

**IN THE MATTER OF THE CAMBOURNE TO CAMBRIDGE TRANSPORT AND WORKS
ACT ORDER APPLICATION MADE BY CAMBRIDGESHIRE COUNTY COUNCIL (AND
GREATER CAMBRIDGESHIRE PARTNERSHIP)**

REF. TWA/24/APP/03

OBJ 213

CLARE HALL, UNIVERSITY OF CAMBRIDGE

REBUTTAL EVIDENCE

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1. Introduction

- 1.1. This rebuttal evidence has been prepared in response to Proofs of Evidence and additional submissions on behalf of the Applicant.
- 1.2. In the sections below, I have summarised the points raised by the Applicant's witnesses and look to address those points.
- 1.3. I have not sought to respond to every point raised by the Applicant's witnesses with which I disagree and have instead confined myself to those matters where I consider the Inspector may find it helpful to have a written response at this stage.

2. Proof of Evidence of Andy Saunders, Technical Director, Environmental Team WSP (CD26-01-APP-W3-1):

- 2.1. Paragraph 6.3.11 of Mr Saunders' refers to Clare Hall as providing '*student accommodation*' when discussing predicted noise levels that will be experienced at night.
- 2.2. This is a mischaracterisation. Clare Hall has no undergraduate members. It does not provide accommodation for students at their first entry into Higher Education. This has been misunderstood by the Applicant at every stage in its consideration of options for routing the final section of the busway and its assessment of the likely impacts. Residents on site include Official and Professorial Fellows (some of whom are permanent residents), Research Fellows, its annual cohort of Visiting Fellows (35 last year), and visiting Life Members (former visiting Fellows who revisit the College to continue their work in College). These senior academics work primarily in their apartments and have and need an environment that permits and enables extreme concentration for very extended periods. Even if their work is laboratory-based, its management may well be remote. That is very different to an undergraduate hall of residence.
- 2.3. Clare Hall accommodates Doctoral candidates typically for four years before post doctoral study and Masters students 'in the first instance' hoping to be accepted for Doctoral study, and one year MPhils on notoriously intensive courses typically taken over two years in other universities. As such its accommodation is not accurately characterised as '*student accommodation*' of the sort which comprises the bulk of other colleges' accommodation such as, for example, the neighbouring Robinson College.
- 2.4. As a result of this mischaracterisation, the Applicant has failed to understand the unique impact that the proposed development will have on Clare Hall, which is very different from the impact that would be felt by '*student accommodation*' housing undergraduates.

- 2.5. Mr Saunders suggests that Clare Hall 'student accommodation' is located "approximately 8m from the busway". However, Mr Jody Blacklock's evidence explains that the busway will be even closer (approximately 7 metres) to the apartments in the Pippard Building.

3. Proof of Evidence by Toby Lewis, Technical Director, WSP (CD26-01-APP-W11-1):

- 3.1. At 4.3.63 of his proof, Mr Lewis places reliance on the transitory nature of the occupancy of the residential accommodation within Clare Hall:

'Although it is not explicitly mentioned as a contextual factor in Table 3.6 of CD15-05, page 25, I consider it relevant that the majority of receptors are not conventional homes but are temporary accommodation linked to the Clare College. CD15-05 does differentiate between dwellings and 'other noise sensitive receptors' (which include educational uses) in its operational noise reporting tables (CD15-05, page 24, Table 3.55a and 3.55b). Residents who newly occupy the affected rooms at Clare Hall following the opening of the busway will not be aware of any change in sound levels/character (because they did not reside there prior to the busway becoming operational) which, in my opinion, reduces any possible long-term impact that could be based on those changes in sound level'.

- 3.2. This reliance is misplaced. As my main Proof of Evidence explains, Clare Hall is not a conventional undergraduate college and has a relatively stable population comparable with general non-institutional residential accommodation. Research Fellows are elected for three years in the first instance and are regularly elected for a further three. The University now accepts that doctorates are completed in four years typically, some take longer. The University is also planning to introduce a fourth year fee and fourth year income for colleges.
- 3.3. Official and Professorial Fellows are permanent residents. Masters students frequently study for masters qualifications in the first instance before enrolling in doctoral work. Visiting Fellowships are won in open competition, awarded on the recommendation of the Fellowship Committee by the Governing Body. Applications are made well in advance so that typically successful Visiting Fellows take up their appointments two years or more in advance. On completion of their term most are elected to Life Membership and many return annually for study periods, some since the 1990s (one or two of whom are now in their nineties).
- 3.4. There is a continuing collective memory running through the College and many residents will become very aware of a deteriorating environment, reporting their disappointment back in their home institution. They may decide not to return to the college and dissuade others from applying for or taking up their positions at Clare Hall. These academics may fear that the effectiveness of their very hard-won sabbatical leave will be endangered by virtue of the proposed development, a position that may be awarded to them only once or twice in their whole careers.

- 3.5. Mr Lewis seeks to suggest that the courtyards and balconies at Clare Hall are private to each apartment do not constitute amenity space. At 4.3.67, he states:

'The Create sound level predictions are far higher than those predicted by WSP and, as I explain at paragraph 4.3.56 above, I do not understand how those predictions are supported. However, in my view the very narrow strip of land between the boundary fence adjacent to the proposed busway and those buildings does not comprise useable amenity space in any event. Furthermore, the more open garden areas associated with the Clare Hall buildings to the west (9 & 9a Herschel Road and Gillan Beer House, for example) are substantial and, even based on the Create predictions, will generally meet the external amenity criteria.'

- 3.6. That is not the case. Residents, not least children, use this strip of land and Mr Blacklock reports seeing toys and other paraphernalia distributed on this land. The ground floor family apartments have private gardens, which are adjacent to Rifle Range Road. We currently have families with very young children inhabiting one such property, as detailed within paragraphs 9.33 through to 9.38 of the Proof of Evidence from Mr Blacklock (CD26-08-W4-1).

4. Errata to my Proof of Evidence

- 4.1. Following submission of my Proof of Evidence and having discussed the same with the expert witnesses instructed by Clare Hall, I would like to make some points of clarification and amendments to my Proof of Evidence to better reflect my understanding and the intention behind some of the statements I make.
- 4.2. I kindly ask that the Inspectors consider the errata sheet provided at Appendix 1 of this rebuttal evidence and the amended version of my Proof of Evidence which reflects those changes (Appendix 2).

C Alan Short

Appendix 1 – Errata Sheet

Paragraph Reference in Proof of Evidence	Current Text	Amended Text
7.1.1	<p>The Applicant has proposed a guided busway, being the Cambourne to Cambridge Order (REF: DP1/E0535/25/1) and involves the construction, operation and maintenance of a guided busway between Cambourne and Cambridge. The application has made by Cambridge City Council in conjunction with Greater Cambridge Partnership. The guided busway consists of a two-way busway of approximately 13.6 kilometres in length, and an emergency and maintenance track, starting at Cambourne, terminating at Grange Road. The final segment 16 of this guided busway is proposed to pass along the routing of the existing trackway known as Rifle Range Road, immediately to the South of Clare Hall. The Applicant's scheme for this last segment 16 of the proposed busway along Rifle Range Road includes a two-way guided busway 7300mm wide with kerbs and a drainage scheme, an adjacent emergency and maintenance track 4500mm wide. The location of Rifle Range Road in relation to the College can be seen in Fig 1.1 above. The proximity of the proposed busway can be seen in Figs 7.1, 7.2 and 7.3 above. The Applicant's proposals will send a stream of buses, 10 each way each hour, so one every 3 minutes, within metres of Clare Hall from early morning to late at night.</p>	<p>The Applicant has proposed a guided busway, being the Cambourne to Cambridge Order (REF: DP1/E0535/25/1) and involves the construction, operation and maintenance of a guided busway between Cambourne and Cambridge. The application has <u>been</u> made by Cambridge City Council in conjunction with Greater Cambridge Partnership. The guided busway consists of a two-way busway of approximately 13.6 kilometres in length, and an emergency and maintenance track, starting at Cambourne, terminating at Grange Road. The final segment 16 of this guided busway is proposed to pass along the routing of the existing trackway known as Rifle Range Road, immediately to the South of Clare Hall. The Applicant's scheme for this last segment 16 of the proposed busway along Rifle Range Road includes a two-way guided busway 7300mm wide with kerbs and a drainage scheme, an adjacent emergency and maintenance track 4500mm<u>3.5m</u> wide (<u>narrowing to 3m towards the junction with Grange Road</u>). The location of Rifle Range Road in relation to the College can be seen in Fig 1.1 above. The proximity of the proposed busway can be seen in Figs 7.1, 7.2 and 7.3 above. The Applicant's proposals will send a stream of buses, 10 each way each hour, so one every 3 minutes, within metres of Clare Hall from early morning to late at night.</p>
7.1.2	<p>Jonathan Blacklock's evidence states that all buildings within 60m of the busway will suffer significant adverse impacts (estimated to be most of Clare Hall), and Fiona Lamb's evidence confirms that in places its buildings and occupants are within 3 metres of the proposed busway and 6 metres of the buses themselves (for example the Erskine Main Buildings, the Brian Pippard Building and Anthony Lowe Building). This proximity can be seen, for example, from Fiona Lamb's evidence which includes a redrawn cross section across Rifle Range Road (also included here as Fig 7.4) adjacent to the College Meeting Room, College Offices and the McLean Studies and offices. This redrawn cross-section also shows that the Applicant's section 17 within the site sections in the Applicants</p>	<p>Jonathan Blacklock's evidence states that all buildings, <u>with rooms and amenity spaces overlooking Rifle Range Road</u>, within 60m of the busway will suffer significant adverse impacts <u>during the construction phase</u>(estimated to be most of Clare Hall), and Fiona Lamb's evidence confirms that in places its buildings and occupants are within 3 metres of the proposed busway and 6 metres of the buses themselves (for example the Erskine Main Buildings, the Brian Pippard Building and Anthony Lowe Building). This proximity can be seen, for example, from Fiona Lamb's evidence which includes a redrawn cross section across Rifle Range Road (also included here as Fig 7.4) adjacent to the College Meeting Room, College Offices and the McLean Studies and offices. This redrawn cross-section also shows that the Applicant's section 17</p>

	drawings CD1-16.05 (SHEET 5 OF 5) and show below at Fig 8.1 is highly misleading because it depicts a wide gap between buses and the nearest building with mature trees growing between although it precisely slices through the Rugby Club stand. Avanti's evidence includes two carefully constructed images drawn to scale showing how close buses would come to rooms on the Grade 2* Listed South elevation to Rifle Range Road and how intrusive they would be for members of the College attempting to meet and work.	within the site sections in the Applicants drawings CD1-16.05 (SHEET 5 OF 5) and show below at Fig 8.1 is highly misleading because it depicts a wide gap between buses and the nearest building with mature trees growing between although it precisely slices through the Rugby Club stand. Avanti's evidence includes two carefully constructed images drawn to scale showing how close buses would come to rooms on the Grade 2* Listed South elevation to Rifle Range Road and how intrusive they would be for members of the College attempting to meet and work.
7.2.2	Jonathan Blacklock's evidence quantifies the quiet and tranquillity of the College setting, a critically important quality in establishing Clare Hall as an internationally renowned centre for advanced study. Mr Blacklock confirms that the Applicant failed to acknowledge Clare Hall to be a noise sensitive property and that construction noise will significantly adversely affect Clare Hall 's buildings, all are estimated to be within 60m of the Applicant's site as Fig 7.4 shows. Mr Blacklock writes that vibration during construction will be close to intolerable.	Jonathan Blacklock's evidence quantifies the quiet and tranquillity of the College setting, a critically important quality in establishing Clare Hall as an internationally renowned centre for advanced study. Mr Blacklock confirms that the Applicant failed to acknowledge Clare Hall to be a noise sensitive property <u>to have so many noise sensitive properties and types of noise sensitive users</u> and that construction noise will significantly adversely affect Clare Hall 's buildings, all are estimated to be within 60m of the Applicant's site as Fig 7.4 shows. Mr Blacklock writes that vibration during construction will be close to <u>intolerable for the closest buildings</u> .
7.2.3	Mr Blacklock's evidence is that the large increase in noise generated by the operation of the proposed busway will have a major impact and a Significant Adverse Effect. Disturbance and distraction caused by buses passing every 3 minutes would be experienced by all affected rooms across the whole College and particularly the College Main Building, the Pippard Building and the College flats. It is not clear what viable and effective mitigation can be introduced at this location in order to prevent heritage impacts.	Mr Blacklock's evidence is that the large increase in noise generated by the operation of the proposed busway will have a major impact and a Significant Adverse Effect. Disturbance and distraction caused by buses passing every 3 minutes would be experienced by all affected rooms across the whole College <u>overlooking Rifle Range Road</u> and particularly the College Main Building, the Pippard Building and the College flats. It is not clear what viable and effective mitigation can be introduced at this location in order to prevent heritage impacts.
7.2.4	Mr Kamran Haider's evidence reports a bus passing 20 times an hour, every three minutes on average, stated as being diesel driven buses with a vague aspiration to electric buses at an unspecified date in the future.	Mr Kamran Haider's evidence reports a bus passing 20 times an hour, every three minutes on average, stated as being diesel driven <u>hybrid</u> buses with a vague aspiration to electric buses at an unspecified date in the future.
7.2.5	The survey drawing of the South elevation of the Erskine Main Buildings of Clare Hall shown in Figs 8.3 and 8.4 in conjunction with the site plan of the College shows studies and administrators' offices. It includes the very characteristic, very long horizontal window seemingly defying gravity with its infeasibly long lintol, in	The survey drawing of the South elevation of the Erskine Main Buildings of Clare Hall shown in Figs 8.3 and 8.4 in conjunction with the site plan of the College shows studies and administrators' offices. It includes the very characteristic, very long horizontal window seemingly defying gravity with its infeasibly long lintol, in the South

	<p>the South wall of the College Meeting Room directly fronting Rifle Range Road. A characteristic surface water drainage canal (with Erskine's dramatic and very well-known rainwater chutes) defines the Southern thresholds into the College. The evidence of Jonathan Blacklock reveals that the productive use of these rooms will be seriously compromised by noise and vibration, not the least the heavily used Meeting Room in the Erskine Main Buildings. There is no alternative meeting space of similar capacity. Nor could the College continue to let it for external meetings, which makes money for Clare Hall in particular during the summer months.</p>	<p>wall of the College Meeting Room directly fronting Rifle Range Road. A characteristic surface water drainage canal (with Erskine's dramatic and very well-known rainwater chutes) defines the Southern thresholds into the College. The evidence of Jonathan Blacklock reveals that the productive use of these rooms will be seriously compromised by noise and vibration <u>during the construction and noise from the operation of the busway</u>, not the least the heavily used Meeting Room in the Erskine Main Buildings. There is no alternative meeting space of similar capacity. Nor could the College continue to let it for external meetings, which makes money for Clare Hall in particular during the summer months.</p>
7.2.6	<p>The Scholars' Walk discharges onto Rifle Range Road across a bridge over the canal and the landscaped surface continues to the track of Rifle Range Road. To the west of the main building is a courtyard house with the Bollinger suite of guest rooms overlooking Rifle Range Road, a courtyard garden to provide amenity to occupants and a bedroom/study overlooking Rifle Range Road. Behind and climbing up Erskine's artificial hillside (please refer to Fiona Lamb's evidence) are two further courtyard houses filled with academics and their families and the President's Lodge which hosts constant high-level meetings with distinguished visitors, Vice Chancellors and Presidents, ambassadors, ministers, prospective benefactors, donors and legators, senior University officials and leading business and financial figures. Mr Blacklock's evidence suggests all would suffer disturbance.</p>	<p>The Scholars' Walk discharges onto Rifle Range Road across a bridge over the canal and the landscaped surface continues to the track of Rifle Range Road. To the west of the main building is a courtyard house with the Bollinger suite of guest rooms overlooking Rifle Range Road, a courtyard garden to provide amenity to occupants and a bedroom/study overlooking Rifle Range Road. Behind and climbing up Erskine's artificial hillside (please refer to Fiona Lamb's evidence) are two further courtyard houses filled with academics and their families and the President's Lodge which hosts constant high-level meetings with distinguished visitors, Vice Chancellors and Presidents, ambassadors, ministers, prospective benefactors, donors and legators, senior University officials and leading business and financial figures. Mr Blacklock's evidence suggests all would suffer disturbance <u>during construction</u>.</p>
7.2.8	<p>The Evidence of Jonathan Blacklock, Graham Sinclair, Jessica Wilson, Fiona Lamb and Kamran Haider state the Brian Pippard Building would suffer severe adverse effects. Kamran Haider and Jody Blacklock explain that the Applicant proposes a vehicle turning bay, a source of noise and disturbance, directly opposite the Brian Pippard Building, entirely comprised of flats for Visiting Fellows and their families, Research Fellows and doctoral candidates. It provides a large flat for families of 3 and 4 children with a protected garden immediately adjacent to Rifle Range Road. Create states that the gardens and balconies will be unusable during construction, certainly for academics working within, and suffer Major Adverse</p>	<p>The Evidence of Jonathan Blacklock, Graham Sinclair, Jessica Wilson, <u>and</u> Fiona Lamb and Kamran Haider state the Brian Pippard Building would suffer severe adverse effects. Kamran Haider and Jody Blacklock explain that the Applicant proposes a vehicle turning bay, a source of noise and disturbance, directly opposite the Brian Pippard Building, entirely comprised of flats for Visiting Fellows and their families, Research Fellows and doctoral candidates. It provides a large flat for families of 3 and 4 children with a protected garden immediately adjacent to Rifle Range Road. Create states that the gardens and balconies will be unusable during construction, certainly for academics</p>

	Impact resulting in Significant Adverse Effect from busway operations.	working within, and suffer Major Adverse Impact resulting in Significant Adverse Effect from busway operations.
7.2.9	To the West is No.4 Herschel Road, owned by the College, currently let but affording the site for the Alison Brooks mixed graduate student/visiting academic scheme noted above. Alison Brooks' scheme is sited tight to Rifle Range Road. Create's evidence states that this property and neighbouring potential sites for new accommodation will be adversely affected by noise and vibration.	To the West is No.4 Herschel Road, owned by the College, currently let but affording the site for the Alison Brooks mixed graduate student/visiting academic scheme noted above. Alison Brooks' scheme is sited tight to Rifle Range Road. Create's evidence states that this property and neighbouring potential sites for new accommodation will be adversely affected by noise and vibration <u>during construction</u> .
7.2.10	5b Herschel Road belongs to the College and is occupied by Fellows. It too is close enough to the proposed busway to be disturbed as evidenced by Jonathan Blacklock.	5b Herschel Road belongs to the College and is occupied by Fellows. It too is close enough to the proposed busway to be disturbed <u>during construction</u> as evidenced by Jonathan Blacklock.
7.2.15	Jonahtan Blacklock's evidence confirms that all would be disturbed by the prospective busway which would pass at first floor level as it crosses the Bin Brook and then descends at a very shallow angle until it is restored to grade well beyond Clare Hall.	Jonahtan Jonathan Blacklock's evidence confirms that all would be disturbed by the prospective busway which would pass at first floor level as it crosses the Bin Brook and then descends at a very shallow angle until it is restored to grade well beyond Clare Hall.
7.2.28	The modelling by Create, as included in the evidence of Graham Sinclair, demonstrates that there are increased flood levels and flood extents that extend across the order limits of the proposed busway. It also highlights that there are increases to in-channel velocities and flood risk downstream of the proposed bridge structure. These increases are observed by up to 100% which gives rise to a clear erosion risk to land within the ownership of Clare Hall. The proposed scheme also produces a net loss of floodplain storage, due to land raising in Flood Zone 3b. The modelling has demonstrated a potential solution that adheres to the National Planning Policy Framework requirements for flood risk management, however delivery of these options by the Applicant are not possible because they exceed the as there in an inadequate area of space requested within the order limits. Therefore, as the evidence of Ms Wilson states, the application fails key policy tests and would result in unacceptable increases in flood risk and erosion risk to land and assets outside the site boundary.	The modelling by Create, as included in the evidence of Graham Sinclair, demonstrates that there are increased flood levels and flood extents that extend across the order limits of the proposed busway. It also highlights that there are increases to in-channel velocities and flood risk downstream of the proposed bridge structure. These increases are observed by up to 100% which gives rise to a clear erosion risk to land within the ownership of Clare Hall. The proposed scheme also produces a net loss of floodplain storage, due to land raising in Flood Zone 3b. The modelling has demonstrated a potential solution that adheres to the National Planning Policy Framework requirements for flood risk management, however delivery of these options by the Applicant are not possible because they exceed the as there in an inadequate area of space requested within the order limits. Therefore, as the evidence of Ms Wilson states, the application fails key policy tests and would result in <u>unacceptable</u> increases in flood risk and erosion risk to land and assets outside the site boundary.

