



UNIVERSITY OF
BIRMINGHAM

*Delivering the world's
Smartest Campus*

*Living Lab: Net Zero
Carbon Lodges*



Executive summary: The opportunity

The UK Government aims for the country to be net zero by 2050. Without making our existing housing more sustainable, this will not be possible.

We are embarking on a collaboration with industry to turn five properties into unique zero or low carbon demonstrator showcase houses.

Through this collaboration, in exchange for your technologies, your support and products featuring in the showcase houses, we will offer:

- The chance to work with world-leading energy, sustainability and data science experts, and sector leading partners
- An opportunity for knowledge exchange with experts through our 'living labs'
- High profile for your work and expertise
- Working with the innovative and award winning estates team at the University of Birmingham
- Trial technologies and combinations of solutions
- Access to the showcase houses to promote your products and technologies to industry for up-scaling

We look forward to working with you.

FOREWORD



As a research-intensive University founded on social responsibility, we at the University of Birmingham have the expertise and partnerships to play a significant role in tackling global sustainability challenges.

We embed sustainability in all of our activities as we seek to change society and the environment positively through our research and education. Our ambition is to deliver sustainability through pioneering research and innovative education, the behaviour and actions of our students and staff, and engagement with our local communities.

A large part of this work involves ensuring our campuses in Birmingham and Dubai are as smart and as sustainable as possible. Our expertise, innovations and capabilities will enable us to demonstrate leadership, creating new opportunities for collaboration with business, industry and other sectors that want to develop new smart technologies and Net Zero Carbon strategies.

The development of our Living Lab will facilitate opportunities for research, teaching, learning and experimentation, influencing national and global strategies for smart, more sustainable spaces for all.

We are a university committed to innovation and are proud to collaborate with a range of partners, regionally, nationally and internationally.

*Professor Adam Tickell
Vice-Chancellor, University of Birmingham*



Like much of our city, many of our campus buildings were built pre-1950 and are likely to be with us and in active use beyond 2050. Some of those buildings are now in need of upgrading to deliver 'fabric first' improvements and to support our net zero carbon aspirations. We have an exciting opportunity to retrofit existing buildings at scale in a sustainable, affordable way to support the delivery of our net zero carbon target. We need to partner with experts and technology/solution providers to develop our methodology for upgrade works and to establish our portfolio of SMART/Internet of Things and carbon reducing products and technologies. We look forward to working with you to bring this ambitious but achievable project to fruition.

*Trevor Payne,
Director of Estates*



The Net Zero Carbon Lodge opportunity

The University of Birmingham is a global institution working within a diverse and vibrant City, offering an inspiring education to our students and undertaking critically important research. We are a place of open, critical thinking and the creation, sharing and dissemination of knowledge.

We have the expertise and partnerships to play a significant role in tackling global sustainability challenges, and have set a number of ambitious sustainability targets. Our Smart Campus initiative plays a significant role in helping the University - and the UK - achieve these targets.

The Opportunity

The UK Government aims for the country to be net zero by 2050. Without making our existing housing more sustainable, this will not be possible.

We are upgrading five existing and varied residential properties on the Edgbaston and Selly Oak campuses (Birmingham, UK) and hope to achieve this in partnership with a broad range of technology, materials, techniques, and construction partners, to turn the properties into five unique zero or low carbon demonstrator showcase houses. Our aim is for all parties to gain from this process – to improve our buildings, to become more carbon efficient, to trial technologies and combinations of solutions and for our suppliers and partners to have a high profile and publicised showcase linked to our world class research and academics.

This project provides us with an exciting opportunity to explore improving existing houses at scale in the most affordable way, while contributing to local and national efforts of reaching net zero carbon.

Through collaborating with our university's world-leading energy, sustainability and data science experts and sector-leading partners, we can combine our knowledge, our research and our development opportunities to evidence that affordable net zero housing at scale is possible.

Partnership opportunities and benefits

It is anticipated that the assembled solutions will comprise new, emergent, and close-to-market products, which could include a range of 'floor to roof' retrofit solutions.

- Low carbon building materials – roofing and insulation products
- Decorative products
- Low maintenance solutions
- Heating and heat exchange systems
- Connected SMART technology & building controls including demand response, solar and battery storage
- Hard landscaping products, and grey water storage solutions

The goal is to establish how the collective use and application of a range of ideas, products and solutions can be specified and assembled to all work together to deliver low carbon configurations. Those configurations, if successful, would be showcased and deployed in a range of similar existing housing stock in Birmingham, in the Midlands and in the UK.

