

## **SOUTH SHROPSHIRE ENGINEERING AMBASSADORS**

### **END OF YEAR REPORT – SCHOOL YEAR 2023-2024**

This report records the activities of the South Shropshire Engineering Ambassadors during the school year ending July 2024. South Shropshire Engineers are a voluntary association of mainly retired engineers providing support in the promotion of engineering and other STEM subjects in primary schools in South Shropshire. There are currently 9 engineers from very diverse engineering backgrounds bringing industry expertise and experience. We are indebted to all our volunteers for giving their time to the small primary schools we support.

We provide after school clubs in some of the schools, mostly in the autumn term and at summer year end arrange visits to places of engineering interest for year 5 & 6 students. Our main event for the year is the assembly and competitive racing of Greenpower Goblin cars. This year we worked directly with 6 primary schools, and supported 2 others, entering all 8 schools to the Shropshire & Staffordshire event at Curborough (Lichfield). Our local schools competed with 48 other schools this year. We also supported the Design & Technology department of the Bishops Castle Community College in administering an annual engineering challenge for the local primary schools. The team also arranged and supported an engineering visit for 3 schools to the Royal Air Force Museum at Cosford

The report is prepared for the members of the group, as well as for the agencies which very generously support our activities with grant funding.

#### **SCHOOLS SUPPORTED DURING THE YEAR**

- Newcastle Primary School - Goblin Car Assembly
- St George's CE Academy, Clun - Engineering Club, Goblin Car Assembly
- Bishops Castle Primary - Goblin Car Assembly
- Stokesay Primary School, Craven Arms - Goblin Car Assembly
- Wistanstow Primary School - Goblin Car Assembly
- Clunbury Primary School – Engineering Club, Goblin Car Assembly
- St Mary's School, Bucknell - School visit to RAF Cosford Aircraft Museum
- Lydbury North Primary School - School visit to RAF Cosford Aircraft Museum
- Onny Primary School - School visit to RAF Cosford Aircraft Museum
- Norbury & Chirbury primary schools - SSEA also provided help and support for with the build and entry of Goblin Cars.

#### **ACTIVITIES CARRIED OUT DURING THE YEAR**

##### **School Engineering Clubs**

After school engineering clubs were arranged during the Autumn term 2022 at both St George's School, Clun, and at Clunbury Primary School. Meetings at St George's & Clunbury were on an ad hoc basis, designed to give that year's children an insight into the processes necessary to assemble a Goblin car and additional general engineering background.

## **Goblin Car Assembly**

South Shropshire Engineers provided support to local schools in assembly of the various Goblin car kits, including those that have been acquired by some of the schools themselves. We also had a new car provided by a very generous anonymous donor this year, the car was built by the children at Bishops Castle school, enabling the group to build and race 8 cars (including the two from Norbury & Chirbury).

The kits available to SSEA last year were 4 older G1 tubular frame design, two G2 cars, including the donated G2 car. The 4 G1 cars have been in use now over a number of years and need frequent replacement of parts, we are planning a replacement programme for these cars in the near future. We intend to keep some components from the old cars for re-use as they are interchangeable.

The 4 G1 cars were allocated this year to Newcastle, Stokesay, Wistanstow and Clunbury schools, Bishops Castle and Clun built G2 cars. Norbury and Chirbury schools build their own G2 Gobblins without help from SSEA engineers but joined with the other schools for the races at Curborough Sprint Track.

Our team were able to work with a record number of children on the car builds this year, with 55 children getting hands on experience with the design, build, test and race of the cars. It is great that so many children can get involved with a fun engineering project.

## **Goblin Car Time Trial**

Our team and BC Community College organised a testing and time trial afternoon on the 23<sup>rd</sup> May to give drivers an opportunity to test their cars before attending the regional event at Curborough, five of the schools were able to attend and got some valuable practice time. Unfortunately, 3 of the schools had other school events planned for the day and could not attend.