7.2.29	<p>The Environment Agency (EA) granted Clare Hall access to their Bin Brook model. The EA has continued to object to the Applicant's modelling on the basis of technical reasoning and required updates. As of the time of writing this document this Proof of Evidence it is understood that this objection remains in place and there is no evidence that approval has been granted. It is not clear what model has been used but it has not been agreed or provided to date. Mr Sinclair's evidence explains that they requested this information several times and it has not been provided by the Applicant. As such Graham Sinclair and Create calibrated the model and brought it up to date with the latest climate change requirements.</p>	<p>The Environment Agency (EA) granted Clare Hall access to their Bin Brook model. The EA has continued to object to the Applicant's modelling on the basis of technical reasoning and required updates. As of the time of writing this document this Proof of Evidence it is understood that this objection remains in place and there is no evidence that approval has been granted. <u>The model used by the Applicant was not shared with Clare Hall until the end of July, just a few weeks before the deadline for this Proof of Evidence. It is not clear what model has been used but it has not been agreed or provided to date.</u> Mr Sinclair's evidence explains that they requested this information several times and it has was not been provided by the Applicant <u>despite being available</u>. As such Graham Sinclair and Create calibrated the model and brought it up to date with the latest climate change requirements.</p>
7.2.31	<p>Newsteer's evidence fundamentally questions the procedures employed by the Applicant, not least in terms of the Cambridge Local Plan 2018 requiring Sequential Testing to establish lower risk alternative. The evidence of Jessica Wilson deduces that there is an entirely viable alternative route above the flood plain, Adams Road, in the lowest flood risk category, Flood Zone 1, which was until a late stage the Applicant's preferred route rather than Rifle Range Road in the highest risk category. The scores arrived at in the Applicant's options testing methodology do not seem credible under a number of headings as discussed in the evidence of both Pulsar and Newsteer. The Applicant's perspective view of the proposed Bin Brook crossing shows all of the trees removed and the houses on Herschel Road clearly visible.</p>	<p>Newsteer's evidence fundamentally questions the procedures employed by the Applicant, not least in terms of the Cambridge Local Plan 2018 requiring Sequential Testing to establish lower risk alternative. The evidence of Jessica Wilson <u>and Kamran Haider</u> deduces that there is an entirely viable alternative route above the flood plain, Adams Road, in the lowest flood risk category, Flood Zone 1, which was until a late stage the Applicant's preferred route rather than Rifle Range Road in the highest risk category. The scores arrived at in the Applicant's options testing methodology do not seem credible under a number of headings as discussed in the evidence of both Pulsar and Newsteer. The Applicant's perspective view of the proposed Bin Brook crossing shows all of the trees removed and the houses on Herschel Road clearly visible.</p>
7.2.33	<p>Newsteer's and Pulsar's evidence fundamentally questions the information fed by the applicant into the INSET options appraisal tool to determine the choice of route, showing that it was not undertaken correctly. For example, Rifle Range Road is wholly in the Green Belt, Adam's Road not at all. There are no listed buildings on Adam's Road.</p>	<p>Newsteer's and Pulsar's evidence fundamentally questions the information fed by the applicant into the INSET options appraisal tool to determine the choice of route, showing that it was not undertaken correctly. For example, Rifle Range Road is wholly in the Green Belt, Adam's Road <u>significantly less</u>not at all. There are no listed buildings on Adam's Road.</p>
7.2.34	<p>Mr Haider explains a Road Safety Audit (RSA) process reveals 5 serious unresolved highway safety concerns with the proposed Rifle Range Road route. The RSA comments that some may at least</p>	<p>Mr Haider explains a Road Safety Audit (RSA) process reveals 5 <u>serious</u> unresolved highway safety concerns with the proposed Rifle Range Road route. The RSA comments that some may at least appear to be</p>

	appear to be irresolvable through lack of space. Rifle Range Road is simply too narrow at key points, not least along the south front of the Erskine buildings, leading to design flaws with the RRR route, making it substandard for cyclists and pedestrians. They will be too close to buses. The proposed left turn only junction to Grange Road at the point of its notorious narrowing, the Rouse Ball gap, is fundamentally criticised in its design and safety.	irresolvable through lack of space. Rifle Range Road is simply too narrow at key points, not least along the south front of the Erskine buildings, leading to design flaws with the RRR route, making it substandard for cyclists and pedestrians. They will be too close to buses. The proposed left turn only junction to from Grange Road at the point of its notorious narrowing, the Rouse Ball gap, is fundamentally criticised in its design and safety.
7.2.38	The "Illustrative view of Bin Brook crossing" does not show this retaining structure right up against the boundaries of the College and neighbouring houses to Rifle Range Road No 5a belonging to Lord Rees is bequeathed to Clare Hall. Pulsar's evidence shows significant additional challenges to access any part of the southern range of the College. Access is very necessary from Rifle Range Road because the existing structures on Herschel Road fronting development sites on Rifle Range Road are too close together to permit access for maintenance and construction of newbuild projects.	The "Illustrative view of Bin Brook crossing" does not show this retaining structure right up against the boundaries of the College and neighbouring houses to Rifle Range Road No 5a belonging to Lord Rees is bequeathed to Clare Hall. Pulsar's evidence shows significant additional challenges to to access any part of the southern range of the College. Access is very necessary from Rifle Range Road because the existing structures on Herschel Road fronting development sites on Rifle Range Road are too close together to permit access for maintenance and construction of newbuild projects.
7.2.39	Mr Haider investigated the prospects for delivering heavy items, servicing maintenance and new construction and demolition as required with the proposed busway in place. Pulsar shows graphically that construction and delivery vehicles would have to encroach on the segregated busway. This would either have to be timed in the short intervals between buses (noting that there are planned to be ten buses each way per hour) or they would have to disrupt the bus timetable, with buses waiting until the route was clear before proceeding. This is described further in the evidence from Mr Haider which shows they cannot be contained within the 3m emergency access strip and would need to swing into the busway.	Mr Haider investigated the prospects for delivering heavy items, servicing maintenance and new construction and demolition as required with the proposed busway in place. Pulsar shows graphically that construction and delivery vehicles would have to encroach on the segregated busway. This would either have to be timed in the short intervals between buses (noting that there are planned to be ten buses each way per hour) or they would have to disrupt the bus timetable, with buses waiting until the route was clear before proceeding. This is described further in the evidence from Mr Haider which shows they cannot should not be contained within the 3m emergency access strip (for safety reasons) and would need to swing into the busway.
7.2.43	Mr Haider has designed two solutions to accommodate buses on Adam's Road. They are declared wholly safe and viable by the Road Safety Advisor unlike the Rifle Range Road proposal. Mr Haider shows that it is preferable in a number of important ways including: the traffic light controlled junction with Grange Road is fully developed, operates in both directions and is safe; it does not cross through the Green Belt, it does not harm any listed heritage assets,	Mr Haider has designed two solutions to accommodate buses on Adam's Road. They are declared wholly safe and viable by the Road Safety Advisor unlike the Rifle Range Road proposal. Mr Haider shows that it is preferable in a number of important ways including: the traffic light controlled junction with Grange Road is fully developed, operates in both directions and is safe; it is largely outside of the does not cross through the Green Belt, it does not harm any listed heritage assets, no

	no buildings on Adams Road are listed and all are set well back and can accommodate maintenance, construction and maintenance vehicles on site; it is in the lowest category floodplain zone, Rifle Range Road in the highest; it avoids the Kings College School entrance; it is very significantly cheaper (as detailed at section 8 below) and is expected to consume very much less carbon (also see section 8 below).	buildings on Adams Road are listed and all are set well back and <u>it appears</u> can accommodate maintenance, construction and maintenance vehicles on site; it is in the lowest category floodplain zone, Rifle Range Road in the highest; it avoids the Kings College School entrance; it is very significantly cheaper (as detailed at section 8 below) and is expected to consume very much less carbon (also see section 8 below).
8.5	The Gleeds report suggests that the section of the route that continues from Charles Babbage Road to Grange Road (along Rifle Range Road), is over £10 million more expensive than Adams Road Route Option 2, and over £11 million more expensive than Adams Road Route Option 1. That is a huge cost difference for a relatively short section of the overall busway route, especially when considering the additional benefits that re-routing the scheme down Adams Road will provide (not least in respect of reduced development on green belt land and internation with flood zone 3).	The Gleeds report suggests that the section of the route that continues from Charles Babbage Road to Grange Road (along Rifle Range Road), is over £10 million more expensive than Adams Road Route Option 2, and over £11 million more expensive than Adams Road Route Option 1. That is a huge cost difference for a relatively short section of the overall busway route, especially when considering the additional benefits that re-routing the scheme down Adams Road will provide (not least in respect of reduced development on green belt land and <u>internationalinteraction</u> with flood zone 3).
9.7	On 8 July 2022 Dentons (on behalf of Clare Hall) wrote a response to a further round of public consultation, continuing to state the issues with a routing down Rifle Range Road, pointing out the requirement to consider alternatives, the impact on Grade 2* historic buildings, the ecological impact, potential flood risk, the potential blocking of the entire south lank of the College to future development, and the displacement of the Granta Backbone optic fibre cables. There was a virtual meeting on 16 December 2022 with Jo Baker from GCP, the WSP representative tasked with the Environmental Impact Assessment for GCP, the Clare Hall Bursar, me, Slaine Campbell (Landscape Architect, supporting Clare Hall) and Carl Maidment (Quantity Surveyor supporting Clare Hall). During the meeting I described the unique significance of Clare Hall as the only college dedicated to research and the dense population of international academics on site with their families. Jo Baker described the ' <i>incandescent fury of the cycling lobby</i> ', but despite that he declared he was very interested in the Adams Road routing option which avoids the West Fields and the need for a Bin Brook crossing (requiring more than a 1.5 metre elevation), commenting, 'Peter didn't brief you?'. The WSP representative tasked with the Environmental Impact Assessment for GCP agreed with Carl	On 8 July 2022 Dentons (on behalf of Clare Hall) wrote a response to a further round of public consultation, continuing to state the issues with a routing down Rifle Range Road, pointing out the requirement to consider alternatives, the impact on Grade 2* historic buildings, the ecological impact, potential flood risk, the potential blocking of the entire south lank of the College to future development, and the displacement of the Granta Backbone optic fibre cables. <u>There was also a meeting at Clare Hall with Peter Blake on 29th November 2022, which Mr Kamran Haider attended.</u> There was a virtual meeting on 16 December 2022 with Jo Baker from GCP, the WSP representative tasked with the Environmental Impact Assessment for GCP, the Clare Hall Bursar, me, Slaine Campbell (Landscape Architect, supporting Clare Hall), <u>Mr Kamran Haider</u> , and Carl Maidment (Quantity Surveyor supporting Clare Hall). During the meeting I described the unique significance of Clare Hall as the only college dedicated to research and the dense population of international academics on site with their families. Jo Baker described the ' <i>incandescent fury of the cycling lobby</i> ', but despite that he declared he was very interested in the Adams Road routing option which avoids the West Fields and the need for a Bin Brook crossing (requiring more than a 1.5 metre elevation), commenting, 'Peter didn't brief you?'. The WSP representative tasked

	Maidment that the net carbon footprint would be greater for the Rifle Range Road option than Adams Road.	with the Environmental Impact Assessment for GCP agreed with Carl Maidment that the net carbon footprint would be greater for the Rifle Range Road option than Adams Road.
9.10	Finally, the only option available to Clare Hall was its Letter of Objection, from Dentons on behalf of Clare Hall on 8 January 2025; there have been subsequent written representations from Clare Hall and Dentons as part of the process leading to the Public Inquiry. This has not been undertaken lightly, recognising the costs to the College in preparing its objections and for the Public Inquiry. These costs have been greater than would otherwise be the case due to the lack of engagement and lack of provision of information by the Applicant. At no point – until June 2025 (once encouraged) – has the Applicant visited the College to understand the impact of the busway scheme on the unique, Grade 2* listed asset, nor to understand how the proposed busway would impact the main site of the College in terms of noise and its consequences on Clare Hall’s academic community, including its students and the many families with children living there.	Finally, the only option available to Clare Hall was its Letter of Objection, from Dentons on behalf of Clare Hall on 8 January 2025; there have been subsequent written representations from Clare Hall and Dentons as part of the process leading to the Public Inquiry. This has not been undertaken lightly, recognising the costs to the College in preparing its objections and for the Public Inquiry. These costs have been greater than would otherwise be the case due to the lack of engagement and lack of provision of information by the Applicant. At no point – until June 2025 (once encouraged) – has the Applicant visited the College to understand the impact of the busway scheme on the unique, Grade 2* listed asset, nor to understand how the proposed busway would impact the main site of the College in terms of noise and its consequences on Clare Hall’s academic community, including its students and the many families with children living there.
10.2	Mr Blacklock also confirms that this habitual quiet and tranquillity is severely threatened by the Applicant’s proposed busway scheme. Mr. Blacklock quantifies the extreme disturbance from noise and vibration during construction. The construction noise will be near intolerable, Clare Hall will have to evacuate at least some of its estate, shutting down its visiting academics programme. As a long-term member of the construction industry, I do not find the estimated programme of a few weeks to build this major piece of infrastructure credible. Jessica Wilson’s evidence emphasizes the noise and disturbance which would low from the construction compound set up alongside Clare Hall’s Pippard Building of apartments. It would be intolerable for residents.	Mr Blacklock also confirms that this habitual quiet and tranquillity is severely threatened by the Applicant’s proposed busway scheme. Mr. Blacklock quantifies the extreme disturbance from noise and vibration during construction. The construction noise <u>and vibration</u> will be near intolerable, Clare Hall will have to evacuate at least some of its estate, shutting down its visiting academics programme. As a long-term member of the construction industry, I do not find the estimated programme of a few weeks to build this major piece of infrastructure credible. Jessica Wilson’s evidence <u>explains the policy compliance of the Applicant’s noise and vibration evidence, emphasizes the noise and disturbance which would low from the construction compound set up alongside Clare Hall’s Pippard Building of apartments.</u> It would be intolerable for residents.
10.3	Noise disturbance and distraction during operation from the buses across the whole College and the distraction of buses passing every three minutes on average from early in the morning to late at night, not least to the Meeting Room and to the families in lats fronting Rifle Range Road. In operation the acoustic character of Clare Hall	Noise disturbance and distraction during operation from the buses <u>across the whole college for the buildings fronting Rifle Range Road</u> and the distraction of buses passing every three minutes on average from early in the morning to late at night, not least to the Meeting Room and to the families in lats fronting Rifle Range Road. In operation the

	will be irreparably changed negating the use of external amenity spaces all over the College. Many apartments have balconies and gardens, and Erskine provided communal meeting places around tables integrated into the structure.	acoustic character of Clare Hall will be irreparably changed negating the use of <u>some private</u> external amenity spaces all over the College. Many apartments have balconies and gardens, and Erskine provided communal meeting places around tables integrated into the structure.
10.6	The evidence submitted by Pulsar demonstrates many failings in the Applicant's design proposal and Road Safety Audit. Pulsar's proposals for Adam's Road to accommodate the Busway have been approved by the Road Safety Advisor as being wholly compliant and safe. There are many advantages to Adam's Road and irresolvable problems with Rifle Range Road. The Adam's Road route is very significantly cheaper with a very significantly lower carbon penalty.	The evidence submitted by Pulsar demonstrates many failings in the Applicant's design proposal and Road Safety Audit. Pulsar's proposals for Adam's Road to accommodate the Busway have been <u>approved reviewed</u> by the Road Safety Advisor <u>and no fundamental concerns were raised as being wholly compliant and safe</u> . There are many advantages to Adam's Road and irresolvable problems with Rifle Range Road. The Adam's Road route is very significantly cheaper with a very significantly lower carbon penalty.
10.12	The transport mode segregation argument collapses in the context of the proposed overall route. The evidence of Pulsar, cited additionally by Newsteer, demonstrates that 44% of the route is unsegregated in the Applicant's current proposal which would only rise to 49% if the Adams Road routing is re-adopted. Mr Haider has produced an entirely viable scheme for Adams Road, safe, efficient and economical, sanctioned by an independent national Road Safety Advisor who has five important criticisms of the Rifle Range Road route in safety terms. As President of Clare Hall and ultimately responsible for its resident community I would have deep concerns about small children playing on the rising banks of the proposed causeway out of sight and actually climbing onto the elevated busway.	The transport mode segregation argument collapses in the context of the proposed overall route. The evidence of Pulsar, cited additionally by Newsteer, demonstrates that 44% of the route is unsegregated in the Applicant's current proposal which would only rise to 49% if the Adams Road routing is re-adopted. Mr Haider has produced an entirely viable scheme for Adams Road, safe, efficient and economical, <u>sanctioned reviewed</u> by an independent national Road Safety <u>Advisor, whereas the Road Safety Auditor for the Rifle Range Road route had who has</u> five important criticisms of <u>that alignment of the Rifle Range Road route in safety terms</u> . As President of Clare Hall and ultimately responsible for its resident community I would have deep concerns about small children playing on the rising banks of the proposed causeway out of sight and actually climbing onto the elevated busway.
10.13	A research institution of international importance, Clare Hall, would be irreparably damaged by the Applicant's proposals. Activity would dramatically reduce or cease during what Jody Blacklock's evidence describes as the near intolerable noise in construction, severely damaging income, and as the predicted disturbance of the proposed busway in operation becomes generally known across our international university constituency. This is entirely unjustified given that there is a wholly viable, safe, economical, more direct route already available with modification for a fraction of the cost. The Applicant has never properly engaged with Clare Hall to understand the impacts of the proposed busway scheme despite	A research institution of international importance, Clare Hall, would be irreparably damaged by the Applicant's proposals. Activity would dramatically reduce or cease during what <u>JodyJonathan</u> Blacklock's evidence describes as the near intolerable noise <u>and vibration during</u> construction, severely damaging income, and as the predicted disturbance of the proposed busway in operation becomes generally known across our international university constituency. This is entirely unjustified given that there is a wholly viable, safe, economical, more direct route already available with modification for a fraction of the cost. The Applicant has never properly engaged with Clare Hall to understand the impacts of the proposed busway scheme despite many

	<p>many invitations. Clare Hall has had to appoint and fund experts to analyse the risks of flooding, the traffic implications, noise and vibration implications, heritage implication, the structural engineering implications, the planning context, costs and carbon implications, in the absence of credible substantiation by the been demonstrated to be deeply flawed. Undertaken correctly it confirms the validity and preferability of the alternative route, Adams Road.</p>	<p>invitations. Clare Hall has had to appoint and fund experts to analyse the risks of flooding, the traffic implications, noise and vibration implications, heritage implication, the structural engineering implications, the planning context, costs and carbon implications, in the absence of credible substantiation by the been demonstrated to be deeply flawed. Undertaken correctly it confirms the validity and preferability of the alternative route, Adams Road.</p>
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Appendix 2 – Amended Proof of Evidence

**IN THE MATTER OF THE CAMBOURNE TO CAMBRIDGE TRANSPORT AND WORKS
ACT ORDER APPLICATION MADE BY CAMBRIDGESHIRE COUNTY COUNCIL (AND
GREATER CAMBRIDGESHIRE PARTNERSHIP)**

REF. TWA/24/APP/03

OBJ 213

CLARE HALL, UNIVERSITY OF CAMBRIDGE

PROOF OF EVIDENCE

CHARLES ALAN SHORT MA, DipArch, PhD, LittD (Cantab)

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- 2 Appendix 2 – Site Map of who is living where in Clare Hall 2024-25 and 2025-26
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1. Introduction

- 1.1 I am Charles Alan Short, The Professor of Architecture (by Grace of 1970) Emeritus at the University of Cambridge. I have the higher doctorate Litt.D, Doctor of Letters, from the University of Cambridge.
- 1.2 My research is in the design and performance of low energy public buildings in city environments in Temperate and Continental climates and Urban Heat Islands. I co-founded an architecture practice in London in 1987 to design and build innovative low energy buildings with important inputs from engineers, theoretical physicists and applied mathematicians, particularly in fluid mechanics, at the University of Cambridge, Loughborough University and Imperial College London.
- 1.3 I won the Green Building of the Year Prize in 1995 for the School of Engineering and Manufacture in Leicester, the largest naturally ventilated building in Europe, followed by the first 'RIBA President's Award for Research 2007: Outstanding Professional Practice-located Research', for the design and construction of the world's first passive draught cooled building in an urban Heat Island, the School of Slavonic and East European Studies, SSEES, in Bloomsbury. I won the 'RIBA President's Commendation for University-located Research 2009' for a research council and Department of Health funded study of NHS acute hospitals and their propensity for summer overheating and adaptation proposals to correct that across the whole NHS England Acute Hospital estate.
- 1.4 I lead the University of Cambridge Department of Architecture's submission to the Research Excellence Framework in 2021, which came top in the UK, and included my teams' impact study proposing solutions to passively cool apartment towers and slabs in the Yangtse River Basin from Shanghai to Sichuan. The aim was to avoid sealing and air conditioning some 450,000 buildings across China, resulting in an immense carbon penalty (from the emissions arising from the operation of air conditioning systems, the energy consumed in mechanical cooling and dehumidification). I am also International Co-Director of the National Centre for Green and Sustainable Buildings and Cities in China.
- 1.5 I was elected to a Professorial Fellowship of Clare Hall in 2002 (membership under Title B for established professors) and as Vice President in 2018. I was elected President of Clare Hall, Cambridge in 2019, taking up the post in August 2020. Clare Hall College Statute III.2 describes the role thus:

"It shall be the duty of the President to exercise a general supervision over the affairs of the College and to see that these Statutes are duly observed. He shall preside, except where these Statutes provide otherwise, at all meetings of the Governing Body, the Council and the Finance Committee, provided always that the powers

conferred upon the Governing Body in Statute XI and upon the Council in Statute XII and upon the Finance Committee in Statute XIII respectively shall continue to be exercisable notwithstanding a vacancy in the Office of President. The President shall have the right to attend, speak and vote at any other Committee or Sub-Committee transacting College business. He shall have the power in any emergency not provided for by these Statutes or by an Ordinance or any resolution of the Governing Body to take such action to ensure the good government of the College as he shall think fit and shall report any such action at the next meeting of the Governing Body”.