This is a particularly unique opportunity, as you will receive support and knowledge sharing from academic experts in the field of Energy, Data Science and Sustainability. We also hope to utilise the data and information generated from this initiative to facilitate research across a range of disciplines (e.g. Energy, Data Science and Sustainability).

“At the Birmingham Energy Institute, we are developing and applying the technological innovation, original thinking and new ways of working required to create sustainable energy solutions. We are supporting our community, industry, local government and more regionally, nationally and globally to transition to a zero carbon energy system.”

*Professor Martin Freer
Director of Birmingham Energy Institute*

“The Institute for Interdisciplinary Data Science and AI is working to understand how data and AI can help us address the most important sustainability challenges. The Zero Carbon Lodges are a great opportunity for our researchers to understand what real-world data tells us about how effective different solutions to decarbonise our homes really are.”

*Professor Iain Styles,
Director of the Institute for Interdisciplinary Data Science and AI*



“Our Birmingham Institute for Sustainability and Climate Action (BISCA) uses expertise to translate ideas, skills and influence into wider engagement and action on climate change and broader sustainability matters.”

Professor David Hannah, Director of Birmingham Institute for Sustainability and Climate Action (BISCA)

Smart Campus and Net Zero Carbon targets

The University of Birmingham is transforming its Birmingham and Dubai campuses into the world's smartest global campus, creating a 'Living Lab' where data is captured from the University's building technologies, estates infrastructure and energy plants. This data will be used for innovation, teaching, and research and development activities. Our mission is to deliver an enriched, personalised experience for students, staff, academics and visitors. We aim to bring together our people, processes and services to become a fully connected, global campus.

This transformation also supports the University's bold sustainability targets, with an ambition to achieve net zero carbon by 2045.

The University of Birmingham Estate

Our estate is large and complex, and it is made up of 200+ buildings ranging in size, shape, building fabric and age with more than three miles of underground service tunnels, and over 7,200 trees.

Our estate is currently undergoing one of the most transformational redevelopments since our Birmingham campus was completed in 1909, creating outstanding, award-winning new facilities for our students, staff and the local community.

We are committed to always pursuing innovation through collaboration and strong partnerships, developing robust relationships with our stakeholders, and developing and collecting a wealth of knowledge that is supporting our Smart Campus Living-Lab ambitions and our Net Zero Carbon targets.



If you are interested in supporting this vision, or if you would like to find out more about the lodges, please visit: www.birmingham.ac.uk/net-zero-carbon-lodges.aspx

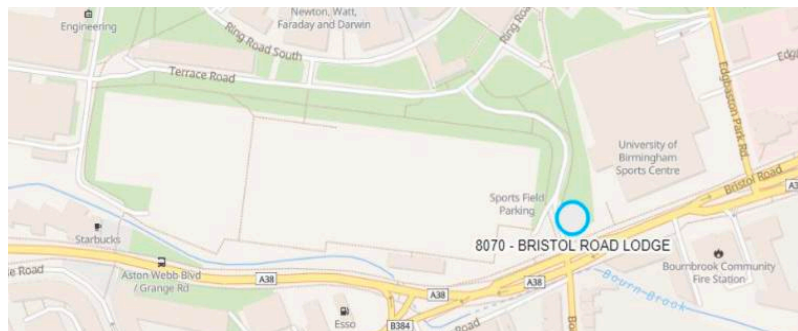
If you would like to know more about the University's Smart Campus initiative, please visit: <https://www.birmingham.ac.uk/smart-campus>

8070

BRISTOL ROAD LODGE

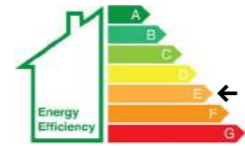
Detached | 130m²

This historic red brick building, constructed in the early 1900s, is proudly positioned next to the busy south gate of the main campus. The two storey detached property comes with three bedrooms and two bathrooms. This property also has the benefit of two reception rooms and a spacious rear garden. The building's notable architecture and history is reflected in its Grade II Listing.



