BUILDING STUDY

Invoking the spirit of White Eagle: James Gorst's pared-back Hampshire temple

James Gorst Architects has created a striking new temple for the esoteric White Eagle Lodge spiritual organisation, marrying Byzantine forms with sustainable building design

24 MAY 2023 BY FRAN WILLIAMS **AJ** PHOTOGRAPHY BY RORY GARDINER

'The site was chosen by a clairvoyant, due to its light qualities,' says Steve Wilkinson, an associate at James Gorst Architects. We have just reached the project's New Lands site after a 45-minute walk from Liss railway station in east Hampshire, which followed sections of the River Railway Walk, Liss Forest and part of the ancient Shipwrights Way in the South Downs, all located in a designated Dark Sky Reserve.

Site plan

Surrounded by woods, clear chalk streams and rolling green fields, the walk – which follows a pathway used in Tudor times to transport timber from an ancient oak forest to Portsmouth for shipbuilding – affords a sylvan context to the peaceful site.

We stroll up a hill and along a path to a bright gravel garden courtyard. We are standing at the eastern edge of White Eagle Lodge, a temple complex for the eponymous spiritual organisation, newly built on a plateau at the crown of a wedge-shaped hill. Around the site, the gently undulating topography affords far-reaching and picturesque views across the surrounding woody landscape, which Wilkinson compares to Richmond Park. The hilltop location has abundant light as well as offering extensive views of the night sky – a key part of its appeal to White Eagle Lodge.

The temple building comprises a series of orthogonal pavilions, oriented to the four cardinal points of the compass, arranged around an open central courtyard and connected by cloisters. The Lodge offers healing, meditation and retreats inspired by ‘spirit teacher’ White Eagle, and there is a loose diagonal divide throughout the plan between the ‘sacred’ and ‘secular’ in a phased hierarchy of spaces.

Following a two-stage design competition in 2017 organised by project manager Jackson Coles, James Gorst Architects was selected from a shortlist that included Walters & Cohen, Gort Scott and Adam Richards Architects. The practice had made the final six following its completion of a Greek Orthodox Chapel on the island of Mykonos and was granted planning consent for the temple in 2019 – just before the pandemic.

It replaces a previous temple on the same site, which was constructed in 1973 and designed by Elidir Davies, architect of London's Mermaid Theatre. This was demolished, due to irreparable water damage, but its rubble has been used for the groundworks of the new building. The surrounding land also accommodates a red-coloured 'lodge' building acquired in the 1940s, when White Eagle Lodge enjoyed its greatest popularity.

The Lodge is a relatively new religious movement founded in England in 1936 by Grace and Ivan Cooke. Grace was a medium who claimed to have received spiritual teachings channelled through a native American spirit guide named White Eagle. Its work aims to help humanity 'develop its true spiritual nature' and uses the symbol of a six-pointed star to give peace to those in need of healing, and also via the teaching and practice of meditation, yoga and astrology. It has centres in the USA and Australia. A previous centre in Kensington was sold off to part-fund this new-build temple.

Members believe in a cosmic Christ and in five eclectic cosmic ‘laws’, including karma and reincarnation. In keeping with its tenets, the temple’s architecture draws on ‘sacred’ geometries and ‘ley lines’, culminating in a pendentive structure and dome, crowned with a timber lantern.

It’s a difficult task designing for a rural site, and particularly to a brief that has a spiritual dimension. As with its predecessor, the building has been placed at the exact midpoint of a putative ‘ley line’ – the pseudo-archaeological idea developed in early 20th century Europe proposing that straight alignments between various historic structures and prominent landmarks were used for wayfinding by ancient societies.

The same importance, spiritually and physically, has been given to the building and its landscape. ‘We leant into chakra and energy in the design brief,’ says Wilkinson. ‘But we also questioned it’ he adds. Dowsing rods were used to find the ‘energy’ (water sources and magnetism) or chakra lines and this pointed to a 1.1m grid, on which most of the building is laid out. This, the ley line, and a ‘root’ chakra point which marks the end of the ley line, also define the axes that orientate the project.

In terms of materials, the building takes direct inspiration from the surrounding landscape and geology of the South Downs National Park – a landscape defined by its underlying chalk ridgeline stretching from Winchester to the East Sussex coast. Clay, chalk, and timber are all referenced in the simple, pared-back palette.