- 1.6 I was elected Chair of the Colleges’ Committee for 2026-28, acting as Deputy Chair 2024-26. The 31 Cambridge Colleges are autonomous, self-governing bodies with their own statutes and governing bodies. The Colleges’ Committee is the principal collegiate committee, comprising the 31 Heads of House (being the Heads of the 31 Colleges of the University of Cambridge), administered by the Office of Intercollegiate Services, meeting twice termly (formally) to discuss all matters likely to impinge on colleges from proposed changes to teaching, research and administration to prospective legislation, the University’s policies and future strategy, to fund-raising protocols, to City and Regional planning.

- 1.7 I am a Trustee of the University of Cambridge as a member of the University Council, which is:

“the principal executive and policy-making body of the University. It has overall responsibility for the administration of the University, for defining its mission, for planning its work and for the management of its resources. It has the power to take such action as is necessary to discharge these responsibilities and, in carrying out its functions, consults the Regent House on questions of both decisions and policy”.¹

- 1.8 I was appointed to the General Board of the University of Cambridge in 2025.

“The General Board is responsible to the Council and the Regent House, for matters relating to the University’s academic and educational activities and policies. These fall under five main headings: Education, Research, Academic Planning, Academic Services, HR issues relating to academic staff. The Board also has general responsibility for the academic activities of Faculties, Departments and the Schools, as well as for the University’s Museums and Libraries”.²

- 1.9 As such and as a Head of House the safety and well-being of our students, staff and academics, many of whom are cyclists, is of the utmost importance to me.

¹ <https://www.governance.cam.ac.uk/committees/council/Pages/about.aspx>

² <https://www.governance.cam.ac.uk/committees/general-board/Pages/about-the-GB.aspx>

- 1.10 I am a member of the University and Colleges' Joint Committee at which the Chair and Deputy Chair of the Colleges' Committee meet with the Vice Chancellor, Pro-Vice Chancellors and the Academic Secretary to discuss collegiate university business at the highest level.

2. History and Background to Clare Hall

- 2.1. Clare Hall has become a research institution of international stature over 60 years. Its Fellows contribute materially to the world-class research supporting the Oxford and Cambridge Arc identified by Government Ministers as the premier research and innovation hub driving national economic recovery and growth.³
- 2.2. Clare Hall was founded by Clare College in 1966 to be the European equivalent of Einstein's Princeton Institute for Advanced Studies. Clare Hall is devoted to research. It has no undergraduates. It is very different to the 29 traditionally constituted undergraduate colleges.
- 2.3. Whereas Princeton's Institute admits scholars in the Humanities and Mathematics only, Clare Hall embraces all disciplines pursued by the University.
- 2.4. The detailed history of Clare Hall is provided by the late Fellow Emeritus Professor Richard Eden.⁴ Clare Hall established itself as an independent college receiving a Royal Charter in October 1984. The Clare College and Clare Hall fellowships were split. In 1996 the Clare College-Clare Hall investment portfolios were separated, Clare Hall receiving a generous proportion of Clare College's endowment.
- 2.5. Clare Hall's uniqueness is demonstrated by boasting the largest Visiting Fellowship programme within any of the Oxford and Cambridge colleges. Clare Hall's statutes permit the Governing Body to admit up to forty-two eminent established academics at any one time through competition, almost all of professorial rank, who join the College for a year on sabbatical to focus on a major piece of research. 35 were admitted for part or all of 2024-25. The attached map locating College members shows most are resident in Clare Hall (shown at Appendix 1).
- 2.6. Only All Souls College Oxford maintains a comparable visiting academic programme, 17 of whom were elected for 2023-4, one of whom had moved on from Clare Hall, which is a regular occurrence.
- 2.7. The tranquil environment of Clare Hall as quantified in the evidence of Jonathan Blacklock is absolutely essential to the success of the College and ensures that Clare Hall is able to attract Fellows and maintain its esteemed reputation in that regard. Clare Hall is a key part of the global success of the University of Cambridge. We have a vision for the College's growth and development that will allow this to continue. The Minister of State at the Ministry of Housing,

³ <https://www.gov.uk/government/publications/oxford-cambridge-arc/oxford-cambridge-arc>

⁴ Eden Richard (1998) Clare College and the Founding of Clare Hall, Clare Hall in the University of Cambridge (shown at Appendix 4). Scans may be provided on request.

Communities and Local Government, Matthew Pennycook, a frequent visitor to Cambridge according to the University Council with Peter Kyle, the Secretary of State for Science, Innovation and Technology , wrote on 31 October 2024.

"The economic growth of Cambridge has been a phenomenal success and the city's strengths in knowledge-intensive businesses within its unique innovation ecosystem are well documented, with strong connections between investors, researchers, businesses and local government".

- 2.8. This is exactly what Clare Hall delivers at a global level: world class research and innovation, combined with interactions with leading entrepreneurs (for example Sir Mene Pangalos (former Executive Vice-President, R&D BioPharmaceuticals at AstraZeneca) is a Professorial Fellow at Clare Hall, including while he was in post at AstraZeneca).

3. Layout and Buildings of Clare Hall

Fig 1: Site Plans prepared by Avanti.



Fig 1.1: Aerial view of the College updated to show all buildings in Clare Hall's current and future possession.

Main Site



Fig 1.2: Further detail of the Main Site and West Court.

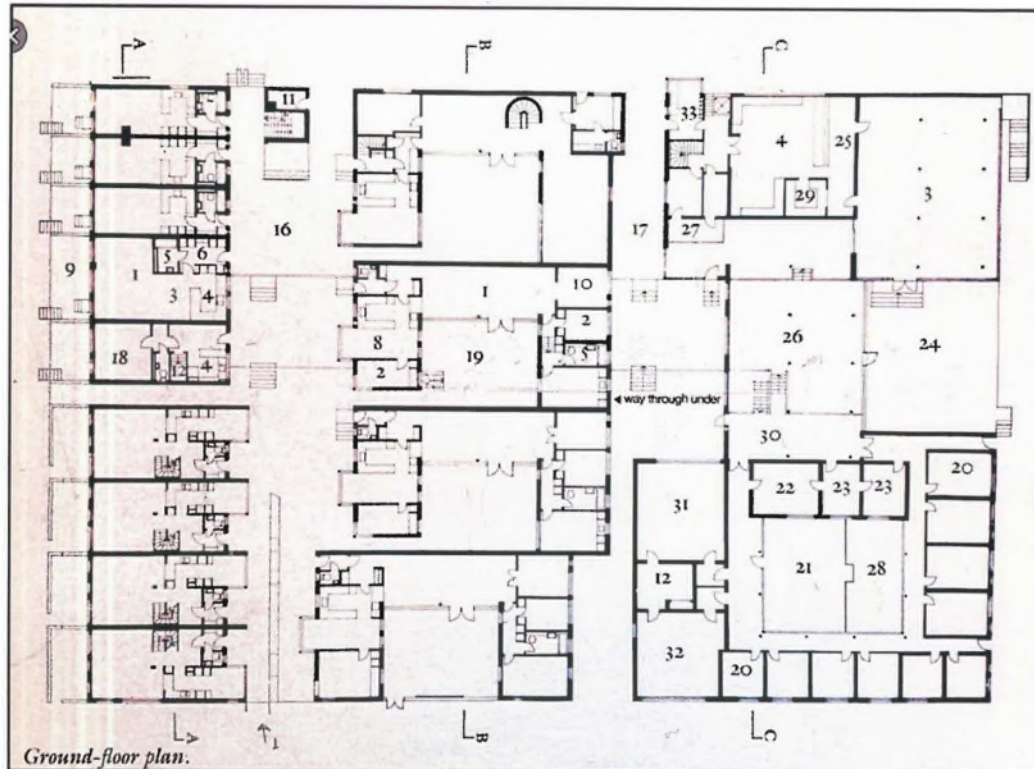


Fig 1.3: Ground Floor Plan of the Erskine Main Buildings (these comprise the College Offices, College Flats and Dining Hall & Common Room shown in Fig 1.2).

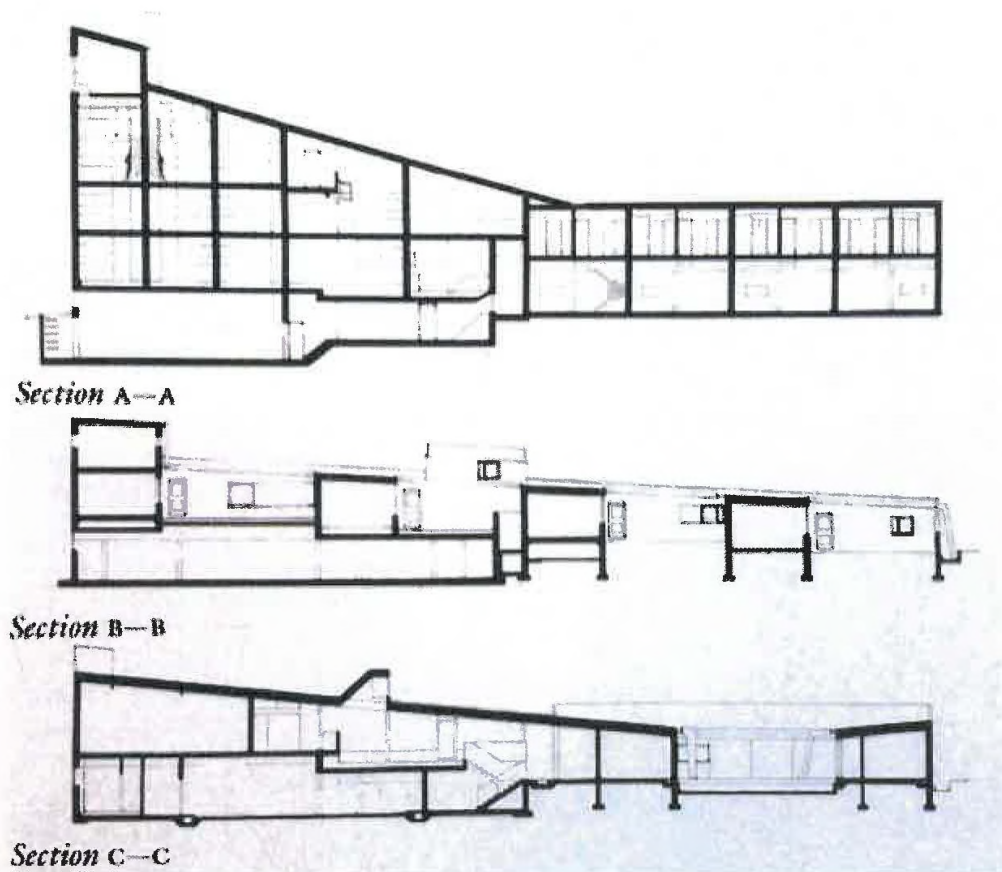


Fig 1.4: Cross sections through the Erskine Main Buildings (these comprise the College Offices, College Flats and Dining Hall & Common Room shown in Fig 1.2, and the location of the sections are as shown in Fig 1.3).

- 3.1. The evidence of Fiona Lamb and the accompanying Conservation Management Plan explain that Clare Hall's core buildings (the Erskine Main Buildings shown in Figs 1.3 and 1.4), designed by the eminent Anglo-Swedish architect Ralph Erskine and listed Grade 2*, were completed in 1969. They provide offices and studies around a tranquil courtyard, a goldfish pond taking up a third of the floorplate with a fountain splashing in the centre (an important oasis for stressed academics and college officers), accommodation for the President and the College's internationally important collection of some 500 Twentieth Century ceramics, the combined Senior and Middle Common Room, Dining Hall and kitchens, all within one contiguous space. The South elevation abuts the boundary to Rifle range Road.
- 3.2. The E S Prior villa known as Elmside (previously No. 49 Grange Road), on Grange Road houses Doctoral and Masters students, once the home of the Trinity mathematician Rouse Ball. The Ashby Library and McLean Studies, abutting Rifle Range Road, were added to Elmside in 1993-94, an important working base for Fellows, research students, post-docs and Visiting Fellows.

- 3.3. In 1987 Ralph Erskine added the Michael Stoker Building along the building line on Herschel Road in his second later career in order to house Doctoral and Masters students.
- 3.4. The Brian Pippard Building was added in 1997, built directly on the boundary with Rifle Range Road. Its balconies directly overlook Rifle Range Road, extending beyond the main building to the boundary. The Brian Pippard Building contains both large family flats with outdoor amenity space alongside Rifle Range Road and smaller flats with balconies overlooking Rifle Range Road for Visiting Professors and their families with rooms for post-doctoral researchers and Doctoral and Masters students.
- 3.5. The E S Prior villa known as Leslie Barnett House (previously known as No. 3 Herschel Road), formerly the economist Maynard Keynes' family home, was acquired in 1980, whilst the Keynes family-built No. 4 Herschel Road in the late 1970s. Clare Hall acquired No. 4 Herschel Road in 2018. No. 5b Herschel Rd was bought in 2001 and houses Official, Research and Visiting Fellows. In 2023 Honorary fellows Lord and Lady Rees bequeathed their house, No. 5a Herschel Road, to Clare Hall.
- 3.6. In 1996 Clare Hall acquired Lord Rothschild's former home, including his chauffeur's house, being then No.'s 9/9a/11/13 Herschel Road, renaming these collectively "West Court", and subsequently added extensively to the existing buildings, including the Paul Mellon Building, a courtyard of houses and flats for Visiting Fellows, and the Robert Honeycombe Building, housing Doctoral and Masters students and post-docs. The original Rothschild House itself is now known as Gillian Beer House, providing meeting rooms for up to 50, a catering kitchen, flats for Fellows and Visiting Fellows, and guest rooms.
- 3.7. The Salje Building, adjacent to Gillian Beer House, was added in 2010, requiring elaborate precautions to survive the severe flooding of the Bin Brook as experienced in 2001 and in 2005 as the evidence of Graham Sinclair describes. Photographs of these destructive and frightening events requiring nighttime evacuation are included as Fig 9. The building is lifted a metre above the ground level with escape bridges to higher ground. A large attenuation tank sits below ground alongside the building to absorb flood surges.
- 3.8. The Anthony Low Building was built as a bar and informal common room for Masters and Doctoral students and post-doctoral researchers in 2010. It is inefficient in its use of space but affords an ideal site for the future concert hall, connected straightforwardly to both Grange Road, Rifle Range Road and Erskine's

Main Building Common Rooms, bar and dining hall, as will be explained later in my Evidence.

- 3.9. Clare Hall is densely occupied throughout the year. Academic terms mean little to a research population for whom it is their permanent home. Clare Hall was fully occupied through the Covid pandemic.

4. Architectural and Academic Significance of Clare Hall

- 4.1. The process of listing Ralph Erskine's Main Buildings as Grade 2* was accelerated by the Secretary of State as the Statement indicates, to ward off the threat of a busway skimming the entire South front.
- 4.2. I first encountered Erskine's Main Buildings at Clare Hall in the academic year 1976-77 as an undergraduate at Trinity College enrolled in the Cambridge Department of Architecture. I was sent there by my Director of Studies to be supervised by the future Aga Khan Professor at MIT, Ronald Lewcock, in his study overlooking Rifle Range Road.
- 4.3. Professor Lewcock introduced me to Ralph Erskine's Main Building, less than ten years old then. He explained how it operated as a unique academic 'machine'. Research and supervision were conducted on the lowest level overlooking the quietude of Rifle Range Road to the South. Fellows and graduates met informally at the next half level, the engine for interdisciplinary working, to talk, to read research journals and international newspapers. They progressed to eat and drink at the top level, all beneath a sweeping monopitch canopy, an extraordinary example of architecture bringing into being a theoretical model for a social organisation. Erskine's humane and protective model had been tested in harsher Northern climates.
- 4.4. The late Charles Jencks, the esteemed architectural critic, wrote in 1977,

"One wanders around an Erskine scheme, lost half the time, wondering what is around the next corner. It is this emphasis on the unexpected which makes him closest to the traditional English picturesque and Chinese garden".⁵

The external spaces are very important in the design. Erskine provides seating areas and tables as part of the infrastructure and all of the flats have external spaces to enjoy the quietude and the views.
- 4.5. I believe as Professor of Architecture that this collection of buildings is the most intelligent post-war interpretation of a modern Cambridge college and acknowledged worldwide as such. Avanti's Conservation Management Plan (CMP), appended to the Proof of Evidence of Fiona Lamb, reminds us that the Statement accompanying the Secretary of State's Grade 2* Listing of 6 September 2018 describes Clare Hall as:

⁵ Jencks, Charles (1977) Architectural Design Vol 47 No 11-12 1977, pp 753

“...a highly sophisticated architectural form which is distinctive, as well as an aesthetically pleasing composition” and “one of the acknowledged premier designs by an internationally renowned architect. “

- 4.6. The buildings owe much to the work of the Finnish architect Alvar Aalto (1898-1976), one of the most renowned architects of the Twentieth Century, in particular the stepped section of La Maison Carré, Bazoches-sur-Guyonne completed 1959.
- 4.7. Ralph Erskine (1914-2005) was one of the great living European architects of his time, proposing a radical alternative to Le Corbusier’s raw concrete Brutalism. The late Fellow Emeritus Richard Eden told me that the founding Fellows, of which he was one, rejected le Corbusier after visiting his Brutalist vertical city, the Unité, in Marseilles. I drew out Erskine’s buildings and presented them at a conference at MIT the following year 1979 as an Exchange Fellow at Harvard’s Graduate School of Design. Erskine’s place in the history of Architecture is described by the architectural historian Professor William Curtis, who taught me at Harvard,

“There was never quite an Aalto school... but there were talents like Jorn Utzon and Ralph Erskine who were able to translate the basic lessons and emerge with their own creative identities’. ⁶

- 4.8. The CMP reminds us that *“our historic environment ... can better be cherished if their spirit of place thrives, rather than withers”*.⁷ This was an overarching aim of the 2012 National Planning Policy Framework and a philosophy that lives on today.
- 4.9. As part of his portfolio of works, Erskine developed a defensive planning strategy for making habitable communities above the Arctic Circle, a dense high apartment block to the North enveloping the site within which lower buildings would lie protected from harsh winds and storms illustrated by his scheme for Resolute Bay reproduced as Fig 2.