Key Facts

- Heritage: Grade 2 Listed
- Power: University of Birmingham Private Grid
- Heating from CHP: No
- Steam from CHP: No
- Ownership: University of Birmingham / Freehold
- Asbestos: Might be present



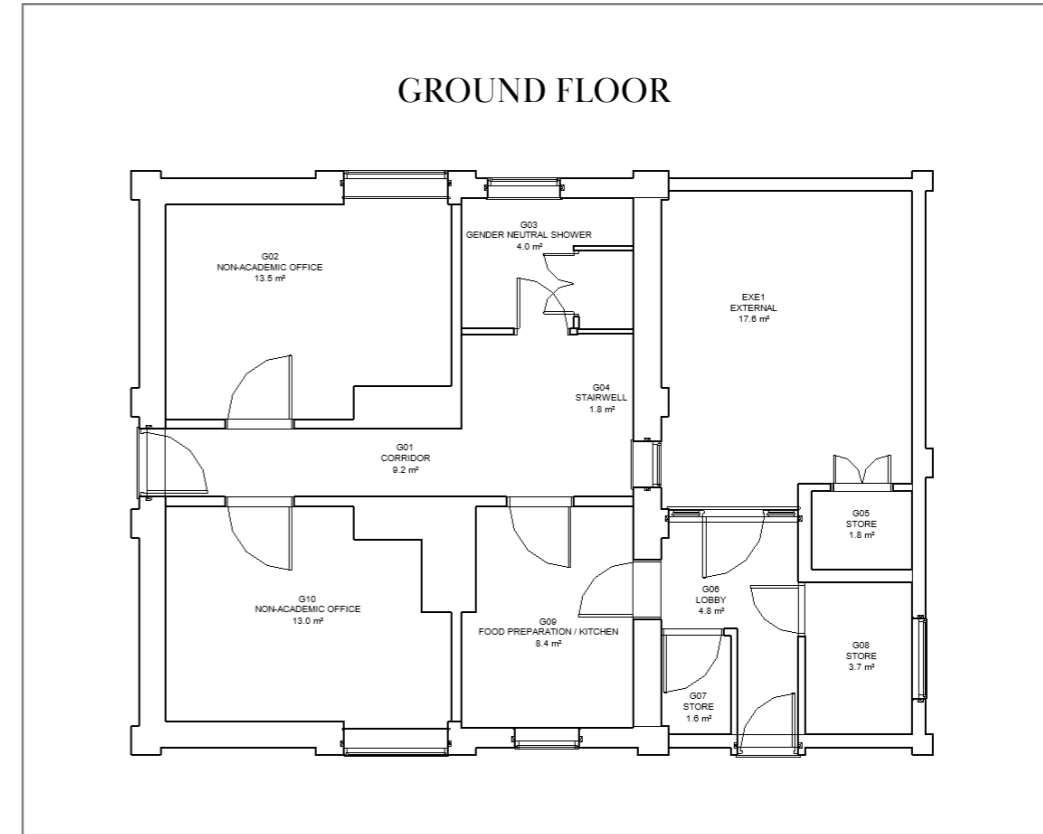
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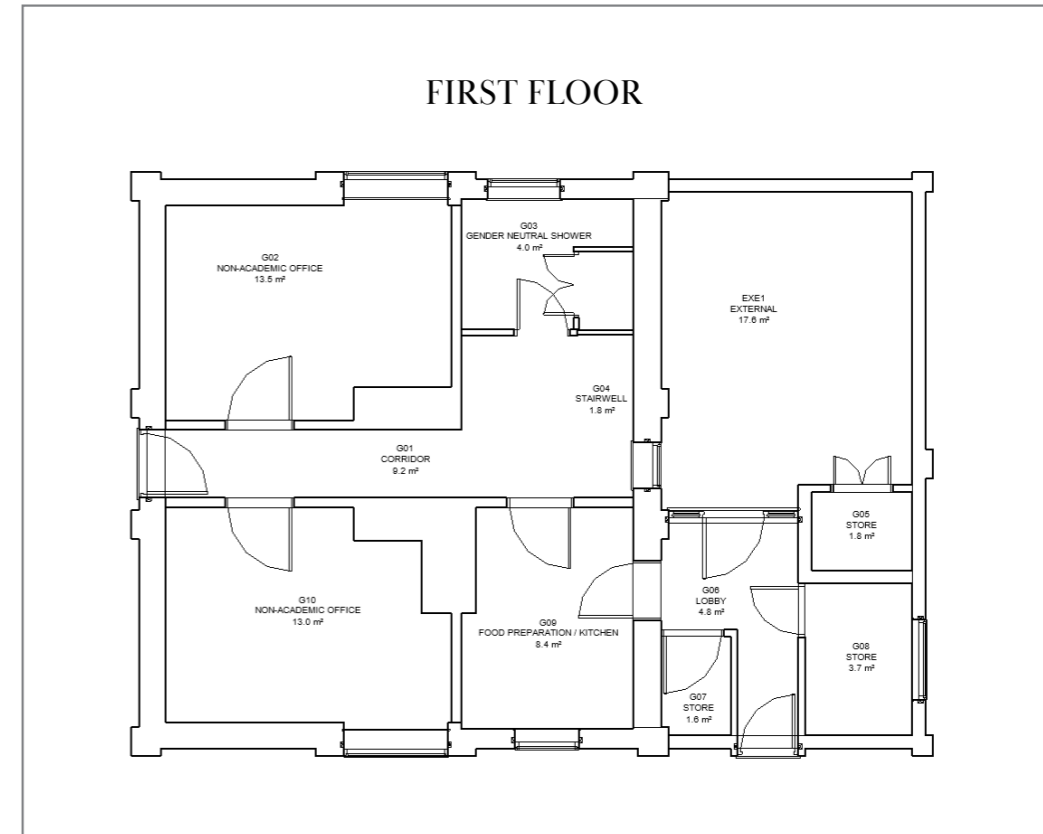
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GROUND FLOOR