The brickwork of the complex, with its dusty lime mortar and a datum line separating smooth and rough brickwork, is intended to echo the county’s underlying chalk geology. Water-cut bricks were used for the façade: smooth to

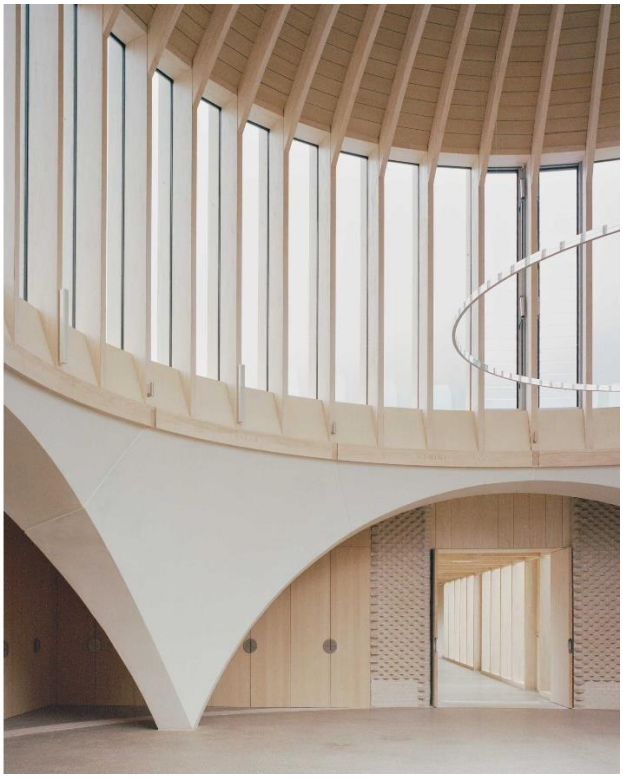
all sides but one, which exhibits production track belt marks, left as a reminder of its manufacturing process. This is subtly expressed in projecting brick armrests to the benches in the eastern façade.

The short timber sections of the laminated beams were digitally sorted to eliminate knots and so give the frame a visual consistency

Just as the temple's base draws materially upon the characteristics of the ground, the Siberian larch timber frame construction reflects the extensive neighbouring woodland. Timber fins to the entrance portico and cloisters give a permeability to this publicly accessible space. The short timber sections of the laminated beams were digitally sorted to eliminate knots and so give the frame a visual consistency. It is honest materiality. The reason for the concise palette, all entirely self-finished and its constituent parts selected to be harmonious with each other, was twofold, says Wilkinson. The muted tones allow for reflection within a calming internal environment, while externally they chime with the colour and light of the changing landscape.

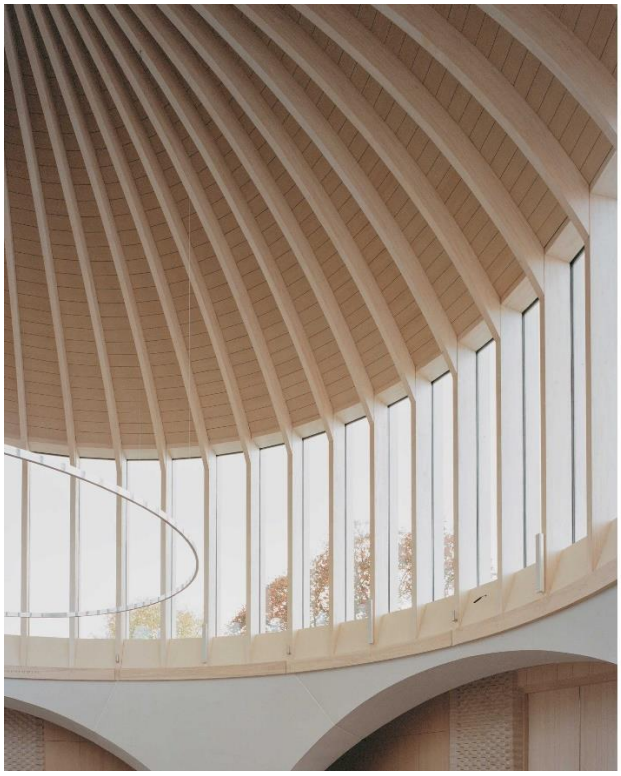
The internal arrangement of the scheme follows an identifiable hierarchy from public to private or, rather, 'the profane to the sacred'. The degree of privacy of the spaces increases from the visitor entrance to the north-east, looping round anticlockwise past a multi-functional lecture room to the north side, and on to a library-cum-meeting room plus prayer chapels to the west, before terminating at the scheme's key focal point and highlight – the temple itself.

