be the size of wind turbines and can be installed in ‘tree farms’ (similar to wind farms).



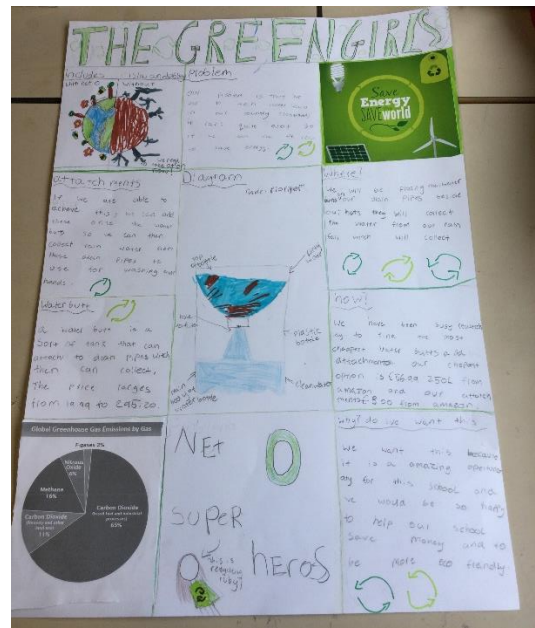
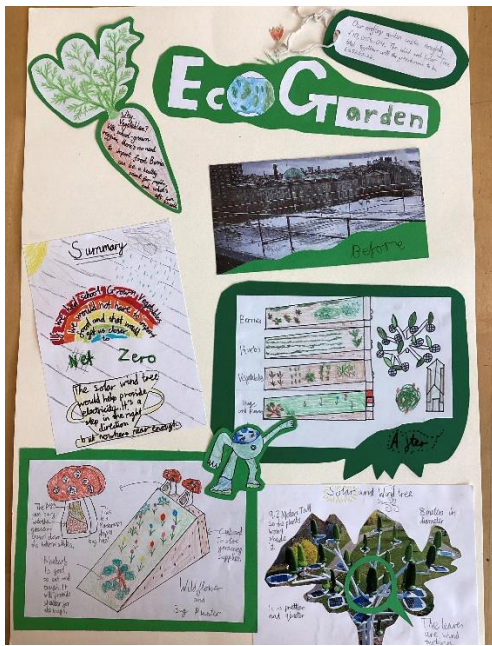
The Natural Multitasker is a robot which uses GPS and data to identify areas of unused land suitable for planting trees. The data is also used to detect wildfires which the robot can extinguish. Finally, the robot also gathers fallen leaves and twigs to make paper to prevent deforestation.



Growing plants on the roof and creating a green wall will offset the amount of carbon emissions produced by the school. A sustainable system to maintain the plants was designed by storing rainwater and creating compost from lunch food waste



‘Bio Energy’ is machine that collects food waste from the canteen which produces methane gas as it decomposes. The methane was then converted into heat and electricity to heat and power the school with renewable energy.



'Eco Garden' is a cost effective use of rooftop space. It incorporates wind and solar energy production while allowing space for school-grown vegetables to be produced. These vegetables would reduce the impact of the schools canteen by decreasing the demand for imported food.

Recycling waste plastic water bottles into new Waterbutts to be attached to the school's drainage downpipes allows for rainwater collection and recycling. This reduces waste plastic and reduces the energy demand related to the school's water usage by requiring less water be pumped from the water network.

## 7. School Checklist

Please refer to the checklist below to track your progress throughout the competition.

Stage	Complete
Competition registration ( <a href="#">here</a> )	
Receive information pack (this document)	
Arrange / plan Net Zero teaching sessions (either independently or with your AtkinsRéalis mentor)	
Complete safeguarding and photo/video consent forms	
Deliver Net Zero teaching resources (either independently or with your AtkinsRéalis mentor)	
Prepare competition entry	
Competition submission 12 noon 4 <sup>th</sup> April	
Preparing and attending for the judging panel (if successful)	

Thank you for taking part in our Net Zero Superheroes competition. If you have any questions, we encourage you to reach out to your AtkinsRéalis mentor in the first instance. If you have not heard back from your mentor, have not yet been assigned a mentor or are completing the competition without a mentor, please reach out to our team at [ENZSchools@atkinsrealis.com](mailto:ENZSchools@atkinsrealis.com).

Good luck with this year's competition and remember, it's never too early to get started!

AtkinsRéalis



[ENZschools@atkinsrealis.com](mailto:ENZschools@atkinsrealis.com)