FIRST FLOOR



8310

WINTERBOURNE LODGE

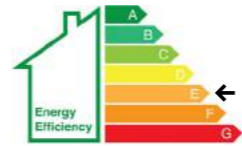
Detached | 86m²

This detached three bedroom property sits near the north of main campus set back from a main road. The building features one reception room, and a well sized kitchen and bathroom. The property also features a large garden area.



Key Facts

- Heritage: Not Heritage
- Power: University of Birmingham Private Grid
- Heating from CHP: No
- Steam from CHP: No
- Ownership: University of Birmingham / Freehold
- Asbestos: Might be present



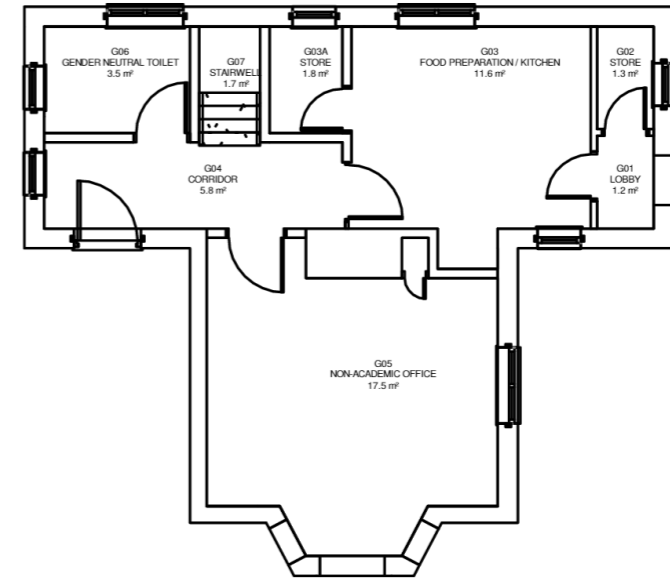
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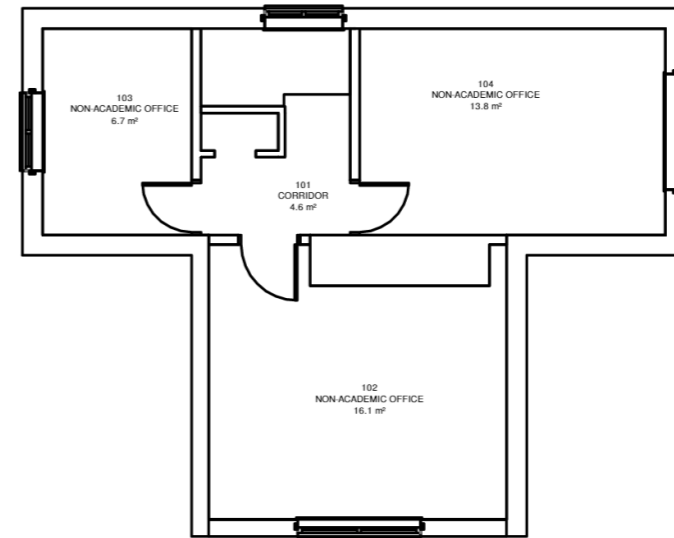
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GROUND FLOOR