Its complicated construction, and even more complex form, was one of the major challenges of the project. The golden ratio and platonic solid geometries were used to inform the temple's proportions, in addition to the geomantic qualities derived from the site. The temple's plan is generated symbolically from both a circle and square – an 'architectural expression of mankind's connection with the earth and heavens' as the practice describes it.



A 12m-diameter circle determines the inner temple, helping focus the congregation's attention onto a central altar. The space is enclosed by a pendentive structure supporting a lantern and dome, akin to those seen in Byzantine, Renaissance and Baroque churches, with arched openings to the cardinal points in the pendentive. Supporting a circular timber and glass lantern above, this structural element's form is modelled as a three-dimensional expression of the energy lines crossing the site.

'We had lots of conversations around how we make the temple welcoming for the four faiths,' says Wilkinson. The practice looked to the ornate Golden Temple in Amritsar, India, with its four entrances and square plan intended to welcome worshippers from all four corners of the world. White Eagle Lodge has similarly four access points.



‘We also kept asking ourselves “how do you communicate privacy?”,’ Wilkinson adds, pointing to the large open space that the temple composes. ‘It’s about openness versus mindfulness.’ This dichotomy is resolved in a shift in materiality from brick to timber, but also through spatial hierarchy, the temple being separated from the rest of the complex via a processional route running north-south.

If entering from the east, one goes through the vestibule, purposely low-ceilinged to act as a contrasting, transitional threshold to the main temple. Here, to the right and left, are interview rooms and a changing area. A ringed cross motif is featured throughout: from an inlay in the circular temple floor to the metal handles of the vestibule and interview room doors.

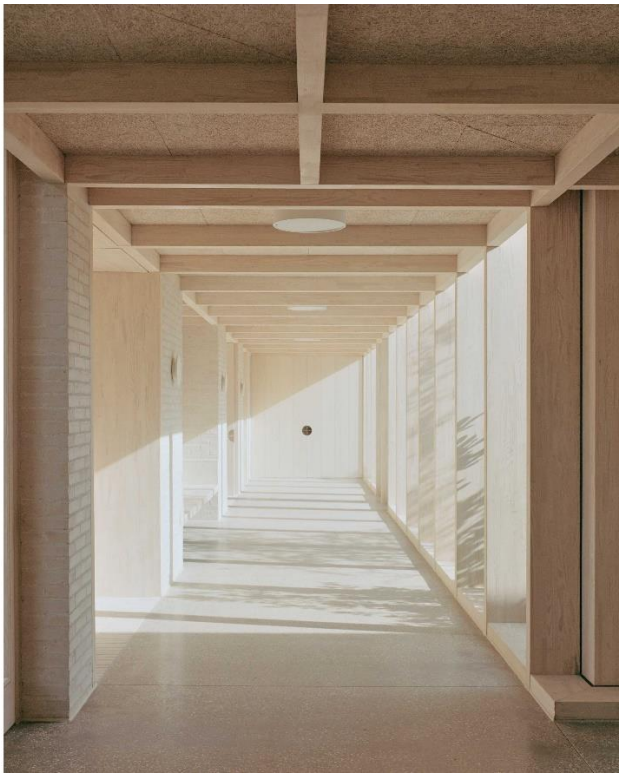
The temple's structural design comprises 48 glulam beams, arranged radially and dividing into 12 bays to line up with the pieces in the arches, then terminating around a ring beam, engraved with the 12 signs of the zodiac. The ring beam in turn supports a 1.2m diameter glazed rooflight above a clerestory to provide a 'halo' light. The structural integrity of this design and exposed finishes meant there was zero tolerance in the build and accuracy of off-site construction was essential. The complexity of creating 48 beams without steel supports is remarkable.

'A lot of the qualities from the previous Davies-designed lodge were brought in,' says Wilkinson. As the 12 steel columns of the original had been condemned due to water damage, the Lodge was keen to avoid the use of metals – its hardness also disruptive to prayer and light. The pendentive – originally planned in solid stone – ended up being of high-GGBS precast concrete for cost savings. A form most famously seen in full development at Hagia Sophia and St Paul's, a pendentive isn't usually fully perceived from all dimensions, but here, the practice was keen to explore that option, particularly as the base carries the load. As a result, its satisfying smooth concrete form, which can be viewed from inside and out, gives the space an elegance: becoming more slender towards its 300mm base from its 1.1m thickness at the top of the arches in a move the practice says 'defies structural logic'.

