

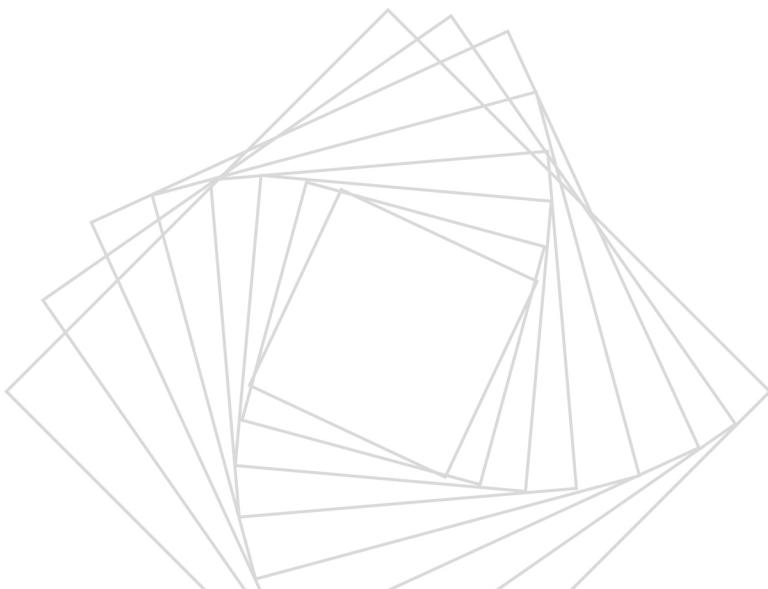


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# Exeter Maths School Expansion: Rationale

Exeter Mathematics School, Rougemont House, Castle Street, Exeter, EX4 3PU



## Context

Exeter Maths School (EMS) is a highly successful sixth form school based in the South West of England which has been open to students aged 16-19 since September 2014 and currently provides for 120 students across Years 12 and 13. The school is run in partnership with Exeter College and the University of Exeter and specialises in mathematics, with all students taking A Levels in Mathematics, Further Mathematics and either Physics, Computer Science or both. The school is looking to increase student numbers by at least 50% within the next few years by expanding into a building with boarding accommodation on site.

<b>Provision</b>	<b>Current Provision</b>	<b>Expanded Provision</b>
Catchment Area (ceremonial counties)	Cornwall, Devon, Dorset, Somerset	<b>Bristol (UA)</b> , Cornwall, Devon, Dorset, <b>Gloucestershire</b> , Somerset, <b>Wiltshire</b>
Student Numbers Total (per year)	128 (64)	180 (90)
Boarding Places 2021 (from 2022)	37 (43)	96

We have carefully modelled the likely number of applications from the expanded catchment area, basing our figures on the number of state school students currently taking further maths, the proportion of 11-16 schools in each county and our experience of recruiting students for whom boarding is required. We are confident that the size of our expanded school will meet the demand without drawing more students from our local post-16 providers.

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## More students will benefit from attending EMS

Educational outcomes for students at EMS are outstanding, and students make significantly more progress than those attending other providers. In 2019, students at EMS made progress (+0.79) which placed them in the top 5 state schools in the England and the second best (after Kings Maths School) of those with more than 10 students taking A-levels. The school currently has the highest OFSTED rating of Outstanding in all areas, including boarding provision and in 2018 was named the 'Sunday Times Sixth Form of the Year'. Students successfully progress to competitive universities; in 2020 67% of students secured places at Russell group universities with 17% attending Oxford or Cambridge. Our very first cohort has now graduated with many going on to higher level courses such as PhDs whilst others have secured work in STEM. Alumni report that their time at EMS was instrumental in preparing them for University study and many reference our enhanced curriculum as being a key experience upon which they could draw when completing projects at a higher level.

Increasing the school's capacity would allow many more young mathematicians to take advantage of the exceptional teaching available at the school. The demand for greater capacity already exists: we have two applicants for every place and with an expanded catchment area, improved bursaries and a reduction in the overall cost of boarding, application numbers are set to increase further.

Increasing our outreach has the potential to drive demand for Further Maths: for example, between 2018 and 2019 when nationally the uptake of Further Maths reduced by 10%, within Devon there was an 8% increase in state school entries (from 138 in 2018 to 149 in 2019). With a growing national demand for excellent mathematicians, data analysts, engineers and statisticians, enabling more students to attend EMS will increase the supply of professionals in each of these fields.