FIRST FLOOR



8450

HORNTON GRANGE COTTAGE

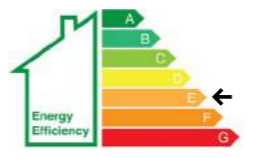
Detached | 101m²

This charming 1920's cottage is located towards the north side of main campus, surrounded by green space and a stones throw from a bustling campus. This two storey detached building is set back from a busy main road. The property comes with three bedrooms, two receptions rooms, and a sizeable kitchen and utility room.



Key Facts

- Heritage: Not Heritage
- Power: University of Birmingham Private Ring
- Heating from CHP: No
- Steam from CHP: No
- Ownership: University of Birmingham / Freehold
- Asbestos: Might be present



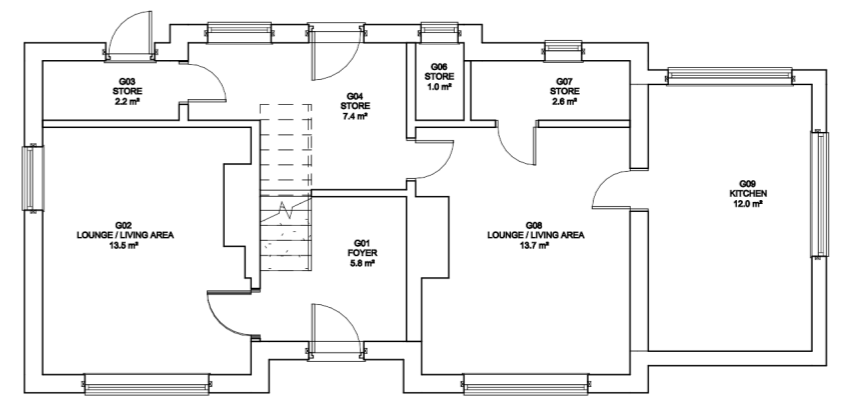
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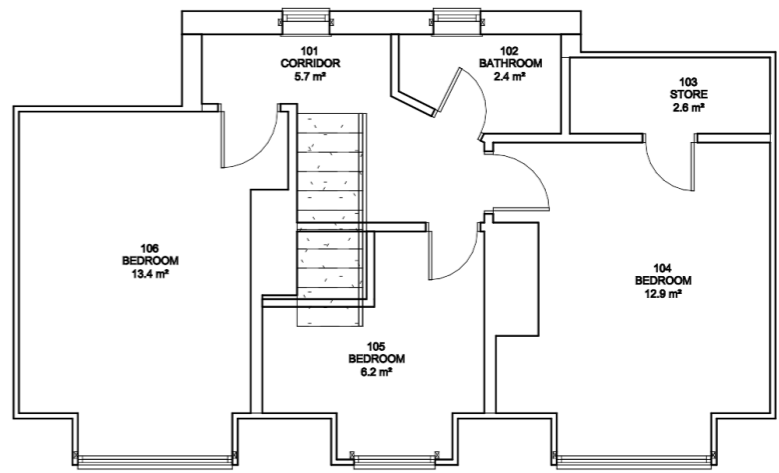
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GROUND FLOOR



FIRST FLOOR

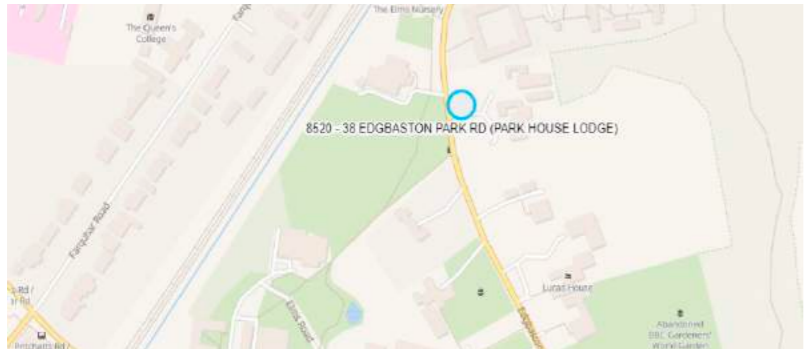


8520

PARK HOUSE LODGE

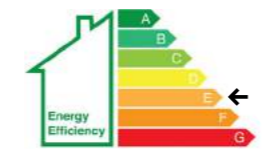
Detached | 70m²

This early 1900's bungalow located towards the north of campus sits off a busy main road at the entrance to an academic building. The spacious bungalow features two bedrooms, one reception room as well as a large bathroom, kitchen and rear garden.