The acoustics within this space were also tricky, due to its composition from four different materials set at various angles. As such, the use of materials and treatments internally also became very technical: the use of textured brick to scatter sound and perforated ash (the pinholes so tiny they're only visible up-close) acting in place of acoustic baffling. The sound is surprisingly even from every part of the room.

A solid onyx altar at the room's centre is a perfectly scaled double cube representing the geometry of the temple in a smaller form. The rest of the furniture is in a similar vein: a lectern in ash features the ringed cross motif.

The overall effect of the architecture is that it feels spiritual without being obviously decorative: in part this is down to the effect of the constantly changing light conditions within its space. The ability to open its four openings to the elements, as well as the effect of the lantern and oculus, creates endlessly changing conditions of light and shadow.



To complement the peacefulness of the temple, the building's environmental design, something also insisted upon by the client, is grounded mainly in passive energy principles to reduce demand. A hidden innovation implemented here is an alternative to traditional air-cooling systems. Two sub-floor ventilation systems provide passive cooling by drawing external air through a shallow labyrinth below the building.

The thermal mass of the temple substructure also supplies tempered air in the winter and summertime cooling to spaces with the highest occupancies. Automated louvres in the façade allow warm air to escape when a full congregation is present.

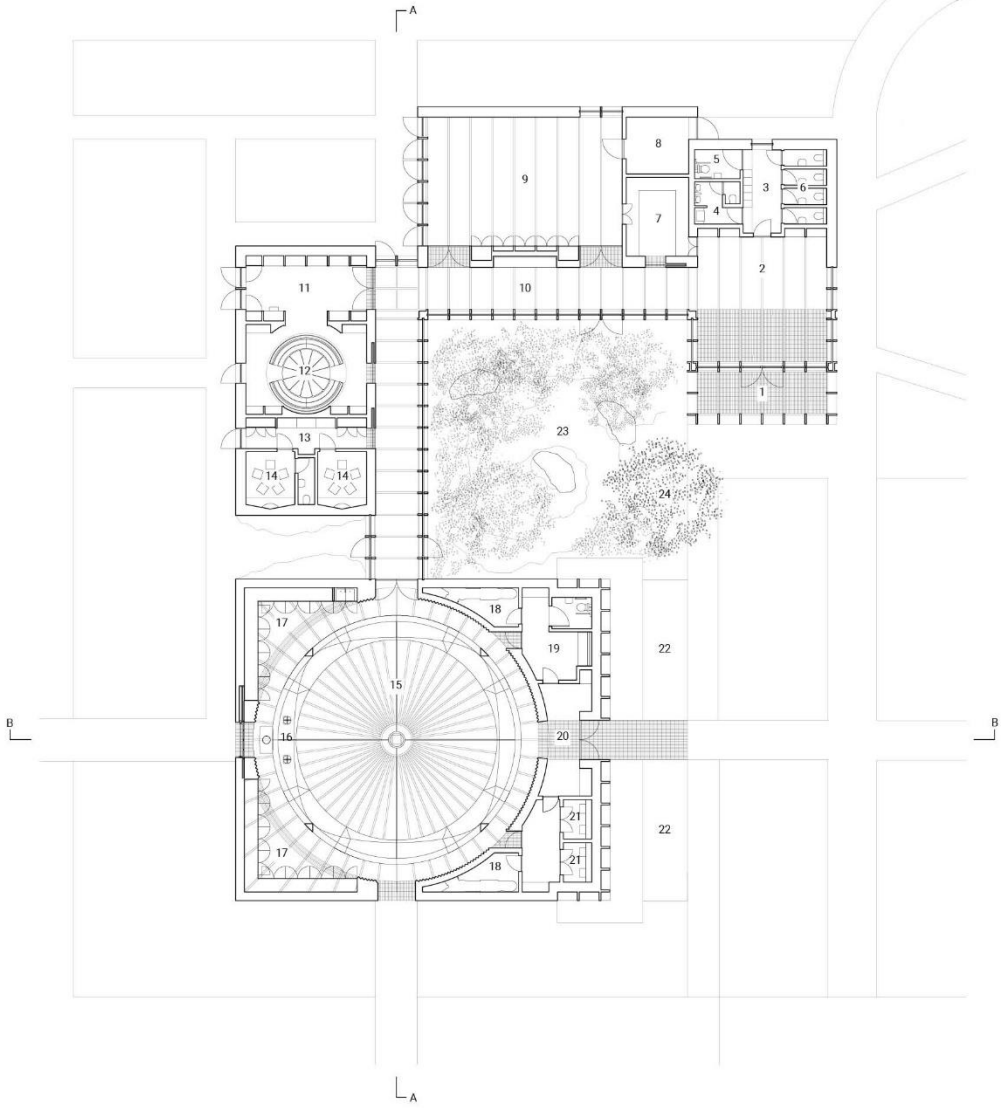
Onsite PV panels provide electricity and power a low-carbon GSHP installation, whose 100m-long buried array in the adjacent field was sized following in-situ thermal conductivity testing of the site's ground soil. It is intended to provide the entirety of the building's heating requirements. There is only single-phase power on site, so careful analysis of the building fabric's heat loss and expected demand plus occupancy profiles were required to ensure systems weren't oversized. Foul water drainage is also processed on site.