The time trials were held on the tennis courts at the Community College on which a suitable circuit had been marked out with cones. All of the children in each team were given the opportunity to complete at least one circuit and the start and finish times were recorded for each driver. The trials gave each of the teams the chance not only to pick out the best drivers for the race meeting, but also to test the reliability of their cars under repetitive use.

We were also pleased to welcome Fiona Rodger-Coltman - Deputy Lord Lieutenant for Shropshire, Caroline & Stephen Habershon and Anne Weller from Hopesay Parish Trust as guests. They were all impressed with the cars and the enthusiasm shown by the children at the event.

### Clunbury time trial team



The Clunbury Team ready to race



Driver waiting at the start line

### Goblin Car Race Day

The race meeting at the Curborough Sprint Track, near Lichfield in Staffordshire was held on 6th June 2024. All 8 Gobblins were able to make it to the event;



The assembled Goblin cars and drivers ready to compete at the race event.

### SSEA entered cars at race day event





A 57-seat coach was hired locally to take the children, staff and ambassadors from six of the schools to the event; Norbury and Chirbury were able to use their own school minibus. We also hired a Luton bodied van to transport the cars to the event.

The timetable for the day was as follows:

There were 51 cars entered at the event, with 47 completing the day. Cars were entered were mainly from Staffordshire, Shropshire, but also included competitors from Leicestershire, Worcestershire and Hertfordshire. Several of the schools entered more than one car. Prizes were awarded in a number of categories, as follows:

- Drag race winner & runners up
- Slalom event winner & runners up
- Sprint race winner & runners up
- Overall, Champion

along with the following special awards:

- Best bodywork
- Greenest bodywork
- Best presented team
- Spirit of Greenpower award
- Portfolio award

Each of the 55 drivers from South Shropshire schools got an award for taking part. The Clunbury car “Green Speed” won a runner up award for the Slalom event and narrowly missed out on the top three being ranked 4<sup>th</sup> just one point behind the third place winners. The new team from Bishops Castle also did very well with the new G2 car “Racing Thoughts” finishing 11<sup>th</sup> in the overall rankings. All the teams entered into the event with enthusiasm, skill and demonstrated great team working. They had a great day of racing and had a very rewarding experience, proud to show off their cars and their driving skills.

### **SSEA cars ready for action**



## Primary Challenge at BC Community College

On Wednesday 12th June, 46 students from Clun, Norbury, Chirbury, Stiperstones, and Newcastle gathered at SPARC in Bishops Castle to take part in Design Technology Day, headed by Adam McMahon, Head of DT at Bishops Castle Community College.

The Children were supported by six members of the South Shropshire Engineering Ambassadors (SSEA) team, STEM Ambassadors from RAF Cosford, IMECHE and teaching staff from the schools. It was great that RAF Cosford team were able to support this event for the first time as an outreach project for their STEM team.

Several exciting tasks were assigned for the day...

Each school had been given a brief to design and build working prototypes of applications using pneumatics in a construction. There were many commendable and innovative designs, first prize going to Amelie from Newcastle school for her stunning device for pushing in fence posts. The RAF team brought along rocket build and launch project and gliders to give some aeronautical engineering principals to the children on the day. Our team set a project for children to build the tallest structure using K'Nex kits. The day was a major success, with the children learning and having fun at the same time.



Amelie with her prize for the fence post Device



K'nex construction for tallest structure in progress



Production line for glider build

## **Schools Visit to RAF Cosford Aircraft Museum**

A visit to the RAF Cosford Aircraft Museum, was arranged for those local South Shropshire schools not taking part in this year's Goblin events. Three schools took part, Lydbury North, Onny and Bucknell, comprising 49 children and support staff. The visit took place on Thursday 16<sup>th</sup> July and a coach was hired locally to pick up the children from each of the schools.

The children had a fun day out, also gathering some important learning too. The "Rover" project required the children to work in teams of 4 to build a K'Nex lunar rover and a parachute system to safely land the rover from 20 feet. They had to work to tight timetable with a limited budget for components, just like the real world. They also learnt that the main limiting factors in the production of rockets is Thrust and Drag. They were able to experiment these theories by developing varying wing and steering systems, with a variety of launch pressures.