Key Facts

- Heritage: Not Heritage
- Power: University of Birmingham Private Grid
- Heating from CHP: No
- Steam from CHP: No
- Ownership: University of Birmingham / Freehold
- Asbestos: Might be present



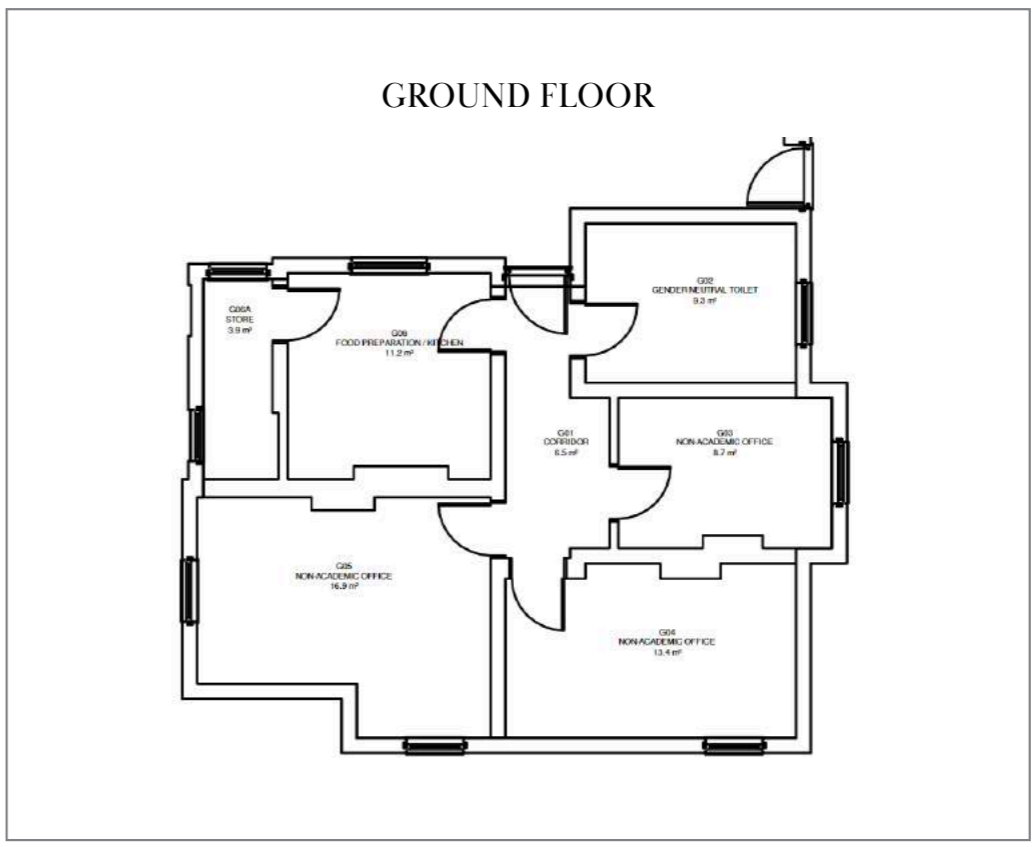
Energy Rating: E



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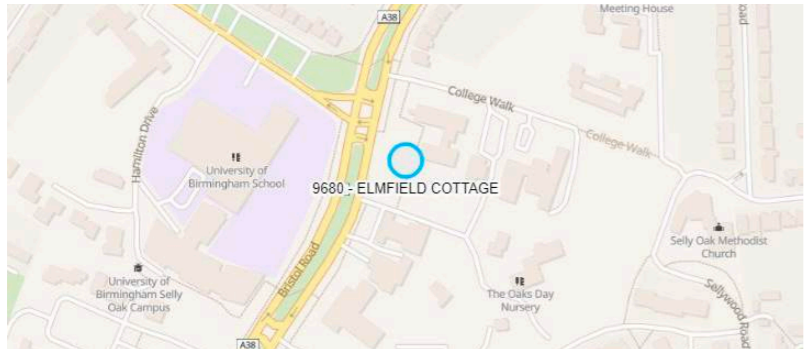
GROUND FLOOR



9680 ELMFIELD COTTAGE

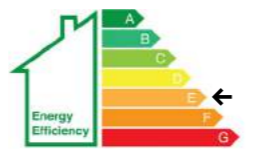
Detached | 108m²

This detached 1950's property is located on University of Birmingham's Selly Oak campus about a mile away from main campus. Set back from the busy Bristol Road, this two storey property features two well sized bedrooms as well as two reception rooms and a garage.