As one might expect of a project impelled by a certain idealism and for which luxury is for once afforded, the construction of the complex is near-perfect – and one rarely seen in new build architecture.

Up close, the beauty is in the temple's detailing and pared-back materiality, but from afar it's in how it adorns the grassy plateau on which it sits. It's unusual to see such strict mathematical and spiritual methodology used as a device for the design of a contemporary building and this is what makes it so fascinating – so much joy can be found in its problem-solving.

Its tranquil site and the honesty of its materials and construction endow the temple with a distinct sense of peacefulness it would be difficult to replicate elsewhere.

Ground floor plan



1. Covered entrance portico
2. Entrance foyer
3. Toilet vestibule, lockers
4. Male WC
5. Accessible WC
6. Unisex WCs
7. Kitchen
8. Plant room
9. Lecture room
10. Cloister
11. Library
12. Meeting room
13. Chapel vestibule
14. Prayer chapel
15. Temple
16. West altar
17. Transept storage
18. Plant room
19. Changing area
20. Temple vestibule
21. Interview room
22. Reflection pool
23. Planted courtyard
24. Retained cherry tree

0 2m

Engineer’s view

Analytical modelling at RIBA Stage 3 was used to test three material options for the primary building structure: steel frame, load-bearing blockwork and engineered timber framing.

The traditional choices of steel frame or load-bearing blockwork were not options here. Both employ significantly more embodied CO_2 and require

additional material finishes to over-clad, thus creating wastage, along with additional site deliveries. Both also contain human-made alloys and compounds which would affect the ambiance of this sacred space. Employing a fully engineered timber frame alone, the whole-life carbon was calculated at 300 $kgCO_2eq/m^2$, representing a saving of up to 25 tonnes of embodied carbon by the use of regenerative materials.

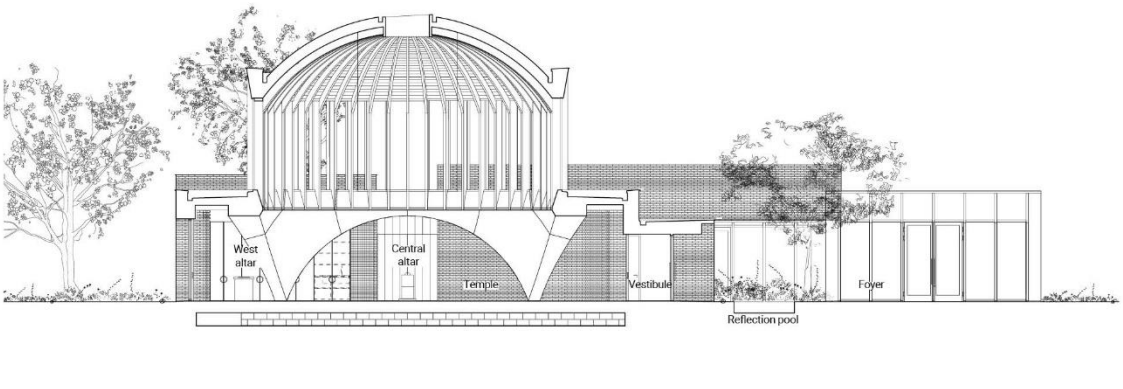
The real challenge came from analytical modelling and testing of the circular clerestory window in the temple, which supports an upper dome and a 1.2m-diameter glazed oculus rooflight. The modelling tested significant wind loads on the exposed site. Using engineered timber allowed the columns in this space to meet the precise movement limits needed to fix the 3.6m-tall glazing panels. It also allowed the structure to be sized according to these limitations and ultimately allowed the elimination of structural steel from the above-ground structural frame.