⁶ Curtis William J (1982) Modern Architecture since 1900, Ch 22 Alvar Aalto and the Scandinavian tradition, p 297, Phaidon

⁷ Ministerial Forward, NPPF (2012) 27 March 2012

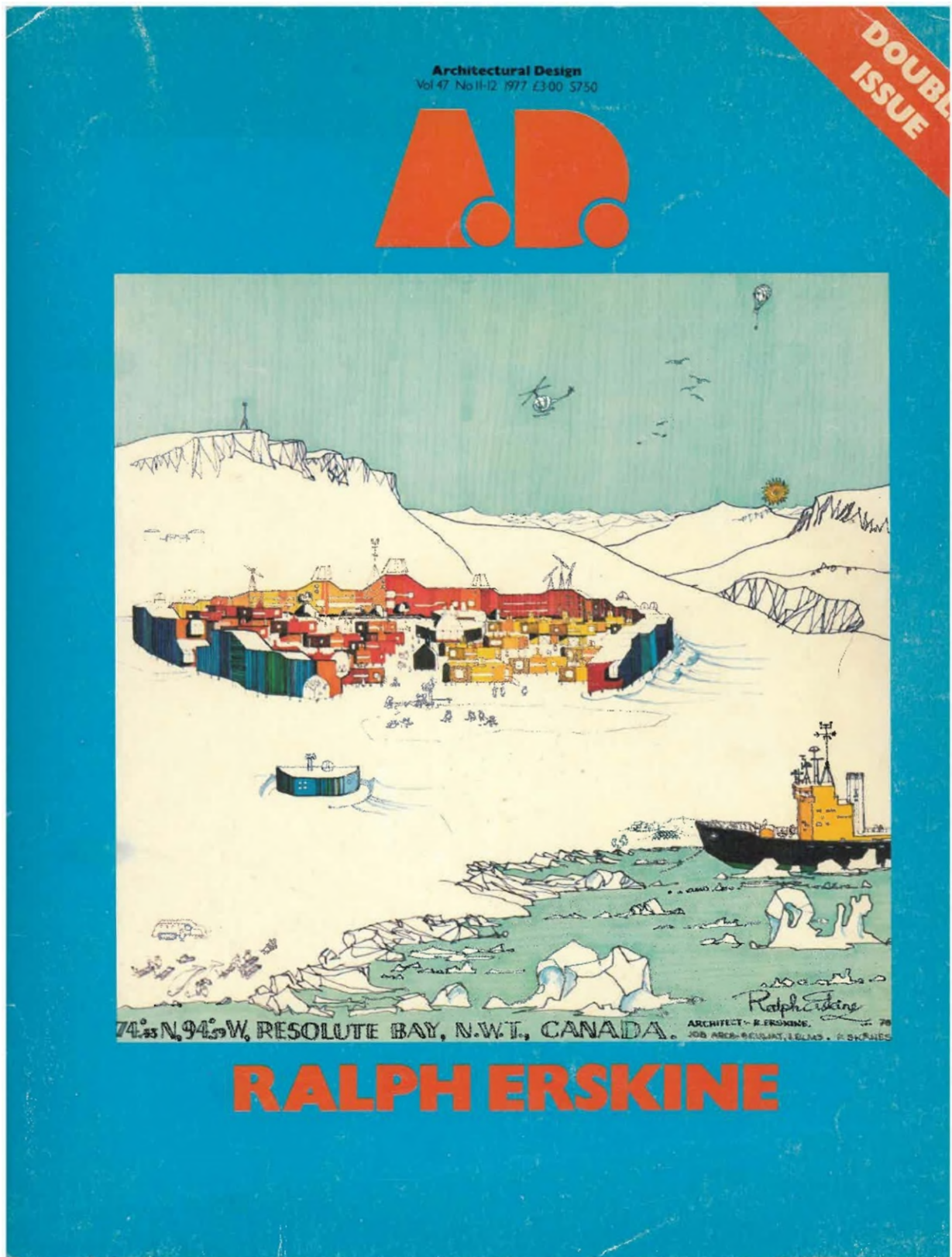


Fig 2.: Cover of Architectural Design Vol 47 No 11-12 1977

- 4.10. Ralph Erskine adapted this strategy to shield the Byker community in Newcastle from the noise of a new motorway. At Clare Hall he built up the site to the North and West by forming an artificial south-facing hillside of concrete trays stepping up over a half-buried carpark. The single storey courtyard houses and long low communal areas are very deliberately placed within the protected space formed, not in this case to fend off Arctic winds or the noise of a highway but to provide a quiet and peaceful enclosure in an already quiet environment, as Jonathan Blacklock's evidence records, for the new European equivalent to the Princeton Institute for Advanced Study, as Fiona Lamb's evidence explains.
- 4.11. The evidence of Jessica Wilson and Fiona Lamb confirms that the setting of an historic building is very important in making planning decisions, citing R (Forge Field Society) v. Sevenoaks DC (2015) JPL 22. Erskine very carefully contrived the setting within and around his buildings.

5. Fellowship and Academic Life

5.1. The Fellowship of World Class Researchers

- 5.1.1. As I have outlined, Clare Hall is based on the Princeton Institute for Advanced Study which admits scholars limited to the Humanities and Mathematics.⁸ Clare Hall very deliberately embraces all disciplines pursued by the University, after much discussion, including all of the Sciences, Technology, Arts, Humanities and Social Sciences. It gathers world class researchers at all stages of their careers.
- 5.1.2. The capacity to invite leading academics to collaborate with their Cambridge peers over appreciable periods was fundamental to the foundation of the College in 1966. All Fellows, including Visiting Fellows, are invited to bring their partners and children to live and dine in Clare Hall, unprecedented in Oxford and Cambridge to enable full engagement in college life, the many colloquia, seminars, symposia, exhibitions and concerts and interaction with doctoral and masters candidates and post-doctoral researchers.
- 5.1.3. This important concession enables Visiting Fellows to work with Fellows in Cambridge for a meaningful period, 2 or preferably 3 terms (an academic year), generally based in their apartments or rooms and in study spaces by the College Library on the corner of Rifle Range Road, over which many of those spaces look out, and Grange Road. Clare Hall is a highly effective locus for interdisciplinary research and innovation at the highest level, counting 8 Nobel Laureates to date.

5.2. Official, Research and Professorial Fellows

- 5.2.1. As I have explained, we map our Fellowship to strategize the recruitment of the most distinguished new research-focussed University appointees. Our reputation makes us very successful in the inter-collegiate competitions.
- 5.2.2. The chart of the Clare Hall Fellowship, shown at Fig 3., shows the current 18 Research Fellows, capped at 24, (8 are recruited per year for periods of 3 years as Research Fellows), then moving outwards on the chart, Official Fellows, the number also capped at 24, the uncapped number of full (Grade 12) Professorial Fellows, just grown to 20 in number, wholly disproportionate to the size of the College, and 23 Honorary and Emeritus Fellows.

⁸ Arntzenius L G (2011) Institute for Advanced Study, Arcadia Publishing

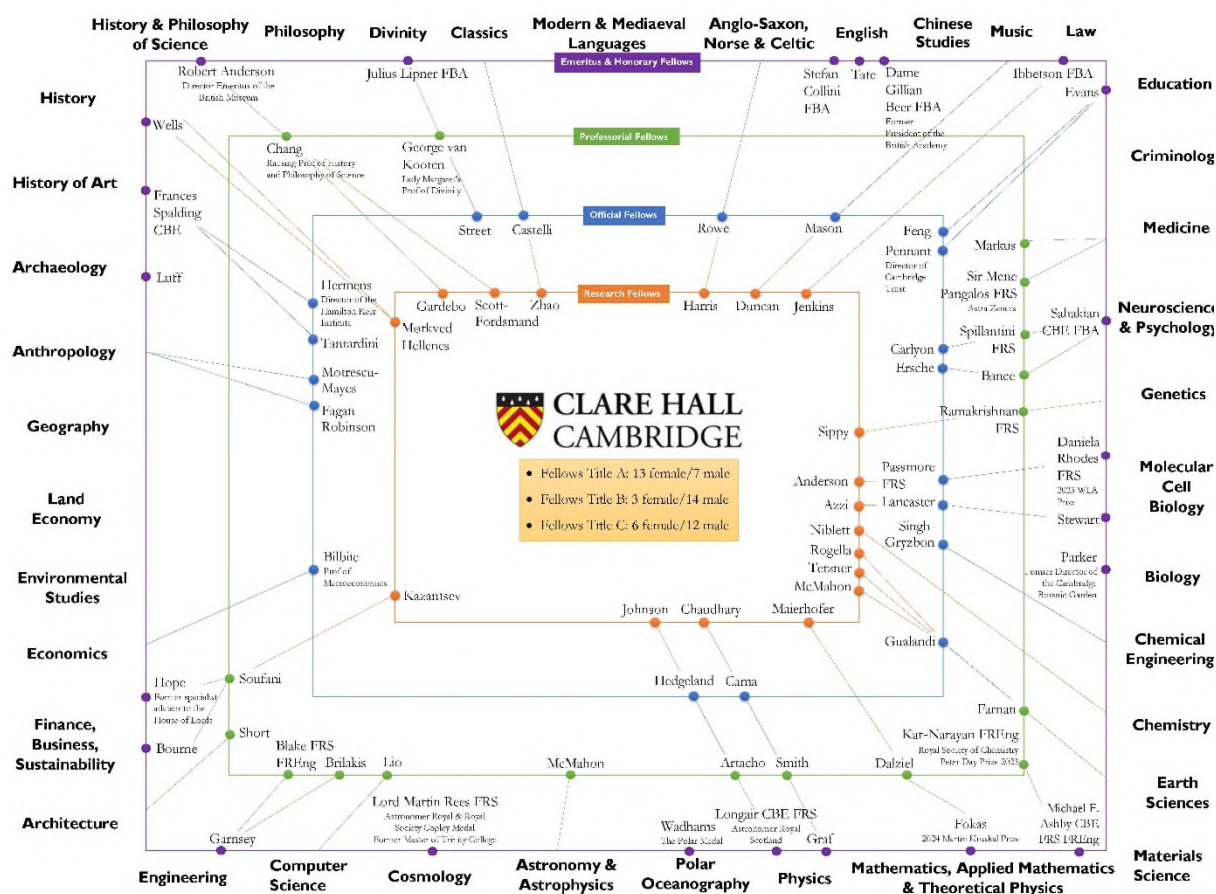


Fig 3. The Fellowship, demonstrating the breadth of fields of study that our Fellows are engaged in.

5.3. Clare Hall as a Place of Work and Study

5.3.1. As discussed above and shown below, maps of Clare Hall show how Clare Hall is populated flat by flat with Official, Research Visiting and Professorial Fellows living in Clare Hall. Appendix 2 records who was living in the College and where for 2024-25. The current cohort of Visiting Fellows is listed in Appendix 1. All are researchers of international rank.

5.3.2. Very few Visiting Fellows are laboratory-based or have office accommodation in University Faculties and Departments. They live and work on site, in the Erskine Main Buildings and in the Brian Pippard Building, both on the College boundary to Rifle Range Road, and in West Court adjacent to Rifle Range Road.

5.3.3. Clare Hall's Fellowship is very present in the college. There are continuous Colloquia, Symposia, meetings and concerts throughout the year including the vacations. Tutorials are held throughout Full Terms by the team of 16 Tutors. The Fellowship congregates in Clare Hall for as many as 90 unique Special Interest Group meetings (SIGs) annually, uniting all generations within each discipline,

held mid-mornings including lunch and on late afternoons and evenings in the Meeting Room within the Erskine Main Buildings overlooking Rifle Range Road. SIGs, Colloquia, Symposia frequently invite external speakers of renown, 3 Nobel Laureates last year.

- 5.3.4. Visiting Fellows regularly arrange ad hoc meetings to share their work. The tranquillity and quietude of the College is absolutely essential to foster this very rich, intellectually charged environment. Many send letters of appreciation at the close of their Fellowships praising the scholarly atmosphere. Quotes include “The living environment was excellent. It was quiet and convenient.” (Professor Baizhan Li) and “The surrounding environment is tranquil and pleasant.” (Professor Runming Yao). Several of these letters can be found in Appendix 3.

6. Plans for Future Development

6.1. Future Developments

- 6.1.1. Many other Cambridge colleges have auditoria, which Clare Hall does not.
- 6.1.2. Other colleges are increasingly able to house a greater proportion of their graduate students than achieved by Clare Hall. Resolving these deficiencies is a primary concern for Clare Hall to maintain relevance and competitiveness. A priority of the University's Estates Plan to boost the Humanities is to expand the available venues for music. The University and the Music Faculty Board have expressed real interest in the proposals put forward by Clare Hall for an acoustically very high-grade concert hall which can be quickly reconfigured for speech.

6.2. New Auditorium

- 6.2.1. Clare Hall is appointed to stage the Tanner Lectures and the Tanner Founder's Lectures in Cambridge, the most generously endowed academic lectures in the world, also held at Harvard, Princeton, Yale, Berkeley, Stanford, Michigan, Utah and Oxford. Clare Hall also hosts the very prestigious King Lectures in Molecular Biology. Three Nobel Laureates spoke in these three series in 2024-25: Paul Krugman, Orhan Pamuk and Jennifer Doudna. The actual lectures, which attract hundreds of attendees, whilst hosted by Clare Hall are held in Robinson College's theatre because Clare Hall does not have an auditorium. All of the associated meetings, symposia and tutorials with graduate students and post-docs happen in Clare Hall's Meeting Room (within the Erskine Main Buildings) fronting Rifle Range Road and in the Richard Eden Room within Gillian Beer House (at West Court), adjacent to Rifle Range Road. Many extremely distinguished academics, diplomats, senior civil servants and politicians visit Clare Hall during these very intense weeks of discussion and debate.
- 6.2.2. Clare Hall also hosts high quality public concerts, 16 in 2024-25. As Clare Hall currently has no auditorium in which to stage these events, it is obliged to borrow lecture halls in other colleges and faculties for the lectures and walks its audiences back through Cambridge to Clare Hall for the associated receptions and dinners. Clare Hall has a vigorous musical community led by its Musician in Residence, chaired by the former Director of the British Museum, and stages many concerts annually, airing pieces by important composers not heard for decades. Clare Hall has to clear its Dining Hall (within the Erskine Main Buildings) completely and then re-assemble the dining configuration quickly, late at night after each event.

- 6.2.3. Clare Hall therefore urgently needs an auditorium in which to stage its music, recitals, public lectures, symposia and conferences for the greater good of the University music community, its new but homeless Centre for Music Performance, and very much for the city. I drew the original plans and an architectural film making practice Cinetecture constructed a 3D model and an animation showing the proposals in context and the interiors. This has long been contemplated by Clare Hall and is in the design and fund-raising stage.
- 6.2.4. Clare Hall has a design for the auditorium seating 358 - a very specific galleried amphitheatre which will fill an important gap in the auditoria available in Cambridge, the ability to stage opera.
- 6.2.5. Clare Hall's Richard Eden Room can seat 50, its Dining Hall 100, both insufficient for the demand frequently experienced. Clare Hall has proposed to develop a venue which it is hoped will quickly acquire an international reputation. Very high acoustic quality and complete acoustic isolation are essential. I have already achieved this at the Contact Theatre Manchester, the Garrick at Lichfield and the Wessex Hall at Poole.
- 6.2.6. As the proposals were discussed more widely, the former Cambridge City Council Conservation Officer suggested to the then Domestic Bursar of Clare Hall that he would be pleased to see a building closing off the Scholars' Garden to the South to create a traditional college courtyard. It provides an ideal site for an auditorium, connected directly to Grange Road for public audiences to arrive, to Rifle Range Road to service the backstage needs and to the Erskine Main Buildings for members of Clare Hall and in order to host receptions and dinners associated with performances and lectures.
- 6.2.7. The proposal will be subject to such necessary design parameters so as to ensure that the architectural significance of Clare Hall is not affected; Historic England will be consulted once sufficient funding is pledged to underwrite solid progress.

Fig 4: Illustrations of proposed auditorium.



Fig 4.1: Proposed auditorium view looking south to Selwyn (film still).



Fig 4.2: Proposed auditorium interior from gallery (film still).



Fig 4.3: Proposed auditorium exterior view from Rugby Field, adjacent to Rifle Range Road (film still)



Fig 4.4: Proposed auditorium aerial view from Northeast

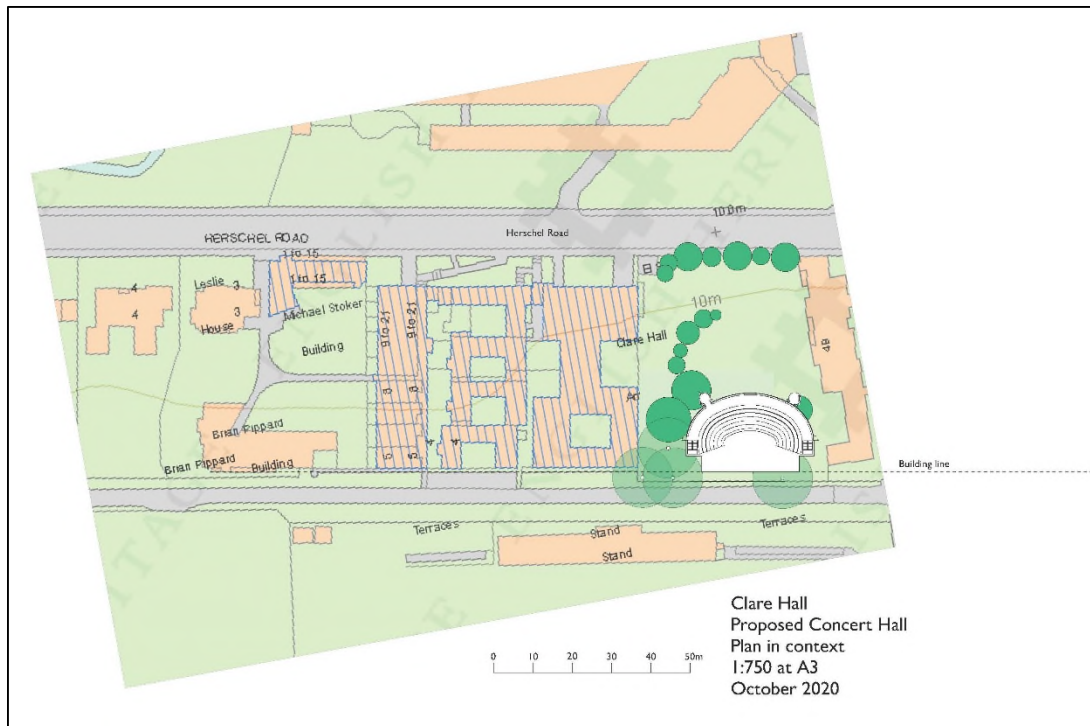


Fig 4.5: Proposed auditorium site plan between the Erskine Main Buildings (striped) and Elmside (shown here as Number 49 Grange Road at the extreme East of the image), with the backstage abutting Rifle Range Road to the south.