The museum arranged a guided tour of some of the historic exhibits in the collection. The two tour guides were both engineers with many years of knowledge and experience which made the tour even more interesting. The children all enjoyed the guided tour of the exhibits and particularly enjoyed the Cold War Hanger, increasing their knowledge of social history from the 1950 & 60s.

Feedback from the event was very positive: -

*St Mary's in Bucknell came away absolutely buzzing from the experience! They loved the workshops and really enjoyed looking around the museum afterwards. We are really grateful that you chose to include St Mary's in your plans this year." Eleri Hood year 5-6 teacher*

*"Thank you for all of your work organising this. The children did have a wonderful time." Joanne Hunt, School Business Manager - St. Michael's Federation*

## **MANPOWER**

South Shropshire Engineers currently have nine active members: -

Jim Halcro-Johnstone, Rob Loynes, Robert Flitney, John Alcock, Steve Blackman, Steve & Jilly Nairne-Clark, Kevin Muttitt, and Doug White.

Responsibility for the Goblin assembly activities has been as follows:

- Clun School – Steve & Jilly Nairne-Clark
- Wistanstow School – Robert Flitney
- Bishops Castle School – Doug White and Kevin Muttitt
- Stokesay School – John Alcock
- Newcastle School – Steve Blackman
- Clunbury School – Rob Loynes

## FUNDING

South Shropshire Engineers are deeply grateful to the following principal donors who contributed generously to the Group's finances for this year:

- Aston on Clun Community Shop
- Institute of Mechanical Engineers, Shropshire Area Committee
- Mid Counties Co-operative
- Ludlow Rotary
- National Grid

National Grid provided funding for the refurbishment of one of our old G1 cars.

We also had capital grant funding for the purchase of replacement cars from:

- Connexus Housing Trust
- Hopesay Parish Trust

The funds made available to us by these very generous donations enabled us to provide the level of support that we were able to give to the schools in engineering projects. The capital grants will allow us to replace some of our older cars and reduce our annual running costs.

We have been overwhelmed by the generosity of our donors which ensures that we deliver on our objective of promoting the engineering subjects within the South Shropshire schools, inspiring them to become our engineers of the future.

## EXPENDITURE

Purchase of Goblin Car parts	£746
Insurance	£131
Coach for Curborough event (less passenger receipts)	£550
Coach for Cosford event (less passenger receipts)	£405
Van Hire – Car Transport	£294
RAF Cosford Aircraft Museum	£100
Goblin Car – Entry fees	£480
<b>Total</b>	<b>£2706</b>

Capital Grant funds have been earmarked for the purchase of two replacement cars, to be purchased in Autumn/Winter term

Replacement Goblin Car	£1795
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**Funding allows the purchase of 2 new cars                      Total   £3590**

Note: Expenditure has increased this year; cost of travel is much more expensive. We did also pick up the extra cost for van hire. Fortunately, our grant funding covered the cost.



And Finally

### **Kings Award for Voluntary Service**

South Shropshire Engineering Ambassadors (SSEA) were awarded The King's Award for Voluntary Service. We are told that this is the highest award a local voluntary group can receive in the UK and is equivalent to an MBE. The award was in recognition of the work we do "*Inspiring Young Engineers*"

The SSEA were nominated for the Award by the Head of one of the local school federations, with supporting recommendations from parents of children who have participated in our engineering activities. We were one of only 262 local charities, social enterprises and voluntary groups nationally to receive the prestigious award in 2023-24. The award was made by Her Royal Highness, Princess Anne at the event hosted by Anna Turner, the Lord-Lieutenant of Shropshire.

As you can imagine the whole team, past and present were honoured to receive this Award in recognition of our work in local schools. We believe it is important to provide a range of technical activities to young people to enable them to appreciate potential engineering career possibilities in the future.

### **SSEA members celebrate following the nomination for King's Award for Voluntary Service**





**South Shropshire Engineering team received the Kings Award for Voluntary Service from Princess Anne, Princess Royal at the Caviler Centre, Much Wenlock.**