Duncan Walters, director, Eckersley O'Callaghan

Sections

Section A-A

Section B-B



Client's view

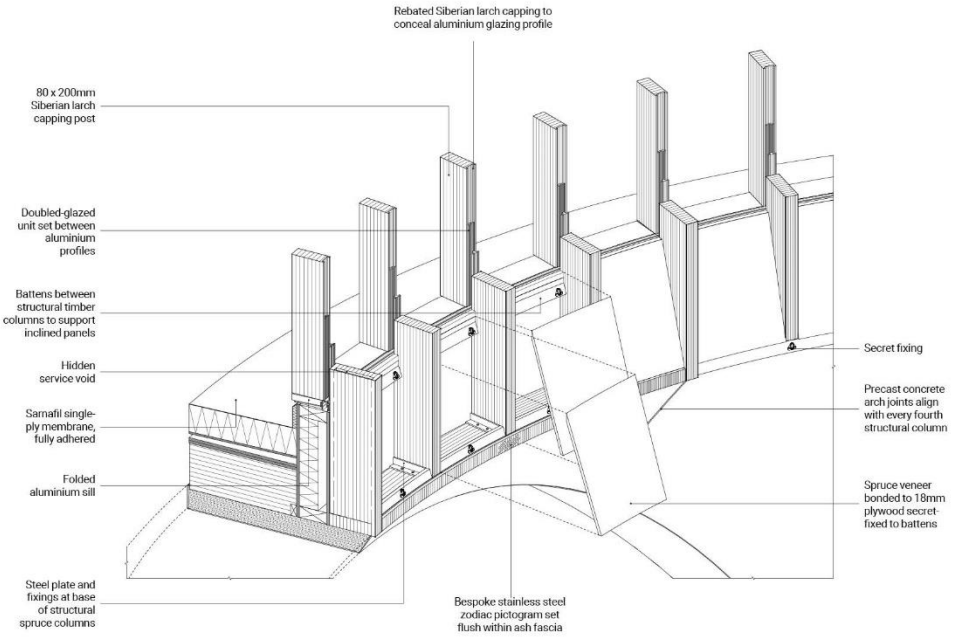
The Temple of Light is a remarkable building that has fulfilled our hopes way beyond our expectations. How did we manage to arrive at this major turning point in our history? We took some useful advice: to seek the 'right' architects by competition.

Following presentations by the shortlisted candidates, it was clear that James Gorst Architects had immersed themselves in our brief, producing an imaginative design combining beauty and simplicity. Working with them proved that nothing was too much trouble: their commitment was total and at a depth greater than we had imagined possible; they were so helpful and supportive at every stage.

In drawing up the brief, sustainability was a major consideration for us as a spiritual organisation. Our previous building was badly damaged in ways that were beyond economical repair. We wanted to minimise the new building's impact on the environment and our longer-term energy use. These concerns were addressed through a prioritisation of sustainable design principles and through the inclusion of a ground source heat pump and passive ventilation cooling.

Perhaps the best commendation is that everyone involved in the project at whatever level, particularly the architects and the construction team, really enjoyed being involved, and of course this made the whole project even more successful in its achievement.
Simon Bentley, temple steward, White Eagle Lodge