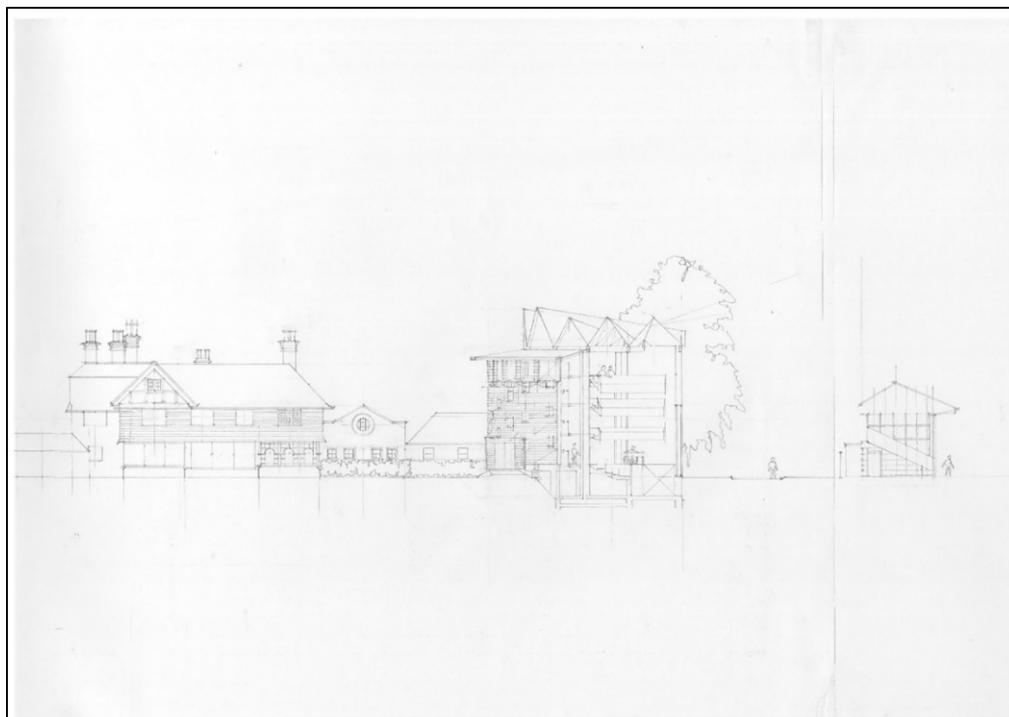


Fig 4.6: Proposed auditorium site section from Herschel Road to the Rugby ground (Rifle Range Road can be seen between the proposed auditorium and the Rugby stand to the right of the picture).

6.2.8. An animation of the proposed auditorium can be viewed on YouTube⁹.

⁹ <https://youtu.be/VEao217z Uw>

- 6.2.9. It is a tall order to make a great auditorium for speech and a great concert hall. This proposed design enables the volume to be halved from 11.5m³ per person by sliding solid timber ceiling panels across the space to drop the reverberation time significantly between music and speech events. It would be a unique auditorium. Wagner wanted to do this at Bayreuth. The plan and section show a very characterised auditorium, borrowing from Auguste Perret's Salle Cortot of 1929, the concert hall in the École Normale de Musique de Paris.¹⁰
- 6.2.10. The site plan (Fig 4.5) shows the new auditorium sitting between the Erskine Main Building and E.S. Prior's Elmside. Public access would be from Grange Road through a converted part of the studies and College access from the studies/offices courtyard. Unimpeded access from Rifle Range Road will be crucial for the delivery of instruments and props, maintenance and fire access, and emergency escape. The evidence of Mr Kamran Haider has also looked to demonstrate the required vehicle access for the construction and operation of the proposed auditorium (with access along Rifle Range Road being essential to these plans).
- 6.2.11. As can be seen in Fig 4.6, the Ground/Upper Balcony level plan is for an amphitheatre comprising 208 seats in the stalls on a gentle parabolic rake to give optimal sightlines with six entrances through sound locked lobbies. Stacked above the rear row are three levels of balconies each seating 50 giving a grand total of 358 seats. Flat floor access to the first row is achievable and, with a wheelchair lift, direct to the fifth row. Even in the fifth row the very furthest audience members are only 10.5m from the speaker. The audience enters through either of two circular lobbies into a galleried foyer extending around the amphitheatre with a staircase at each end. Symmetrical stairs climbing gently up around the convex periphery take the audience up to the balconies, distributing them evenly across each level. The rear wall of the amphitheatre has sufficient depth to take heavily modelled timber panelling to break up any unwelcome reflections off the concave form and to provide a resonant layer. Fresh air can be distributed through this thick wall and exhaust incorporated higher up. It will be highly sustainable, passively cooled and naturally ventilated. I have an international reputation in the design of naturally ventilated buildings. The stage is 13m wide at its widest point and 6m deep and equipped with a full stage lift and heavy concrete soundproof stage doors to take a grand piano from ground to stage to lower ground floor. It could take the Vienna Philharmonic Orchestra.

¹⁰ Britton K (2001) Auguste Perret, Phaidon, p71

- 6.2.12. The Cross Section in Fig 4.6 also shows how so many audience members can be accommodated so close to the speaker/musicians. The top balcony has high stools with a handrail to enable that segment of the audience to lean forwards and fully engage with the performers. The section shows how the access staircases and the galleries are configured in a tall thin foyer. The roof is pitched and radial in plan over the amphitheatre, the ridges could be glazed and openable for ventilation. The eaves height is 11m above ground level, comparable with the Brian Pippard Building. Set across the open volume of the auditorium at 33 degrees is an open framework which enables heavy timber shutters to slide down and completely seal off the upper part of the volume. This will cut the volume to nearly half which will hugely improve speech intelligibility for speakers. The intention is to make a concert hall, with a world class acoustician, with a wonderful acoustic, so rewarding to perform in that musicians will vie for the opportunity to appear at Clare Hall.
- 6.2.13. The proposed auditorium is at fundraising stage and has been proposed to a number of key donors. There is clear interest. However, the spectre of the Applicant's proposals has significantly complicated these exchanges with donors.

6.3. New Student Accommodation

- 6.3.1. Clare Hall admits some 140 graduate students annually, about 25% proceed directly to the PhD and many of the remainder to the MPhil in the first instance alongside various other graduate degrees. The College can only house 100 students within its curtilage. The University is engaged in a comprehensive review of the experience of its doctoral candidates often lured away by the generous funding provided by its Ivy League competitors. It is contemplating raising funding to underwrite the fees of all doctoral candidates for a full 3.5 years but more likely 4 years and housing them well throughout. Colleges are planning and building additional graduate accommodation to house all of their graduate students throughout their tenure.
- 6.3.2. Clare Hall must keep pace with this to be a credible destination for the best graduate applicants to the University. For Clare Hall this would require another 130 en suite rooms and one-bedroom flats to be developed. It will need to build along the Rifle Range Road boundary in the backs of the large Edwardian houses it has acquired. Clare Hall commissioned Stanton Williams to produce a

masterplan in 2017 which shows new graduate student and post doc residences placed in every vacant garden space.¹¹



Fig 5: Stanton Williams architects Masterplan for Clare Hall – proposed new buildings shown in red.

6.3.3. Clare Hall subsequently held an invited selection process for the design of 30 new student rooms to the rear of No 4 Herschel Road. Alison Brookes won the commission in a selection process. Her design after several iterations and consultation with the city conservation and planning officers settled on two rectangular blocks at 90°, the 3-storey building fronting Rifle Range Road set on the boundary. The plans are for 30 student rooms plus communal facilities for those student rooms, including two kitchen/dining rooms and a living room.

This proposal was submitted to the relevant authorities for pre-planning comments. The principle of development at this scale is accepted. Lord and Lady Rees's wholly unexpected donation of their substantial house and site at No5b Herschel Road to Clare Hall as a legacy two years ago offers the possibility of a more ambitious version of the building(s) extending across the gardens of 5B, already in ownership and 5a. The College Council has commenced a strategic review of the College to consider the opportunities afforded by these new acquisitions in the light of successful fund raising over the last two years, some £2 million with more pledged.

¹¹ <https://stantonwilliams.com/en/works/clare-hall>.

Fig 6: First of the Proposed Student Accommodation blocks along Rifle Range Road, following purchase of No.4 Herschel Road, in which garden this is to be sited.

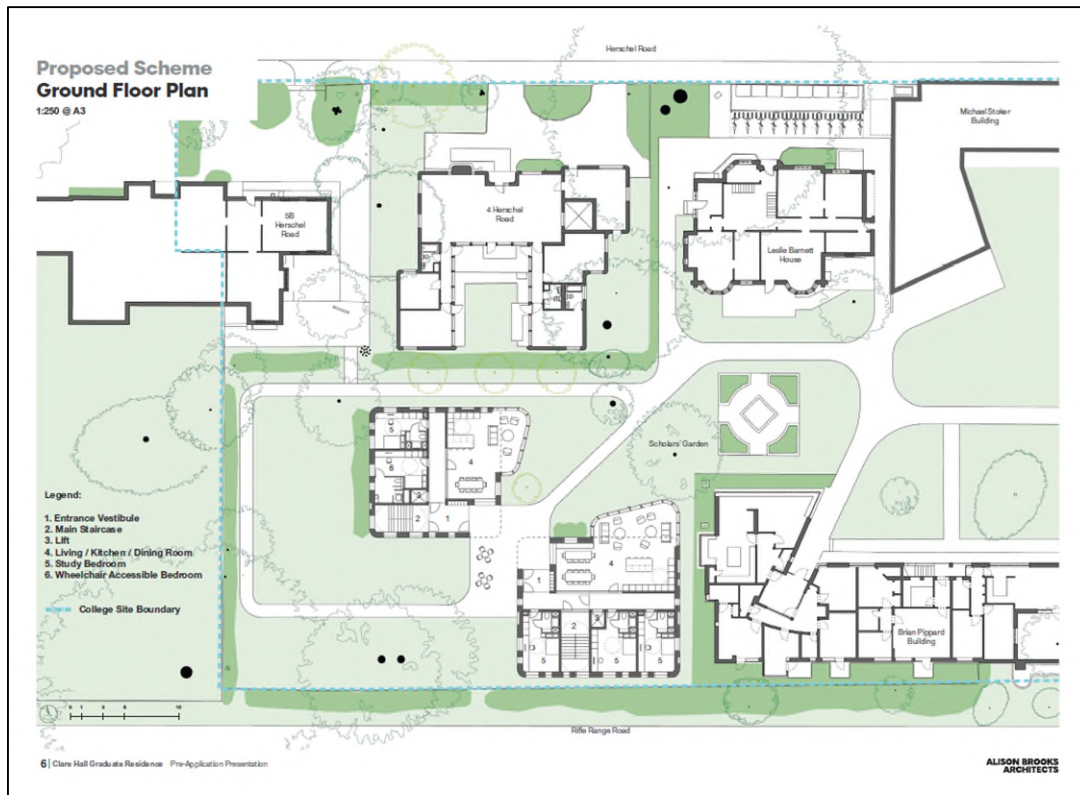


Fig 6.1: Alison Brooks scheme ground floor plan (Rifle Range Road to the south)

**Proposed Scheme
Aerial View**



10 | Clare Hall Graduate Residence - Pre-Application Presentation

ALISON BROOKS
ARCHITECTS

Fig 6.2: 3D visualisation

7. Impacts of Proposed Busway

7.1. The Submitted Application for the Proposed Busway and Relationship to Clare Hall

Fig 7: Routing of proposed busway and its proximity to Clare Hall

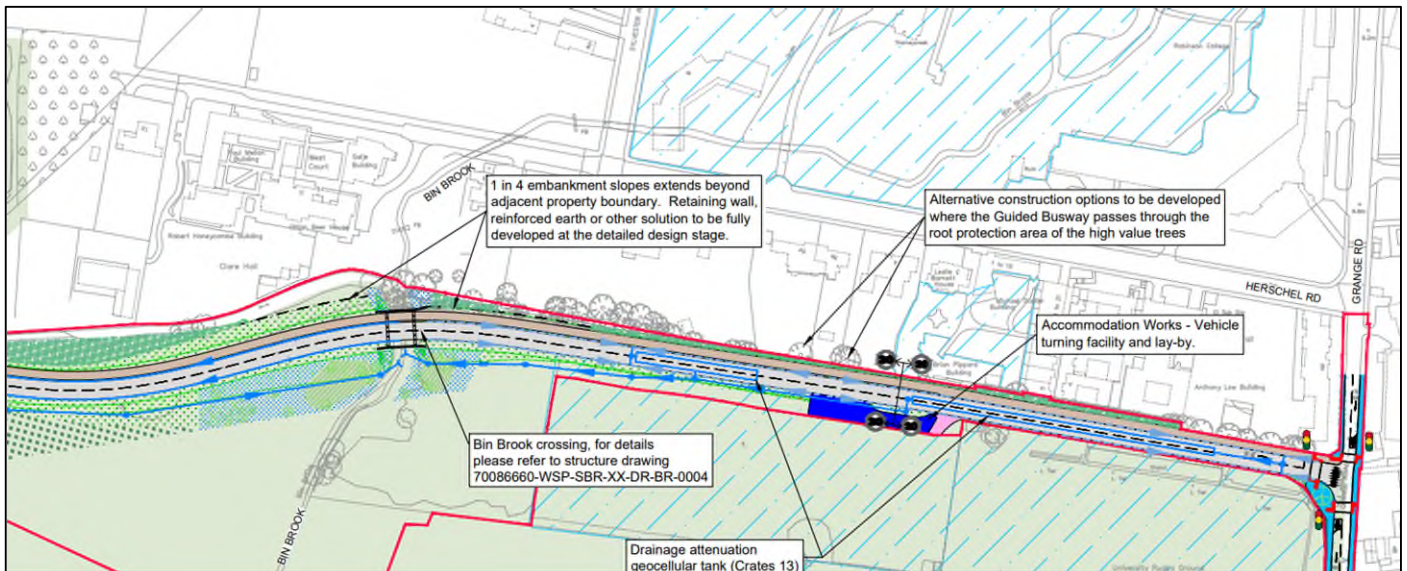


Fig 7.1: Proposed routing of guided busway CD1-16.04 (SHEET 17 OF 17)

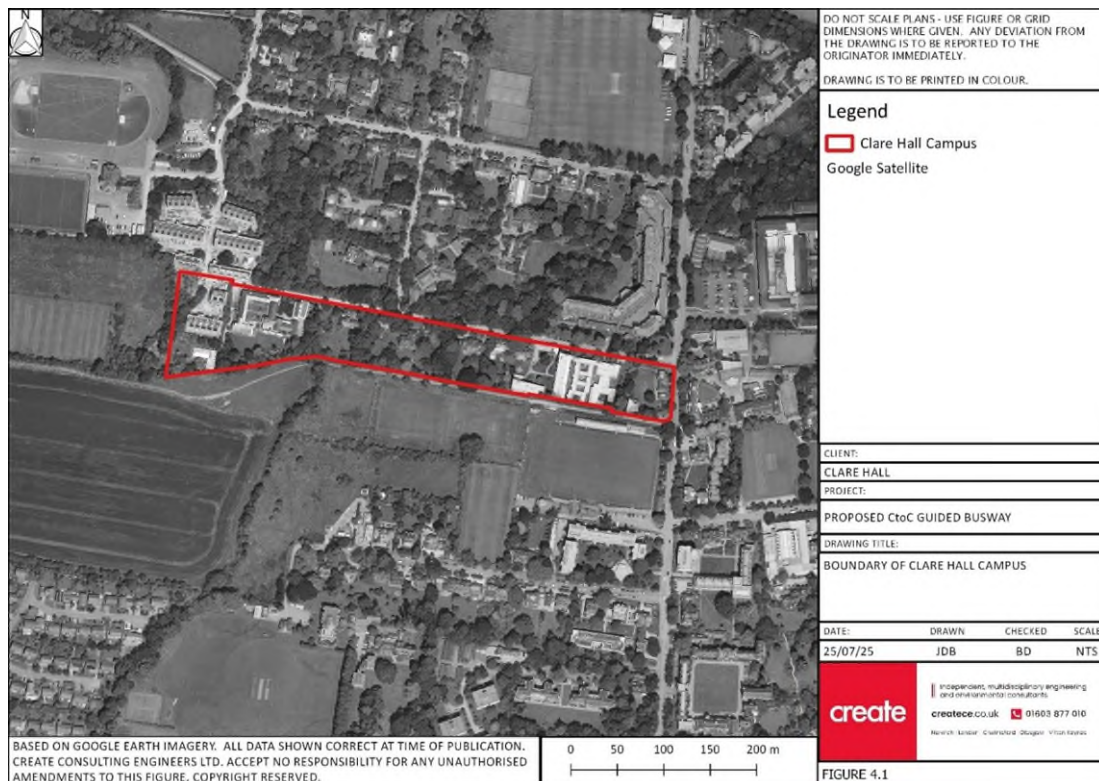


Fig 7.2: Clare Hall Boundaries – Satellite Image



Fig 7.3 The proposed busway drawn over the aerial view of Clare Hall

- 7.1.1. The Applicant has proposed a guided busway, being the Cambourne to Cambridge Order (REF: DP1/E0535/25/1) and involves the construction, operation and maintenance of a guided busway between Cambourne and Cambridge. The application has been made by Cambridge City Council in conjunction with Greater Cambridge Partnership. The guided busway consists of a two-way busway of approximately 13.6 kilometres in length, and an emergency and maintenance track, starting at Cambourne, terminating at Grange Road. The final segment 16 of this guided busway is proposed to pass along the routing of

the existing trackway known as Rifle Range Road, immediately to the South of Clare Hall. The Applicant's scheme for this last segment 16 of the proposed busway along Rifle Range Road includes a two-way guided busway 7300mm wide with kerbs and a drainage scheme, an adjacent emergency and maintenance track 3.5m wide (narrowing to 3m towards the junction with Grange Road). The location of Rifle Range Road in relation to the College can be seen in Fig 1.1 above. The proximity of the proposed busway can be seen in Figs 7.1, 7.2 and 7.3 above. The Applicant's proposals will send a stream of buses, 10 each way each hour, so one every 3 minutes, within metres of Clare Hall from early morning to late at night.

- 7.1.2. Jonathan Blacklock's evidence states that all buildings, with rooms and amenity spaces overlooking Rifle Range Road, within 60m of the busway will suffer significant adverse impacts during the construction phase, and Fiona Lamb's evidence confirms that in places its buildings and occupants are within 3 metres of the proposed busway and 6 metres of the buses themselves (for example the Erskine Main Buildings, the Brian Pippard Building and Anthony Lowe Building). This proximity can be seen, for example, from Fiona Lamb's evidence which includes a redrawn cross section across Rifle Range Road (also included here as Fig 7.4) adjacent to the College Meeting Room, College Offices and the McLean Studies and offices. This redrawn cross-section also shows that the Applicant's section 17 within the site sections in the Applicants drawings CD1-16.05 (SHEET 5 OF 5) and show below at Fig 8.1 is highly misleading because it depicts a wide gap between buses and the nearest building with mature trees growing between although it precisely slices through the Rugby Club stand. Avanti's evidence includes two carefully constructed images drawn to scale showing how close buses would come to rooms on the Grade 2* Listed South elevation to Rifle Range Road and how intrusive they would be for members of the College attempting to meet and work.
- 7.1.3. Because the route lies within the notorious Bin Brook floodplain the Applicant has realised that the route must be lifted significantly above future floods. The proposed busway is shown to rise along a causeway to 2.4m above the Bin Brook current bankside level, retained to the north by vertical concrete retaining walls extending for up to 80m, infrastructure yet to be designed in detail, the intended banked cross-section being too narrow to fit within the purchase order boundaries.
- 7.1.4. Evidence produced on behalf of Clare Hall highlights the Applicant's proposal for vehicle turning and a layby directly opposite Clare Hall's Brian Pippard Building (which provided accommodation for Visiting and Research professors and their families), the likely removal of many if not all trees along Rifle Range Road as the

Applicant's perspective drawing shows reproduced as Fig 7.5 and the extent of reinforced concrete infrastructure shown in outline. The Applicant proposes to take land up to the wall surfaces of Clare Hall's Grade 2* buildings including the iconic rainwater canals and water chutes designed by Ralph Erskine as explained in Fiona Lamb's evidence and shown graphically in their drawing Fig 7.4.