Key Facts

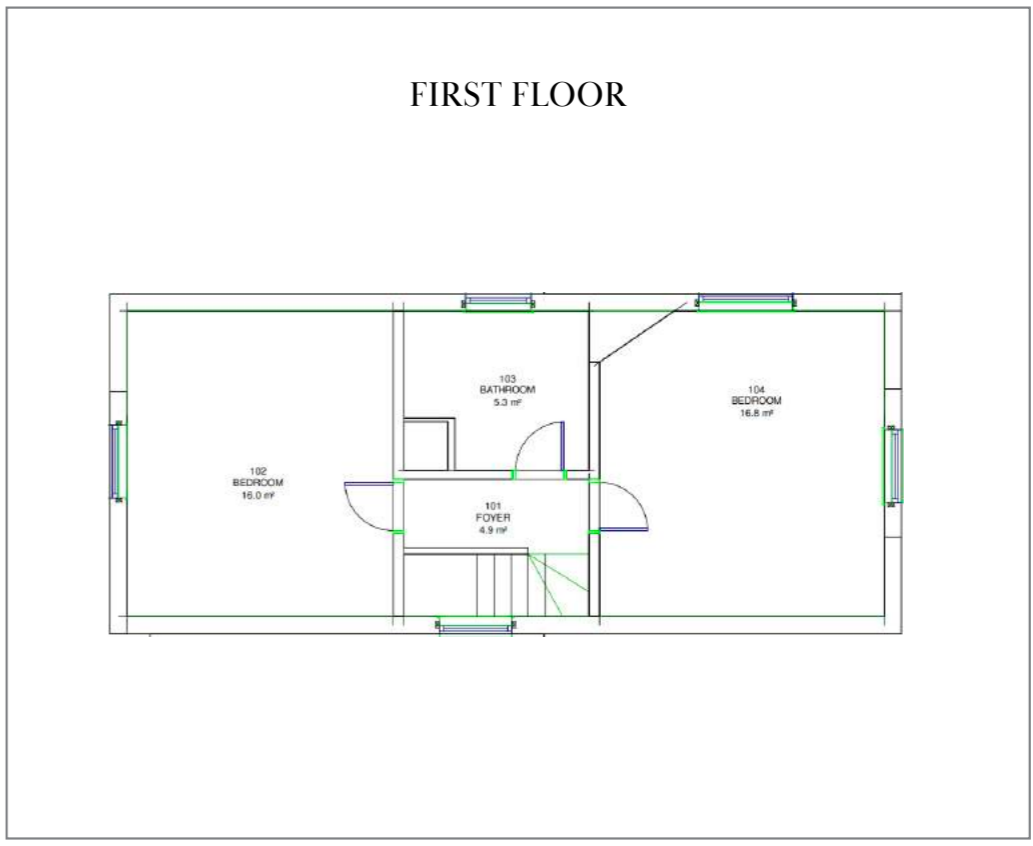
- Heritage: Not Heritage
- Power: WPD Grid
- Heating from CHP: No
- Steam from CHP: No
- Ownership: Leasehold (Long Term)
- Asbestos: Might be present



Energy Rating: E



Please scan this QR code to view a matterport tour of the property.



The Smart Campus

Delivering a campus that is sustainable and fit-for-the-future.

The Smart Campus will facilitate many of the University's strategic objectives, including a pathway to Net Zero Carbon, development of a Living Lab for research, industry collaboration, teaching, learning and experimentation.

Supporting information is available here:
<https://www.birmingham.ac.uk/smart-campus>

“Higher Education has never been as dynamic and open to new ideas as it is right now. The next decade provides a unique opportunity for us all to rethink everything, especially the things we take for granted.

We are a University that is committed to change. Join us as we seek to transform society and the environment positively through our research, our education and our innovation.

*Professor Adam Tickell,
Vice-Chancellor and Principal of the University of Birmingham*



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