The planned network of 11 Maths Schools leaves a gap in provision for students from half of the South West, which EMS has the potential to fulfil

Our planned expansion is modest to ensure that our unique learning culture and Exeter's successful education eco-system is sustained, whilst offering opportunities to students in areas not served by any current or planned maths school.

The South West is a large region with several pockets of deprivation, including coastal towns and rural communities. In the drive to "level-up" by reducing England's North-South divide, the South West can be overlooked. Across all the maths schools, both open and proposed, the two nearest to EMS are Aston in Birmingham and Surrey in Guildford. The counties of Gloucester and Wiltshire and the city of Bristol are not within a reasonable daily commuting distance of either of these proposed schools. Due to its boarding provision, EMS could serve the whole of the South West region; commuting distances from the expanded region are no greater than for those from the west of Cornwall, a region we already serve successfully.

An expanded catchment area would align EMS to the area served by the South West Regional School Commissioner, making collaborative working more effective and enabling us to increase our impact in the region. Collaborative working amongst the network of maths schools should impact across the whole of England and EMS would be well placed to ensure no part of the South West is omitted from outreach activities which may be coordinated through such a network.

There is plenty of demand for Further Maths provision within the region: in 2019, there were 576 entries for Further Maths from state providers within our current catchment area (of which 61 were from EMS) and a further 590 entries from state schools within the proposed expanded catchment area.

## Our current building is too small to meet our needs and limits current activities

Whilst our building is both welcoming and inspiring, it is expensive to maintain, diverting resources which would otherwise be spent on education and outreach. It does not provide adequate space for the flexibility in teaching that is needed, effective collaboration and communication between staff, or the delivery of outreach in the numbers we are ambitious to serve. From classroom size, to lack of social space, no assembly hall or enough offices, we have worked hard to overcome challenges, but they do limit our capacity and we could achieve more in an appropriate building.

The recent COVID pandemic has brought into stark focus the lack of available space, making social distancing impossible within the building. The table below illustrates this clearly by comparing the space at EMS to Kings and Liverpool maths schools.

Space	Exeter	Kings	Liverpool
Classrooms	23 m <sup>2</sup> to 46 m <sup>2</sup> (mean 34.5 m <sup>2</sup> , median 33 m <sup>2</sup> )	38 m <sup>2</sup> to 49 m <sup>2</sup>	48 m <sup>2</sup>
Physics Lab	1 at 59 m <sup>2</sup>	2 at 50 m <sup>2</sup>	2 at 90 m <sup>2</sup>
Physics Prep Room	0	22 m <sup>2</sup>	34 m <sup>2</sup>
Social area/cafe	0	108 m <sup>2</sup> and 110 m <sup>2</sup>	96 m <sup>2</sup> + 2 at 90 m <sup>2</sup>
Library	21 m <sup>2</sup>	97 m <sup>2</sup>	83 m <sup>2</sup>
Hall	0	78 m <sup>2</sup>	180 m <sup>2</sup>
Staff room	0	21 m <sup>2</sup>	53 m <sup>2</sup>
Pastoral rooms	1	1	3
Breakout rooms	0	9	4
Offices	5	9	10
Store rooms	5	11	19
Toilets	7	10	15

When Exeter first opened it was a pilot school for the network which was to come. Trialling the concept of a maths school before expanding the provision across the country has proved to be worthwhile in informing the practice of others, enabling them to benefit from our hindsight. Whilst it might be argued that this lack of space could have been foreseen, there are many factors which were not, or could not be, known at the time.

Firstly, we now know that although students will attend lessons at Exeter College, they do not spend a quarter of their time there and instead choose to remain at the Maths School when not involved in a timetabled activity at the college.

Secondly, we did not plan to offer Computer Science at EMS but have since done so, increasing uptake of this vital subject. The impact has been to reduce the numbers who attend Exeter College and thereby further increase demand on the space in our school.

Thirdly, our outreach has expanded significantly, much more than envisioned at the outset, and we now limit numbers because of the space we have available rather than because we lack the staff to lead activities.

Fourthly, we did not know how rich our curriculum would become; having added several courses to the timetable since opening, the pressure on classroom space is greater than accounted for in our initial plans.

Fifth, the number of staff we employ is much greater than expected. This is partly due to the expanded outreach activities but also because we have secured funds to support a richer curriculum for our own students.

Knowing what we do now and having a clear strategic plan for the coming five years, the time is right to correct the issues with our current building and secure premises which will enable us to maximise efficiency and increase our positive impact in the region.