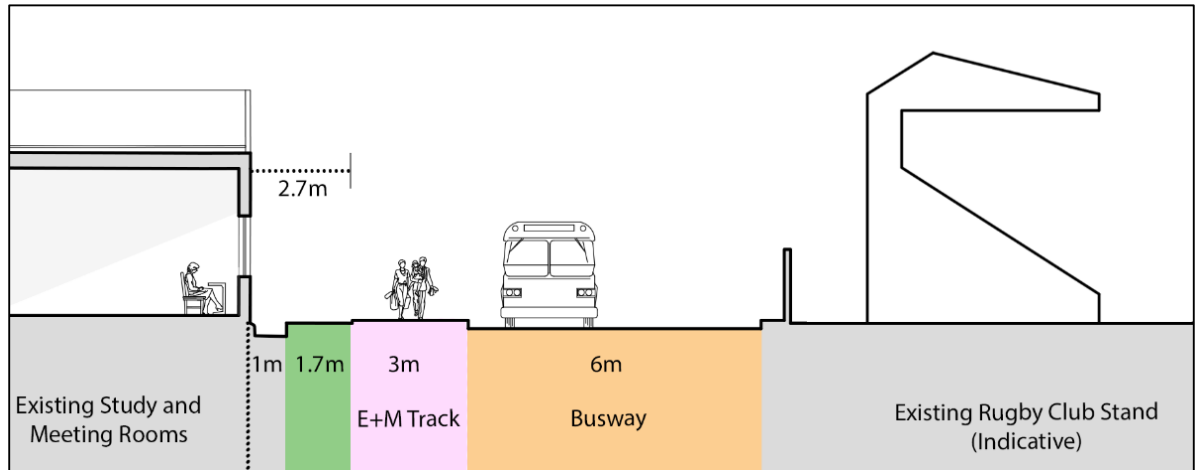


Fig 7.4: Section showing relationship of study/meeting room with the proposed new busway as redrawn by Avanti Architects, include in the evidence of Fiona Lamb.

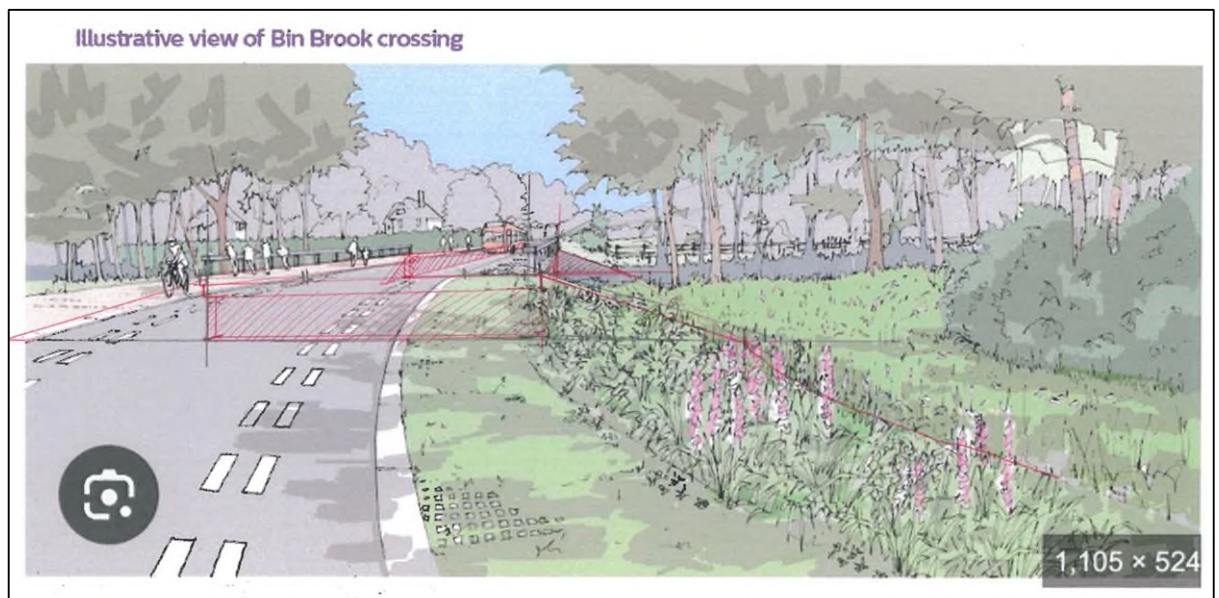


Fig 7.5 Overdrawing on Applicant's perspective to show the extent of the proposed concrete infrastructure to cross the Bin Brook and the vertical concrete walls to retain the North side of the proposed causeway.

7.2. Impact on the Functioning of Clare Hall

Summary of Harms

7.2.1. This proposed routing will adversely affect the entire College in a variety of ways – in terms of:

- Intolerable noise and vibration during construction, **Significant Adverse Impact**
- Major Impact resulting in **Significant Adverse Effect** from the large increase in noise from busway operations.
- Grade 2* Heritage assets would be damaged; there is no regard for the setting of the heritage assets which will be **very adversely impacted**.
- **Increased flood risk** up and downstream, increased water velocities and damage
- Major, possibly irresolvable **constraints on ability to build** along the southern half of Clare Hall's sites.
- The combined harms will cause **severe reputational damage** and discourage senior academics from applying for Visiting Fellowships and permanent Fellowships and dissuade Graduate students from applying from within and beyond Cambridge.
- These harms will impact Clare Hall both during the construction phase and when in operation.

Noise and Vibration

7.2.2. Jonathan Blacklock's evidence quantifies the quiet and tranquillity of the College setting, a critically important quality in establishing Clare Hall as an internationally renowned centre for advanced study. Mr Blacklock confirms that the Applicant failed to acknowledge Clare Hall to have so many noise sensitive properties and types of noise sensitive users and that construction noise will significantly adversely affect Clare Hall 's buildings, all are estimated to be within

60m of the Applicant's site as Fig 7.4 shows. Mr Blacklock writes that vibration during construction will be intolerable for the closest buildings.

- 7.2.3. Mr Blacklock's evidence is that the large increase in noise generated by the operation of the proposed busway will have a major impact and a Significant Adverse Effect. Disturbance and distraction caused by buses passing every 3 minutes would be experienced by all affected rooms overlooking Rifle Range Road and particularly the College Main Building, the Pippard Building and the College flats. It is not clear what viable and effective mitigation can be introduced at this location in order to prevent heritage impacts.
- 7.2.4. Mr Kamran Haider's evidence reports a bus passing 20 times an hour, every three minutes on average, stated as being hybrid buses with a vague aspiration to electric buses at an unspecified date in the future.
- 7.2.5. The survey drawing of the South elevation of the Erskine Main Buildings of Clare Hall shown in Figs 8.3 and 8.4 in conjunction with the site plan of the College shows studies and administrators' offices. It includes the very characteristic, very long horizontal window seemingly defying gravity with its infeasibly long lintol, in the South wall of the College Meeting Room directly fronting Rifle Range Road. A characteristic surface water drainage canal (with Erskine's dramatic and very well-known rainwater chutes) defines the Southern thresholds into the College. The evidence of Jonathan Blacklock reveals that the productive use of these rooms will be seriously compromised by noise and vibration during the construction and noise from the operation of the busway, not the least the heavily used Meeting Room in the Erskine Main Buildings. There is no alternative meeting space of similar capacity. Nor could the College continue to let it for external meetings, which makes money for Clare Hall in particular during the summer months.
- 7.2.6. The Scholars' Walk discharges onto Rifle Range Road across a bridge over the canal and the landscaped surface continues to the track of Rifle Range Road. To the west of the main building is a courtyard house with the Bollinger suite of guest rooms overlooking Rifle Range Road, a courtyard garden to provide amenity to occupants and a bedroom/study overlooking Rifle Range Road. Behind and climbing up Erskine's artificial hillside (please refer to Fiona Lamb's evidence) are two further courtyard houses filled with academics and their families and the President's Lodge which hosts constant high-level meetings with distinguished visitors, Vice Chancellors and Presidents, ambassadors, ministers, prospective benefactors, donors and legators, senior University officials and leading business and financial figures. Mr Blacklock's evidence suggests all would suffer disturbance during construction.

- 7.2.7. The Family Walk within which children play, and Fellows meet around set tables and benches discharges onto Rifle Range Road in a similar manner, again with the landscaped surface continuing to the track of Rifle Range Road. To the West is a two-storey family apartment currently occupied by the Praelector, a well-known art historian of the Italian Renaissance, an expert on Luini, and her family, a large corner window to the kitchen and a very long low window to her sitting/dining room with bedroom windows on the floor above. All of the apartments in this block have balconies to both east and west, from which Mr Blacklock's evidence explains the proposed busway will be seen and heard intrusively, fundamentally changing the acoustic environment, the setting of the listed buildings.
- 7.2.8. The Evidence of Jonathan Blacklock, Graham Sinclair, Jessica Wilson, and Fiona Lamb state the Brian Pippard Building would suffer severe adverse effects. Kamran Haider and Jody Blacklock explain that the Applicant proposes a vehicle turning bay, a source of noise and disturbance, directly opposite the Brian Pippard Building, entirely comprised of flats for Visiting Fellows and their families, Research Fellows and doctoral candidates. It provides a large flat for families of 3 and 4 children with a protected garden immediately adjacent to Rifle Range Road. Create states that the gardens and balconies will be unusable during construction, certainly for academics working within, and suffer Major Adverse Impact resulting in Significant Adverse Effect from busway operations.
- 7.2.9. To the West is No.4 Herschel Road, owned by the College, currently let but affording the site for the Alison Brooks mixed graduate student/visiting academic scheme noted above. Alison Brooks' scheme is sited tight to Rifle Range Road. Create's evidence states that this property and neighbouring potential sites for new accommodation will be adversely affected by noise and vibration during construction.
- 7.2.10. 5b Herschel Road belongs to the College and is occupied by Fellows. It too is close enough to the proposed busway to be disturbed during construction as evidenced by Jonathan Blacklock.
- 7.2.11. No. 5a Herschel Road is the home of Lord Rees and Dame Caroline Humphreys, Lady Rees both Honorary Fellows and Legators. The house is bequeathed to Clare Hall.
- 7.2.12. No. 6 Herschel Road, currently for sale and in which the College is potentially interested, sits between the Rees house and West Court. The Applicant's scheme is to construct a vertical concrete retaining wall across the rear of the property to shore up the climbing causeway.

- 7.2.13. Gillian Beer House at West Court, Lord Victor Rothschild's marital home, comprises Clare Hall's principal meeting rooms, the Richard Eden Suite, the venue for Governing Body meetings, symposia and colloquia such as the famous termly Classics of Historiography seminars, the Tanner Symposia (in addition to the use of the Meeting Room in the Erskine Main Buildings), award giving, receptions for distinguished visitors, lunches and dinners. Senior Fellows, visiting academics and distinguished Life Members occupy flats on both floors, a former Vice President and Director of the Cambridge Trust and the Director of the Hamilton Kerr Institute.
- 7.2.14. To the west is the Robert Honeycombe building of graduate student rooms which would also be very exposed to noise disturbance and overlooking. To the West is Clare Hall's swimming pool (which is very popular with parents living in Clare Hall with small children) within an all-glass enclosure, very popular with small children, which would be completely exposed to view from passing buses, 20 per hour.
- 7.2.15. Jonathan Blacklock's evidence confirms that all would be disturbed by the prospective busway which would pass at first floor level as it crosses the Bin Brook and then descends at a very shallow angle until it is restored to grade well beyond Clare Hall.

Harm to Heritage, the Setting of the College and Privacy

- 7.2.16. Ms Fiona Lamb's evidence states that the proposed busway would cause harm to the heritage setting of the Grade 2* Listed Erskine Main Buildings. Grade 2* listed assets make up just 5.8% of the listed buildings in England.
- 7.2.17. The vertical concrete retaining structures and concrete bridge will harm the setting of West Court and the College houses on Herschel Road including the Grade 2 Listed E S Prior villas Elmside and Leslie Barnett House. Ms Lamb refers to the NPPF direction that the contribution of the setting to the significance of a heritage asset must be fully understood by prospective applicants. It was not and as Avanti shows, some of the applicant's statements and drawn evidence was highly misleading. Clare Hall has no record of the Applicant's heritage advisor entering its sites and it was therefore impossible for the applicant to understand the spatial, functional and visual interrelations between the Listed buildings and their immediate context and setting.
- 7.2.18. Jessica Wilson and Fiona Lamb report the loss of privacy to Clare Hall buildings facing the proposed busway along Rifle Range Road. The survey drawing of the South elevation of the Erskine Main Buildings of Clare Hall shown in Figs 8.3 and 8.4 in conjunction with the site plan of the College shows offices and studies, what

Erskine called the Discussion Room and College officers' rooms directly fronting Rifle Range Road. Fiona Lamb's evidence explains that Erskine deliberately set the Clare Hall buildings back from the South boundary to create a green landscaped edge and across it Erskine very deliberately designed the approach to each threshold, walking down an extension to the paths within the building, crossing the perimeter moat, passing the famously characterised rainwater chutes and the slender handrails before entering The Scholars' or Family Walks. Fiona Lamb explains that this whole sequence of built work, set inside the red line of the C2C Order limits, are an integral part of Erskine's scheme and built contemporaneously with the whole building and would need Listed Building Consent for any demolition or alteration from the City Council and Historic England.

- 7.2.19. The Domestic Bursar confirms that in an effort to increase privacy, a one-way film (removable) was applied to some windows leaving views out unaffected. The film does not afford any privacy at night with indoor lighting. With reference to the Applicant's original Heritage assessment and the CtoC Environmental Statement (Addendum 2 and Clarifications) and referring to Ms Lamb's evidence, the Applicant was quite wrong in claiming that there were few windows to the South elevation and all are frosted glass. There is one obscured (frosted) glass bathroom window to the upper floor of the Praelector's two-storey apartment in the Western range of the Erskine buildings, as can be seen in fig 8.4. The fact that the Environmental Statement contained this material error is indicative of the lack of care and attention paid to the impact on Clare Hall when the scheme was developed, and the lack of a properly developed understanding of the impact when deciding to apply for a scheme along this route.
- 7.2.20. The buses along the busway will be heard and seen as frequently as every 3 minutes from the early morning to late at night from the College's gardens, Main Site Buildings overlooking Rifle Range Road with its balconies, gardens and communal outdoor amenity areas, the Brian Pippard Building, particularly impacted given its overlooking balconies, and the buildings fronted by Herchel Road (Listed Grade 2 Leslie Barnett House, the Grade 2* Michael Stoker Building and No.s 4, 5b and 5a Herschel Road).
- 7.2.21. No 9/9a, Gillian Beer House and Robert Honeycombe House would be disturbed by the prospective busway which would be at first floor level as it crosses the Bin Brook. Moreover, the view from No. 9/9a, Gillan Beer House and the Robert Honeycombe Buildings will be onto a concrete wall, in excess of 2.4 metres high, the additional height to support balustrades, as there is insufficient space within the Purchase Order limits to create a 1 in 4 slope. In this respect section 16 in the Applicant's drawing referred to within the site sections in the Applicants

drawings (CD1-16.05 (SHEET 5 OF 5)). Section 16 is highly misleading, showing as it does a gentle, wooded slope on land that is both outside the Purchase Order limits and, but on land that is part of Clare Hall. This concrete wall would be topped by a bus every 3 minutes from early morning to late at night.

- 7.2.22. Fiona Lamb's evidence shows that the Applicant's depiction of its proposals is highly misleading, and attempts have been made to produce more accurate representations revealing further unresolved issues relating to the Heritage assets.

Fig 8. : Diagrams to illustrate scale and positioning of busway and related structures.

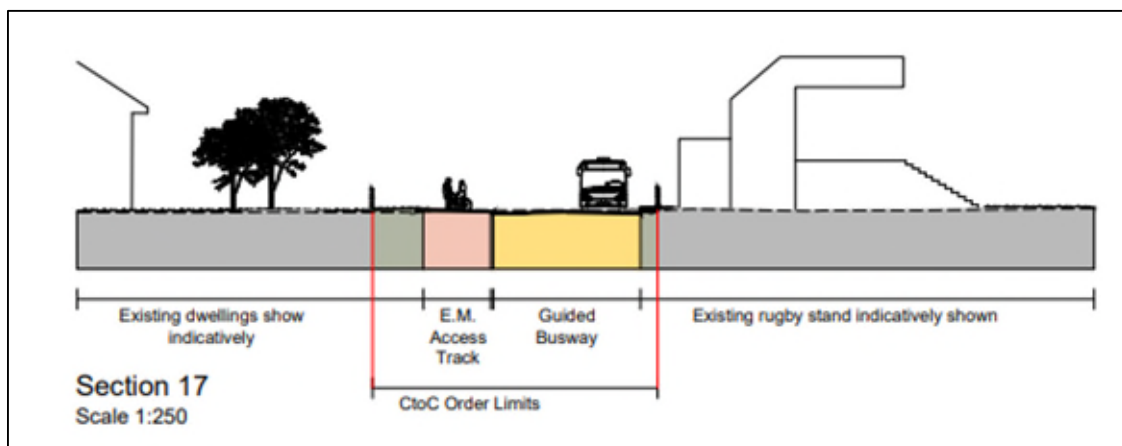


Fig 8.1 CD1-16.05 (SHEET 5 OF 5)

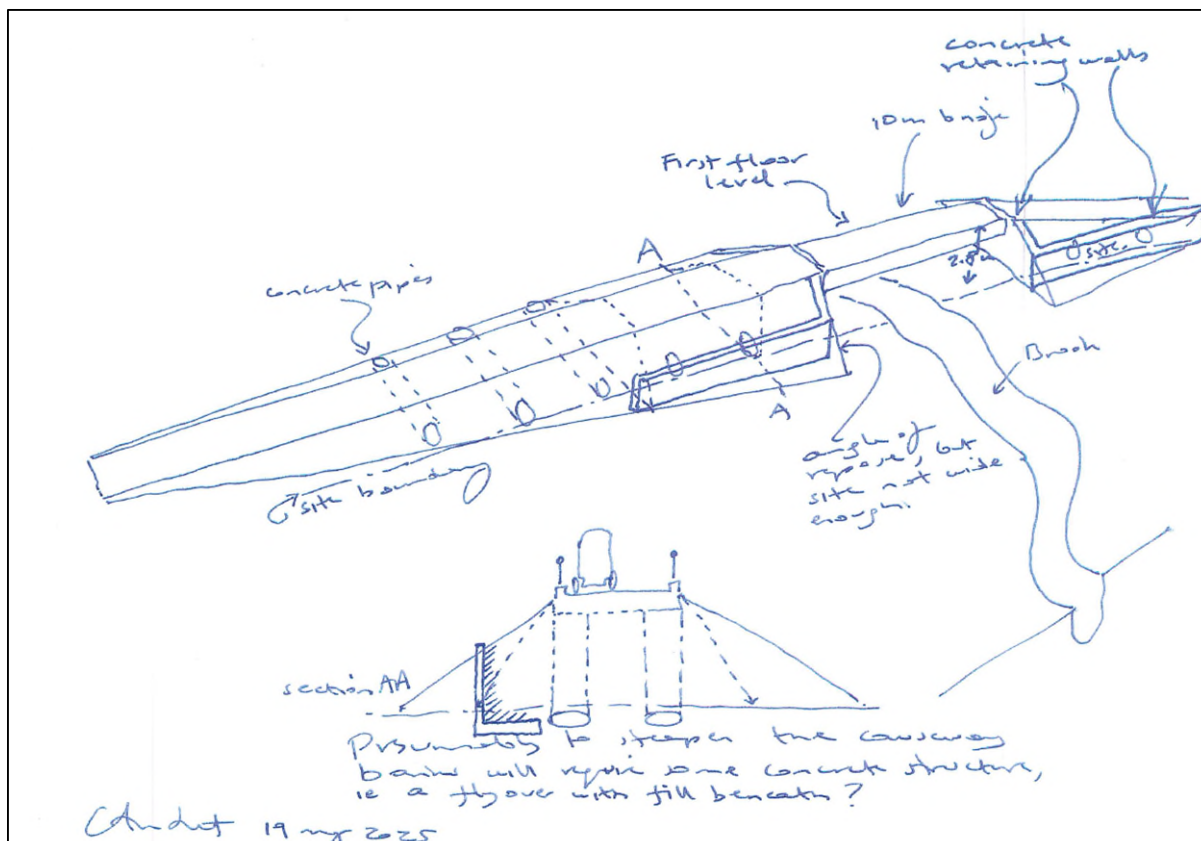


Fig 8.2: Architects impression of proposed bridge over Bin Brook – 3D view – prepared by the President of Clare Hall.

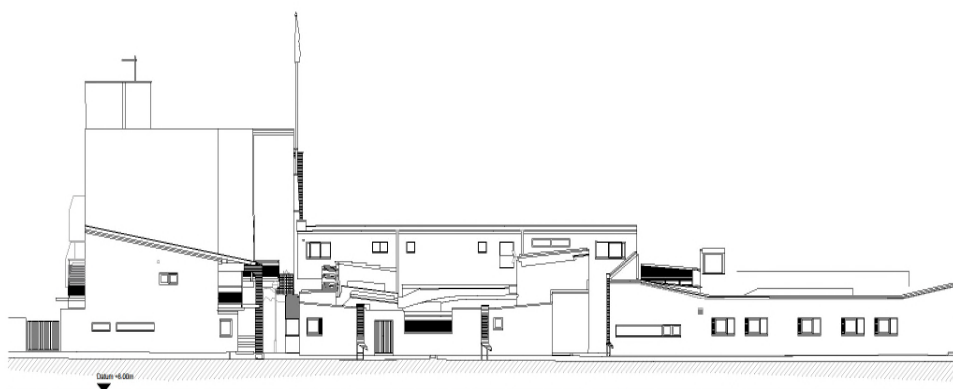


Fig 8.3: Survey drawing by Avanti Architects showing the south elevation of the Erskine Main Buildings, being the view from Rifle Range Road (and the proposed route of the guided busway); Only one (bathroom) window along the entire elevation is frosted, as described in the evidence of Fiona Lamb; all other windows and openings will be directly impacted by the busway in terms of noise and vibration and/or visual intrusion.

Increased Flood Risk and Damage to Watercourses

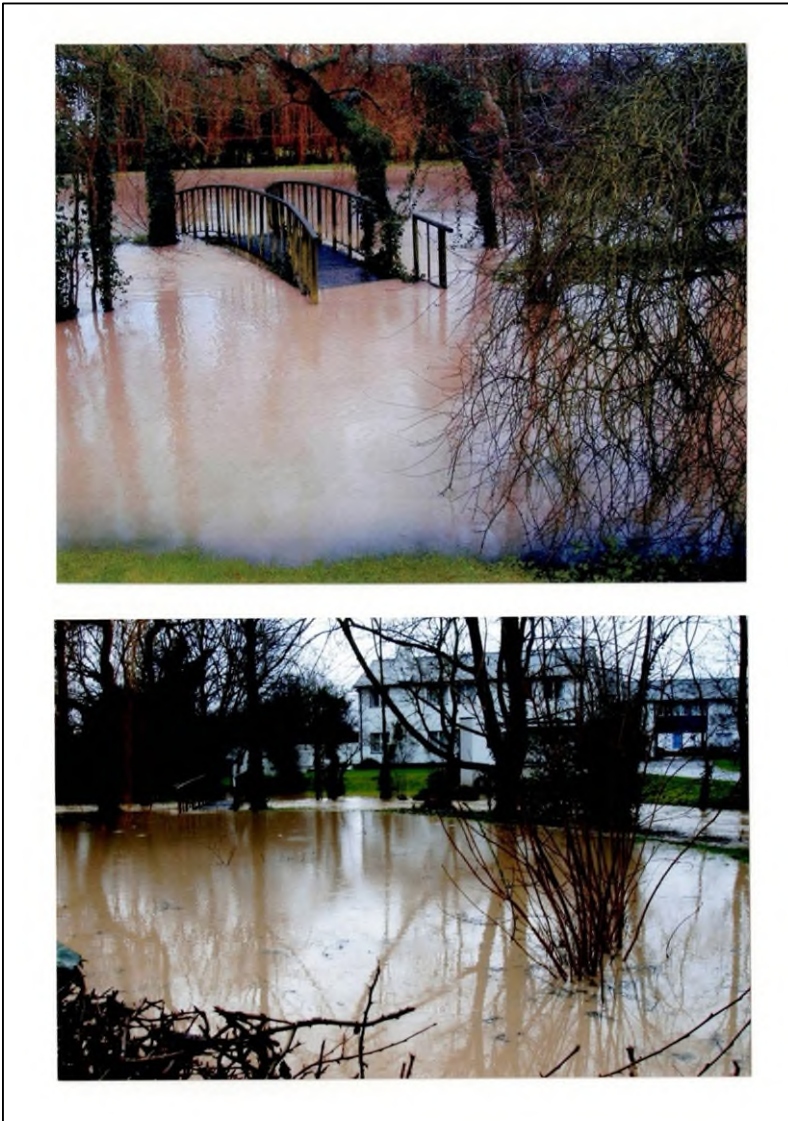


Fig 9: Two photographs of the 2001 flood at West Court from Archives taken by President Salje

7.2.23. Residents of Newnham know to their cost that the risk of flooding is ever present in the Bin Brook flood plain. They have suffered severe inundation twice in the last 24 years and much damage and misery in the clear up. The evidence of Graham Sinclair shows that the proposed causeway would impact flood level and extent beyond the bounds of the application site and this risk cannot be mitigated within the purchase order limits. A consequence of deciding to switch route away from Adam's Road safely in Flood Zone 1 to Rifle Range Road in Flood Zones 2 and particularly 3 is the need to greatly increase the size of the current crossing to become a major reinforced 10m reinforced concrete bridge to attempt to completely dissipate the increased volume of floodwater. Mr Sinclair's evidence shows that it doesn't. Instead it shows significant areas of Clare Hall are

vulnerable within the flood zone. Mr Sinclair warns of damage and erosion due to the doubling of velocities of flood water crossing Clare Hall in and above the natural unreinforced Bin Brook channel.

- 7.2.24. Many Fellows and neighbours remember the October 2001 and February 2005 floods. Fellows' homes in Gough Way were under 500mm of water, I saw the high-water marks in Professor John Barrow's house in Gough Way. West Court stood in an expansive lake, recorded in photographs by the late President Salje, some of which are shown in fig 9. I saw water flowing across Herschel Road. Residents were marooned and would be again. Significant areas of Clare Hall lie within the highest flood risk 3 zone and flood risk 2 zone. In order to achieve consent to build the Salje Building, Clare Hall dug out two large swales, one adjacent to the Bin Brook and another connected to a connecting stream, raised the proposed building design by a metre, providing access by accessible lift and escape walkways to higher ground and a large surge tank below ground. It is not possible to modify Lord Rothschild's former house of the early 1960s this way.
- 7.2.25. On 7 March 2023 Honorary Fellow Professor Lady Rees of 5a Herschel Road notified Clare Hall of the latest issue of the flood map. It shows the highest category flooding risk along the Bin Brook as it arrives at Rifle Range Road and crosses Clare Hall to the Needham Institute. Clare Hall contacted the Environment Agency to discuss these matters. Amy Shaw (Flood Risk Manager Fens) and, Philippa Hume of the Environment Agency met with the current Bursar, with me and a Clare Hall doctoral candidate studying Fenland flood risk with the EA. They reported when we met in August 2023 that the EA had rejected the Greater Cambridge Partnership submission made earlier that year, greatly increasing the College's concerns.
- 7.2.26. The proposals revealed that the Applicant had chosen to build a long causeway at 90 degrees to the Bin Brook across the floodplain. The proposed causeway, which will lift the busway above the Bin Brook, currently by 2.4m, would create an artificial dam. The evidence provided by Graham Sinclair shows that as a consequence of this unwise design the Applicant has been obliged to introduce a 10m spanning concrete road bridge, 14m wide, in an attempt to discharge retained floodwater downstream and has tested longer span options including a 21m span option to dissipate the risk.
- 7.2.27. It seemed that little regard had been given to estimating flood risk. In order to protect its interests and in the absence of modelled outcomes of the proposals, Clare Hall engaged flood risk consultants Create, including Graham Sinclair.

- 7.2.28. The modelling by Create, as included in the evidence of Graham Sinclair, demonstrates that there are increased flood levels and flood extents that extend across the order limits of the proposed busway. It also highlights that there are increases to in-channel velocities and flood risk downstream of the proposed bridge structure. These increases are observed by up to 100% which gives rise to a clear erosion risk to land within the ownership of Clare Hall. The proposed scheme also produces a net loss of floodplain storage, due to land raising in Flood Zone 3b. The modelling has demonstrated a potential solution that adheres to the National Planning Policy Framework requirements for flood risk management, however delivery of these options by the Applicant are not possible because they exceed the as there in an inadequate area of space requested within the order limits. Therefore, as the evidence of Ms Wilson states, the application fails key policy tests and would result in increases in flood risk and erosion risk to land and assets outside the site boundary.
- 7.2.29. The Environment Agency (EA) granted Clare Hall access to their Bin Brook model. The EA has continued to object to the Applicant's modelling on the basis of technical reasoning and required updates. As of the time of writing this document this Proof of Evidence it is understood that this objection remains in place and there is no evidence that approval has been granted. The model used by the Applicant was not shared with Clare Hall until the end of July, just a few weeks before the deadline for this Proof of Evidence. Mr Sinclair's evidence explains that they requested this information several times and it was not provided by the Applicant despite being available. As such Graham Sinclair and Create calibrated the model and brought it up to date with the latest climate change requirements.
- 7.2.30. The evidence of Mr Sinclair explains: WSP makes no reference to the highly relevant historical context, the Bin Brook floodplain has suffered large scale inundation twice in 24 years late at night in the most frightening way, requiring resident members of the College, some elderly, to evacuate in the Winter season, and its neighbours, not least Gough Way residents; the applicant is obliged to find the lowest risk route and certainly not to make the flood risk worse; the College has invested in constructing two swales to absorb surges of floodwater from upstream but this section of Bin Brook is not canalised in concrete conduits; the predicted doubling of velocities threaten the integrity of the Bin Brook channel as it crosses Clare Hall and canalisation may be necessary; the net loss of floodplain storage will exacerbate the flows both upstream and downstream; the proposed long span bridge structure is a major piece of highway infrastructure introduced late in the emerging design to reduce the scale of increased flood risk upstream all of which is entirely avoidable if the significantly lower flood risk route is re-adopted.

7.2.31. Newsteer's evidence fundamentally questions the procedures employed by the Applicant, not least in terms of the Cambridge Local Plan 2018 requiring Sequential Testing to establish lower risk alternative. The evidence of Jessica Wilson and Kamran Haider deduces that there is an entirely viable alternative route above the flood plain, Adams Road, in the lowest flood risk category, Flood Zone 1, which was until a late stage the Applicant's preferred route rather than Rifle Range Road in the highest risk category. The scores arrived at in the Applicant's options testing methodology do not seem credible under a number of headings as discussed in the evidence of both Pulsar and Newsteer. The Applicant's perspective view of the proposed Bin Brook crossing shows all of the trees removed and the houses on Herschel Road clearly visible.

Traffic

7.2.32. Mr Kamran Haider's evidence shows the Applicant's principal argument for adopting the Rifle Range Road option over Adam's Road, the segregation of modes of transport, is unsupported by the Applicant's design because 44% of the submitted route is unsegregated. Unsegregated routes connect to both ends of Rifle Range Road. If Adam's Road was re-incorporated this proportion of unsegregated route would rise to only 49% of the total length.

7.2.33. Newsteer's and Pulsar's evidence fundamentally questions the information fed by the applicant into the INSET options appraisal tool to determine the choice of route, showing that it was not undertaken correctly. For example, Rifle Range Road is wholly in the Green Belt, Adam's Road significantly less. There are no listed buildings on Adam's Road.

7.2.34. Mr Haider explains a Road Safety Audit (RSA) process reveals 5 unresolved highway safety concerns with the proposed Rifle Range Road route. The RSA comments that some may at least appear to be irresolvable through lack of space. Rifle Range Road is simply too narrow at key points, not least along the south front of the Erskine buildings, leading to design flaws with the RRR route, making it substandard for cyclists and pedestrians. They will be too close to buses. The proposed left turn only junction from Grange Road at the point of its notorious narrowing, the Rouse Ball gap, is fundamentally criticised in its design and safety.

7.2.35. Mr Haider's evidence questions the veracity of the scores fed by the applicant into their Optioneering tool INSET used to make crucial judgements on the routing of the proposed busway. He reveals that INSET was not updated to inform the June 2020 decision to change to Rifle Range Road from Adam's Road. He has rescored the inputs into INSET and Adams Road emerges as the clear winner to be adopted. The over-riding argument as put by the Applicant to Clare Hall was the

importance of maintaining a segregated route. It isn't at all a segregated route, as explained by Mr Haider.

- 7.2.36. Mr Haider reports that the Road Safety Advisor retained is not satisfied with the Rifle Range proposal on 5 counts, none of which appear to Mr Haider to be resolvable within the site envelope.
- 7.2.37. The resulting causeway is a very significant piece of new infrastructure, in effect a dam across the Bin Brook flood plain blocking the southerly aspect of all the residents behind it. The causeway structure banked up naturally at a 1 in 4 slope is too wide to fit within the existing Rifle Range Road boundaries. This is clearly shown on CD-16.01 (BIN BROOK BRIDGE GENERAL ARRANGEMENT DRAWING SHEET 1 OF 1), "retaining wall shown indicatively".
- 7.2.38. The "Illustrative view of Bin Brook crossing" does not show this retaining structure right up against the boundaries of the College and neighbouring houses to Rifle Range Road No 5a belonging to Lord Rees is bequeathed to Clare Hall. Pulsar's evidence shows significant additional challenges to access any part of the southern range of the College. Access is very necessary from Rifle Range Road because the existing structures on Herschel Road fronting development sites on Rifle Range Road are too close together to permit access for maintenance and construction of newbuild projects.
- 7.2.39. Mr Haider investigated the prospects for delivering heavy items, servicing maintenance and new construction and demolition as required with the proposed busway in place. Pulsar shows graphically that construction and delivery vehicles would have to encroach on the segregated busway. This would either have to be timed in the short intervals between buses (noting that there are planned to be ten buses each way per hour) or they would have to disrupt the bus timetable, with buses waiting until the route was clear before proceeding. This is described further in the evidence from Mr Haider which shows they should not be contained within the 3m emergency access strip (for safety reasons) and would need to swing into the busway.
- 7.2.40. Jesus College, who own Rifle Range Road, have repeatedly allowed it to be used in the past when Clare Hall has required building access from the south, given difficulties in access from Herchel Road. Nick Ray Architects' drawing of the site set up to build the Pippard Building shows the site compound to straddle Rifle range Road (Fig 10).

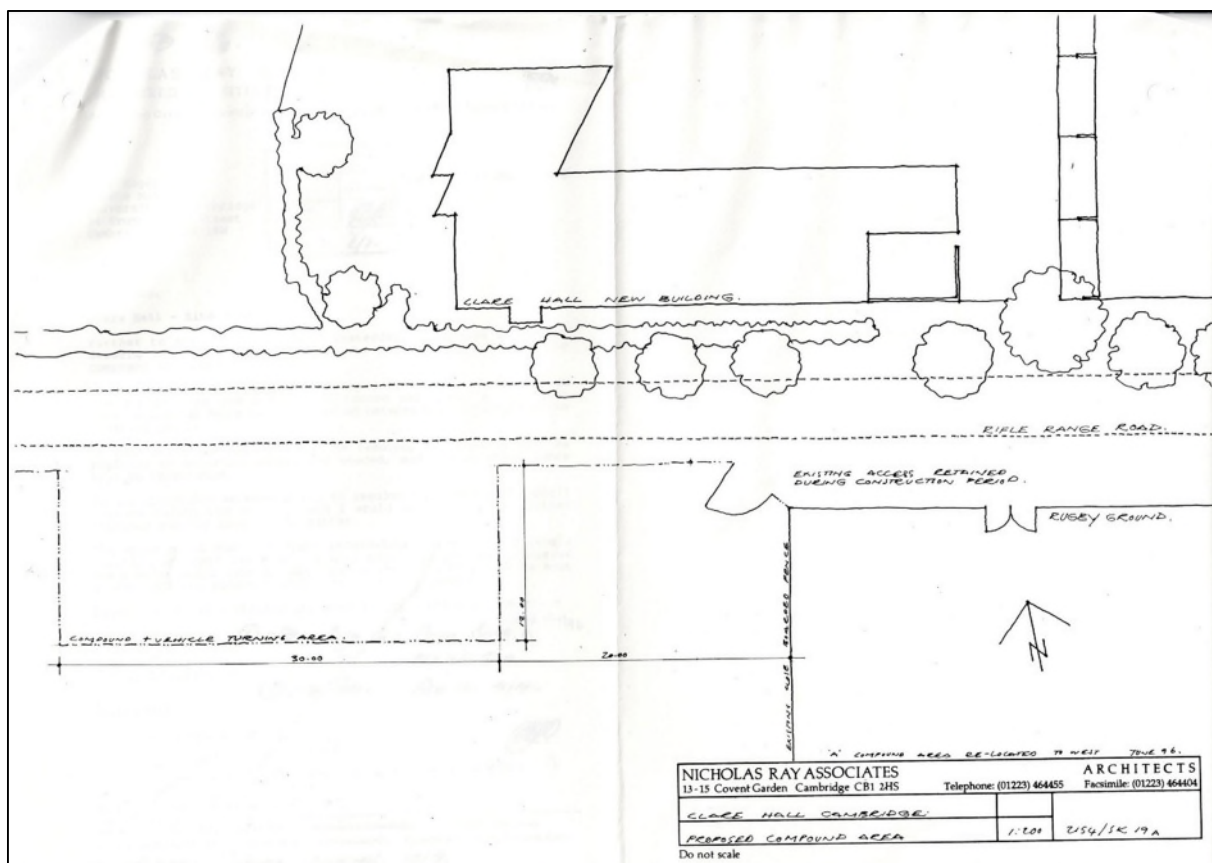


Fig 10: Nicholas Ray Associates – Proposed Compound Area Drawing that was used for the construction of the Brian Pippard Building

7.2.41. In an email from the Bursar of Jesus College to the Bursar of Clare Hall dated 28 March 2025, the former stated “In relation to access for development, the PIC [Jesus College’s Property Investment Committee, who have authority over these matters] was happy to support the College communicating its willingness to provide access for the future development of Clare Hall (consistent with a previous communication in 2019). This would be subject to a formal written agreement at the time...”. At the same meeting of the PIC, Jesus College agreed to transfer a small amount of land that had incorrectly been registered as belonging to Jesus College, being part of the drainage channels of the Erskine Main Buildings, to Clare Hall, at no cost. Work to correct the entry, and register Clare Hall’s title to this land, is ongoing. This piece of land is included within the order limits and subject to powers of compulsory acquisition. It is noted that this is unnecessary for the scheme, and it is unclear why the Applicant has applied to acquire more land than is necessary for the busway to be constructed and operated.