There are opportunities for development within the city centre now, with the redevelopment of Exeter as an Eco-city and the Maths School will be part of those plans

Exeter City Council has ambitious plans to redevelop the city, including its centre to become energy sufficient and a model eco-city. Furthermore, as we come out of the current pandemic, the city centre will be a core part of those changes, with shops and offices closing, buildings will be repurposed and a mixed-use Highstreet is at the core of the vision for Exeter.

The City Council are highly supportive of EMS and keen that we are incorporated into their vision for the city centre. There is a moment of opportunity now to be included in the heart of Exeter's re-development. The identification of a suitable site is difficult for many schools, but working with the Exeter City Council, we are confident that a suitable site will be identified within close proximity to Exeter College, the University of Exeter and key transport links.



Having boarding provision on site will reduce the cost of residential facilities, reducing the risk of students missing out on a place for financial reasons; a significant saving will be made on the cost of providing boarding bursaries

When first opening our pilot school it was difficult to predict how successful we would be in recruiting students from across our full catchment area. No boarding facilities were provided as part of the original build and we are now the only state boarding school to not own its own accommodation. As a result, we are renting from the private sector which in turn pushes our price of boarding up to an unaffordable level for most families (currently £10 400).

Each year, several students withdraw their application to the school due to the cost of boarding. Still more never apply having been deterred from doing so by the price.

The DfE have worked with us to secure a new bursary scheme which should have a positive impact for those on below average incomes. Our middle-income families will still find themselves unable to afford boarding at its current rate.

We have modelled the cost of running our own facility, basing figures on those shared by our sponsors (Exeter College has boarding for its rugby academy and the University of Exeter is experienced in sustaining larger boarding facilities). If we were to have our own boarding building, we would be able to reduce the cost to families to between £5 500 and £6 500, depending on the number of boarders we cater for.

This makes boarding affordable to those who are not eligible for a bursary and will reduce the amount of bursary given to each family, making our provision better value for money for the public purse.

Further economies can be made by providing boarding which is connected to our main school building: social spaces, pastoral offices and study areas can have dual use, being used in the daytime by the main school and in the evening by residential students and staff.

An expanded school provides better value for money for the public purse: per-student cost is reduced; economies of scale will allow for more outreach resource

Our maths-school top up funding is fixed and no longer dependent on the number of students in the school. This means that as we expand our provision, the per-pupil cost of a place at EMS will reduce. There will be no additional revenue costs to the public purse, only an initial capital investment.

We have financially modelled the expansion and can afford it within the per-student funding because the size of expansion will not require more middle or senior leadership positions, nor will it require significant additional teaching resource. We will have better economies of scale and therefore a greater proportion of our maths school fund will be directed towards outreach and enrichment activities than is currently the case.

In short, by expanding our provision we will secure better value for money, increase our outreach, and ultimately have a greater impact in terms of the number of students we support and the quality of that support.

EMS will be a similar size to other proposed maths schools, thereby reducing the risk of future funding decisions working for other maths schools but not EMS

As a single academy trust we need to carefully manage financial risk to ensure the longevity of our provision. All proposed or open maths schools are larger than EMS, mostly with an intake of 80 to 100. With a PAN of 60, we are an outlier and as such a future funding model which works for other maths schools may not be financially viable for us.

This is a risk that can be overcome by bringing our numbers in line with other schools within the network.

## Further capital investment in EMS represents good value for money

A relatively modest amount of capital expenditure was invested in opening EMS: approximately two million for the building and its refurbishment. Some of this will be recouped in the sale of our current building, Rougemont House, which has been assessed to have a current market value of £750 000.

By combining a school building with residential provision on site, further savings could be made in the capital spend by having rooms which are used in both the daytime and at night. Such a facility would enable the school to further extend its outreach offer with residential conference facilities.

Building a new facility for EMS therefore represents excellent value for money: the capital investment made will not be entirely in addition to the original build cost and is likely to be perfectly suited to the school's needs, benefiting from all the lessons learnt by the pilot scheme.

In conclusion: expansion brings life-changing opportunities to more students, both those who enrol at EMS and those who benefit from our outreach programmes, and does so with no financial impact beyond the initial investment required to develop a new site. Expansion will ensure that no student in the South West is excluded from access to a maths school and the associated boarding facility will ensure equality of access within the region. EMS has the potential to be a jewel in the crown of a sustainable development within the city centre, a flagship for innovation, academic excellence and social mobility within an environmentally sustainable development.



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