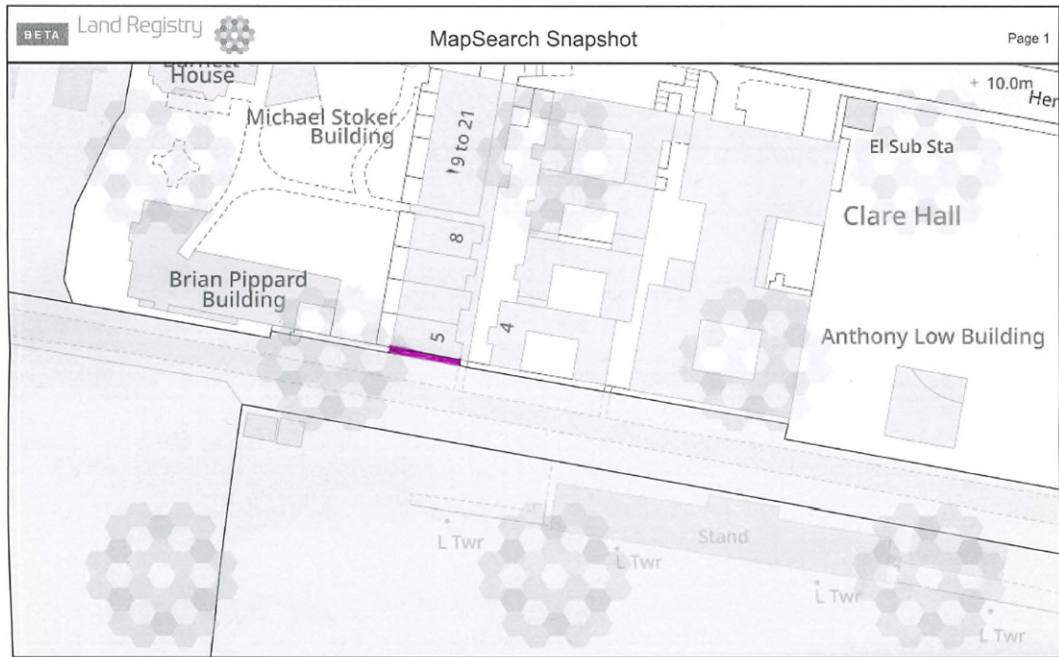


Fig 11: Land to be transferred back to Clare Hall by Jesus College (in purple), to the south of the Erskine Main Buildings.

- 7.2.42. Mr Haider's analysis shows the difficulties facing vehicles required to swing into any location to the North of the proposed busway. Mr Haider explains that Clare Hall has a very particular requirement to access its maintenance yard at the proposed busway junction of Rifle Range Road with Grange Road.
- 7.2.43. Mr Haider has designed two solutions to accommodate buses on Adam's Road. They are declared safe and viable by the Road Safety Advisor unlike the Rifle Range Road proposal. Mr Haider shows that it is preferable in a number of important ways including: the traffic light controlled junction with Grange Road is fully developed, operates in both directions and is safe; it is largely outside of the Green Belt, it does not harm any listed heritage assets, no buildings on Adams Road are listed and all are set well back and it appears can accommodate maintenance, construction and maintenance vehicles on site; it is in the lowest category floodplain zone, Rifle Range Road in the highest; it avoids the Kings College School entrance; it is very significantly cheaper (as detailed at section 8 below) and is expected to consume very much less carbon (also see section 8 below).
- 7.2.44. The Applicant's proposals will send a continuous stream of buses within metres of the proposed auditorium and graduate student and Fellows' housing. The evidence of Jonathan Blacklock is that noise levels in Clare Hall will be significant, so that the acoustic isolation of the envelope of the auditorium would then need to be very significantly upgraded to full BBC studio isolation adding much cost and complexity. I have personal experience of achieving this at the Contact

Theatre in Manchester which I designed with full 'building in building' separation and isolation. To function as a regionally, nationally, internationally important concert hall the building will require full access to its backstage for pantechicon type vehicles characteristic of touring companies and ensembles. The Applicant's proposals will seriously compromise this as the evidence of Kamran Haider explains. The College is in discussion with various interested donors in the Far East and in the UK, but the spectre of the Applicant's proposals has significantly complicated these exchanges.

Reputational and Academic Impact

- 7.2.45. Clare Hall functions extremely well as an institute of Advanced Research. It is prospering. Visiting Fellowships are over-subscribed again after the COVID pandemic ban on travel. The world's leading universities and national governments and foundations are competing to sign agreements with Clare Hall to enable their top academics to attend as Visiting Fellows. Across Cambridge the Research Fellowship competitions are fiercely competitive. Clare Hall is extremely attractive to more senior established academics for whom colleges compete. 14 new Official and Professorial Fellows have been appointed in the last five years. Fellows regularly win top honours, FRS, FBA, FREng, the Copley medal, Blaise Pascale Medal, Peter Day Prize (Royal Society of Chemistry), World Laureate Association Prize, The Polar Medal amongst numerous others and are appointed to senior University posts in Cambridge and, internationally, we have a new Director of a Max Planck Institute in Germany.
- 7.2.46. All this success depends on the scholarly atmosphere of Clare Hall, its peacefulness and tranquillity. Create's acoustic evidence confirms this, and it broadly aligns with the applicant's measurements. Rifle Range Road contributes enormously to this. It is a very successful Greenway in effect, enjoyed by college members and their families including very young children and many others. Two babies have been born to Students and Fellows residing in the College in the last 18 months. Fellows and Scholars work on site in their flats, rooms, the Common room, meeting rooms and the library. All are close to Rifle Range Road and many abut it.
- 7.2.47. If this atmosphere is irreparably damaged so that academics cannot work and really concentrate from those locations, the reputational damage will be immediate and disastrous. The various experts' evidence shows that this would flow from a sustained period of intolerable noise and vibration during construction which we are advised may require the closure of the College, almost constant noise, distraction and disturbance in operation to 100 residences,

library cells, meeting rooms, common rooms, studies and offices, the loss of use of the many external amenity spaces throughout the College at ground and first floor levels, safety concerns over children straying onto the busway, harm to the very significant listed buildings, increased flood risk, difficulties at the proposed junction with Grange Road which will generate disturbance around school gates, the longer term inability to build important new facilities as academic expectations rise across all ages. With so many serial visitors from partner institutions around the world, bad feedback could see the termination of these programmes, applicants of the high calibre required by Cambridge would decline, as would the associated benefits to the College.

8. Feasibility Order of Cost Estimate

- 8.1. In addition to the expert evidence produced to assess the proposed busway's impact on Clare Hall, the college has instructed Gleeds LLP (quantity surveyors) to provide a Feasibility Order of Cost Estimate consisting of three options for proposed busway routes (appended to the evidence of Mr Kamran Haider).
- 8.2. The busway routes that have been assessed by Gleeds are:
 - a) the Applicant's proposed route along Rifle Range Road;
 - b) Adams Road Route Option 1 (New busway running from Charles Babbage Road through Coton Cycleway to Adams Road. Adams Road is to be resurfaced based upon its current layout, involving new road markings, signage and other elements); and
 - c) Adams Road Route Option 2 (New busway running from Charles Babbage Road through Coton Cycleway to Adams Road. Adams Road is to be adjusted through carriageway widening and resurfacing of other areas based upon a cycle street layout (proposed by others) which has not yet been constructed).
- 8.3. The costs reported by Gleeds are inclusive of the Works, Main Contractor's Preliminaries, Traffic Management, Design Fees, Main Contractors Design Development and Construction Risk, and Overheads and Profit. The estimate makes further allowances for Project Design Team Fees, Employer Risk, and Inflation. Details of assumptions and exclusions are set out in the report.
- 8.4. The estimated project cost for each option are summarised in Table 01 (page 5) and Section 5.0 of the Gleeds report. This table clearly shows that the Rifle Range

Road route is considerably more expensive than the alternative proposed by Clare Hall along Adams Road (including when taking account of any interaction with the proposed cycle street along Adams Road).

- 8.5. The Gleeds report suggests that the section of the route that continues from Charles Babbage Road to Grange Road (along Rifle Range Road), is over £10 million more expensive than Adams Road Route Option 2, and over £11 million more expensive than Adams Road Route Option 1. That is a huge cost difference for a relatively short section of the overall busway route, especially when considering the additional benefits that re-routing the scheme down Adams Road will provide (not least in respect of reduced development on green belt land and interaction with flood zone 3).
- 8.6. Clare Hall has also instructed Gleeds to undertake a carbon assessment of the same busway routes. Whilst this is still being prepared by Gleeds at the point of submission of this Proof of Evidence, I am informed that the difference between the relative carbon impact of the Rifle Range Road route and the alternative Adams Road proposals is expected to reflect the costs appraisals – therefore showing the Rifle Range Road alignment to be not only more expensive but also more costly in terms of its carbon impact. It is expected that the carbon report produced by Gleeds will be submitted to the Inspectors shortly after this Proof of Evidence and it is kindly requested that it is considered by the Inspectors in their examination of the proposal.

9. Attempts to Engage with the Applicant

- 9.1. The College first became aware of the risk that the proposed Cambourne to Cambridge busway might be routed beside the College in 2017. In late 2017 GCP invited interested parties (these were general emails to multiple parties, rather than any emails directly to Clare Hall) to a general consultation on the proposed busway. This was immediately seen as a significant risk for the College and its operating model, where a tranquil environment for research to take place is seen as essential to the aims of Clare Hall. On 30 January 2018, Clare Hall replied providing its formal response to the consultation, providing detailed reasons why a routing along Rifle Range Road or Herschel Road would be inappropriate and damaging to Clare Hall.
- 9.2. Meetings were therefore sought with representatives of the Applicant over nearly 7 years.

- 9.3. Clare Hall requested an initial meeting with GCP in February 2018, and the then Bursar and President of Clare Hall met with Adrian Shepherd from GCP on 18 April 2018. At this meeting Adrian Shepherd stated that Rifle Range Road was the preferred routing for that section of the proposed busway. He was unwilling to discuss the College's concerns. The then President was the Regius Professor of Common Law who was clear that the college would contest this proposal in the courts if necessary. I was present as Vice-President. The report from GCP of 15 November 2018 indicated that this was indeed the case, and on 23 January 2019 the then Bursar of Clare Hall met with Peter Blake from GCP in the College. The then Bursar subsequently requested in May 2019 a meeting with Austin Nwadike from GCP, who was unable to make such a meeting until 8 August 2019; at this meeting the then Bursar continued to stress the proposed harm the proposed busway would cause Clare Hall, confirming this in meeting notes sent to Austin Nwadike a week later.
- 9.4. During August of 2019 it appears that the position of GCP towards the routing via Rifle Range Road changed, with Adams Road now being the preferred option. This was confirmed by letter from Peter Blake of GCP at the start of September 2019.
- 9.5. However, on 26 May 2020 without warning or explanation Peter Blake wrote to the then Bursar of Clare Hall stating that once again Rifle Range Road was the preferred option. From the detailed records kept by then Bursar there is no evidence of a subsequent meeting taking place.
- 9.6. Peter Blake of GCP then wrote on 6 July 2021 to Clare Hall stating that the scheme (including the routing down Rifle Range Road) had been "audited and passed", inviting Clare Hall to contact them as they were likely to be impacted. I, now President of Clare Hall, responded to Peter Blake shortly thereafter re-stating the many reasons why a routing down Rifle Range Road inappropriate.
- 9.7. On 8 July 2022 Dentons (on behalf of Clare Hall) wrote a response to a further round of public consultation, continuing to state the issues with a routing down Rifle Range Road, pointing out the requirement to consider alternatives, the impact on Grade 2* historic buildings, the ecological impact, potential flood risk, the potential blocking of the entire south flank of the College to future development, and the displacement of the Granta Backbone optic fibre cables. There was also a meeting at Clare Hall with Peter Blake on 29th November 2022, which Mr Kamran Haider attended. There was a virtual meeting on 16 December 2022 with Jo Baker from GCP, the WSP representative tasked with the Environmental Impact Assessment for GCP, the Clare Hall Bursar, me, Slaine Campbell (Landscape Architect, supporting Clare Hall), Mr Kamran Haider, and

Carl Maidment (Quantity Surveyor supporting Clare Hall). During the meeting I described the unique significance of Clare Hall as the only college dedicated to research and the dense population of international academics on site with their families. Jo Baker described the '*incandescent fury of the cycling lobby*', but despite that he declared he was very interested in the Adams Road routing option which avoids the West Fields and the need for a Bin Brook crossing (requiring more than a 1.5 metre elevation), commenting, 'Peter didn't brief you ?'. The WSP representative tasked with the Environmental Impact Assessment for GCP agreed with Carl Maidment that the net carbon footprint would be greater for the Rifle Range Road option than Adams Road.

- 9.8. On 10 March 2023 County Councillor Lucy Nethsingha met with me to discuss the busway proposal, stating during that meeting when the Rifle Range Road routing option was discussed that 'everyone knows this doesn't work'.
- 9.9. There was then another meeting at Clare Hall with Peter Blake of GCP in person, with the WSP representative tasked with the Environmental Impact Assessment for GCP attending via Zoom; the latter said nothing during the meeting, which was unproductive.
- 9.10. Finally, the only option available to Clare Hall was its Letter of Objection, from Dentons on behalf of Clare Hall on 8 January 2025; there have been subsequent written representations from Clare Hall and Dentons as part of the process leading to the Public Inquiry. This has not been undertaken lightly, recognising the costs to the College in preparing its objections and for the Public Inquiry. These costs have been greater than would otherwise be the case due to the lack of engagement and lack of provision of information by the Applicant. At no point – until June 2025 (once encouraged) – has the Applicant visited the College to understand the impact of the busway scheme on the unique, Grade 2* listed asset, nor to understand how the proposed busway would impact the main site of the College in terms of noise and its consequences on Clare Hall's academic community, including its students and the many families with children living there.

10. CONCLUSION

- 10.1. Clare Hall is a unique research institution of international stature. It is of vital significance in the future success of the 'Oxford and Cambridge Arc' identified by Government as the premier research and innovation hub driving national economic recovery and growth. Clare Hall has become a worldwide focus for leading academics from across the globe's leading universities who come for extended periods with families on sabbatical leave, regularly for a year, to concentrate very hard within Clare Hall's well-established tranquil atmosphere. Eight Nobel Prize winners have spent extended periods in Clare Hall. Mr Blacklock's evidence confirms that it the college campus is indeed quiet and tranquil.
- 10.2. Mr Blacklock also confirms that this habitual quiet and tranquillity is severely threatened by the Applicant's proposed busway scheme. Mr. Blacklock quantifies the extreme disturbance from noise and vibration during construction. The construction noise and vibration will be near intolerable, Clare Hall will have to evacuate at least some of its estate, shutting down its visiting academics programme. As a long-term member of the construction industry, I do not find the estimated programme of a few weeks to build this major piece of infrastructure credible. Jessica Wilson's evidence explains the policy compliance of the Applicant's noise and vibration evidence. It would be intolerable for residents.
- 10.3. Noise disturbance and distraction during operation from the buses for the buildings fronting Rifle Range Road and the distraction of buses passing every three minutes on average from early in the morning to late at night, not least to the Meeting Room and to the families in flats fronting Rifle Range Road. In operation the acoustic character of Clare Hall will be irreparably changed negating the use of some private external amenity spaces all over the College. Many apartments have balconies and gardens, and Erskine provided communal meeting places around tables integrated into the structure.
- 10.4. Clare Hall's core buildings are of very high architectural value and designated Grade 2* by the Secretary of State, the Listing process accelerated as the Statement indicates, to help avert the threat of a busway skimming its southern boundary. The evidence submitted by Fiona Lamb shows that significant harm to the setting and perception of the building from without and within will be sustained throughout the operation of the busway. The Applicant explains that the earthworks to retain the proposed causeway taking the busway up to the required river crossing level are to be determined later but Rifle Range Road contained within the Applicant's site area is too narrow to accommodate 1 in 4 sloped banks

to the north. Vertical concrete retaining structures of prodigious length fronting the Southern boundaries of Clare Hall properties would be required including that bequeathed by Honorary Fellows destroying outlook along the Eastern leg of the causeway, some 80 m from the Applicant's plans.

- 10.5. The evidence submitted by Kamran Haider and Jessica Wilson demonstrates that the transport argument for adopting the Rifle Range Road option, and the urgency to segregate the modes of transport, is wholly undermined by the 44% of unsegregated route shared by the busway connecting to Rifle Range Road at either end. Including Adams Road would only increase this by 5%.
- 10.6. The evidence submitted by Pulsar demonstrates many failings in the Applicant's design proposal and Road Safety Audit. Pulsar's proposals for Adam's Road to accommodate the Busway have been reviewed by the Road Safety Advisor and no fundamental concerns were raised. There are many advantages to Adam's Road and irresolvable problems with Rifle Range Road. The Adam's Road route is very significantly cheaper with a very significantly lower carbon penalty.
- 10.7. Cambridge Colleges plan for very long futures. Clare Hall will need a lot more accommodation for doctoral candidates as University policy pursues much enhanced conditions for them to counter competition from North America's very generously endowed Ivy League universities. It has long needed an auditorium for its major lectures, concerts and internal gatherings of the College community. Mr Haider shows that the severe limitations on access along the whole south boundary of the College would severely restrict the much-needed development.
- 10.8. The risk of flooding is ever present in the Bin Brook flood plain. Graham Sinclair's evidence demonstrates that the proposed causeway forms an obstruction to the flow of water across the floodplain, which will either flood upstream if the Bin Brook opening is sized as present as it was in earlier proposals or flood downstream if the bridge opening is substantially widened to release floodwater downstream. The bridge proposal is currently for a full 10m span making the bridge a highway-scaled piece of concrete infrastructure and Mr Sinclair reports that longer span bridges have been considered to reduce additional flood risk which is very disturbing.
- 10.9. This concrete infrastructure is completely inappropriate in the protected land of the Green Belt. The earthworks to retain the proposed causeway taking the busway up to the river crossing level are not described, to be determined later, but it is clear that they will not be grassed banks but will be vertical concrete retaining structures approximately 80 m in length tapering from over 2.4m to

ground level, fronting the Southern boundaries of Clare Hall properties including that bequeathed by Honorary Fellows Lord and Lady Rees and No 6 in which the College has an interest.

- 10.10. There is a clear safe, viable and economical alternative route along the existing Adam's Road and the existing route to West Cambridge with reasonable modifications. The Applicant's own declared INSET options tool scoring shows only a marginal difference between Adams Road and Rifle Range Road.
- 10.11. Clare Hall's experts, Jessica Wilson and Kamran Haider, are deeply sceptical about the relative scores used in the INSET tool as declared by the Applicant. For example the two schemes are certainly not equivalent in cost given the concrete structures to be built alongside and over the Bin Brook, as analysed in the evidence of Kamran Haider and costings provided by Gleeds (nor as expected to be shown in Gleeds report on the relative carbon impacts), nor in harms to the Heritage buildings, their settings, the Green Belt and to those dwelling and working within Clare Hall.
- 10.12. The transport mode segregation argument collapses in the context of the proposed overall route. The evidence of Pulsar, cited additionally by Newsteer, demonstrates that 44% of the route is unsegregated in the Applicant's current proposal which would only rise to 49% if the Adams Road routing is re-adopted. Mr Haider has produced an entirely viable scheme for Adams Road, safe, efficient and economical, reviewed by an independent national Road Safety Advisor, whereas the Road Safety Auditor for the Rifle Range Road route had five important criticisms of that alignment. As President of Clare Hall and ultimately responsible for its resident community I would have deep concerns about small children playing on the rising banks of the proposed causeway out of sight and actually climbing onto the elevated busway.
- 10.13. A research institution of international importance, Clare Hall, would be irreparably damaged by the Applicant's proposals. Activity would dramatically reduce or cease during what Jonathan Blacklock's evidence describes as the near intolerable noise and vibration during construction, severely damaging income, and as the predicted disturbance of the proposed busway in operation becomes generally known across our international university constituency. This is entirely unjustified given that there is a wholly viable, safe, economical, more direct route already available with modification for a fraction of the cost. The Applicant has never properly engaged with Clare Hall to understand the impacts of the proposed busway scheme despite many invitations. Clare Hall has had to appoint and fund experts to analyse the risks of flooding, the traffic implications, noise and vibration implications, heritage implication, the structural engineering implications, the

planning context, costs and carbon implications, in the absence of credible substantiation by the Applicant. The Applicant's option appraisal scoring in its given methodology has been demonstrated to be deeply flawed. Undertaken correctly it confirms the validity and preferability of the alternative route, Adams Road.