Isometric sectional lantern detail



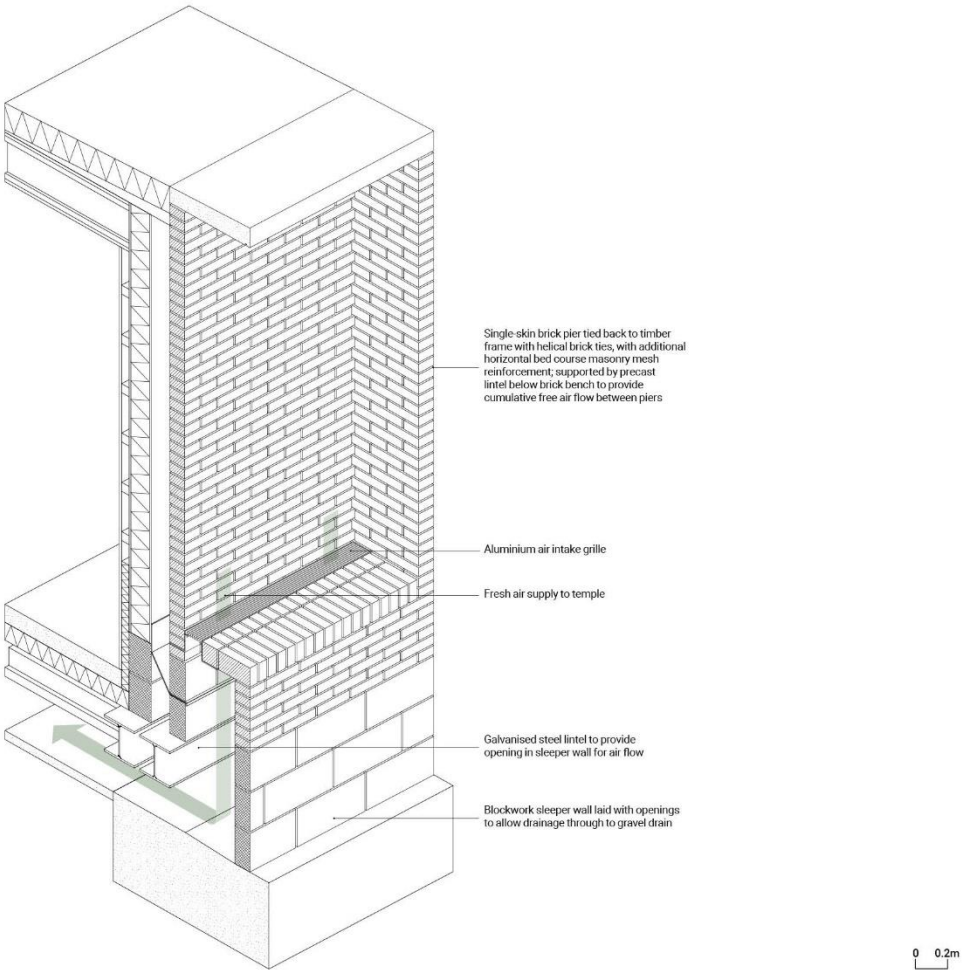
Working detail

An ancient track known as The Shipwrights Way runs alongside the site and follows the journey the Tudors used to transport timber to the shipbuilding city of Portsmouth. This pathway passes clay beds and chalk streams, and connects ancient oak forests to the south coast. The building makes use of each of these materials – a timber-framed structure, with a facing clay brickwork set within a chalk lime mortar. The materials are self-finished and selected to create a harmonious palette of tones allowing for quiet contemplation and encouraging a spiritual connection to the changing landscape beyond.

Throughout the building the structure is exposed and legible. Within the temple, a cast pendentive supports 48 Glulam columns that form a circular clerestory window. This window sits beneath a raised high-level dome, which terminates with a 1.2m-diameter glazed oculus rooflight. Traditionally, the pendentive is used to allow the placing of a circular dome over a square base – with some of the earliest witnessed in the Greek Orthodox Cathedrals of Istanbul in the sixth century. Here, the pendentive defies structural logic, with the increased mass and weight at the crown of the arch, narrowing to the base where the structural load path is at its greatest. Deep radial beams connect the central dome back to the square exterior envelope, which takes inspiration from the square plan of the historic 16th century Sikh Golden Temple in Amritsar. As with the Temple in

Amritsar, the square plan with entrances on each of the cardinal points is designed to welcome visitors from all faiths and from the four corners of the world into the principal sacred space.
Steve Wilkinson, associate, James Gorst Architects

Sub-floor ventilation detail



Architect's view

The building's environmental design strategy is grounded in passive design principles to reduce energy demand at source. This includes investment in the building fabric, insulation and airtightness to exceed building regulations requirements.

As a design team, we have ensured that any energy needed to facilitate the ongoing use of the building has been kept to a minimum, before employing additional green and renewable technologies. One of the stand-out innovations includes a more sustainable alternative to traditional, energy-intensive air

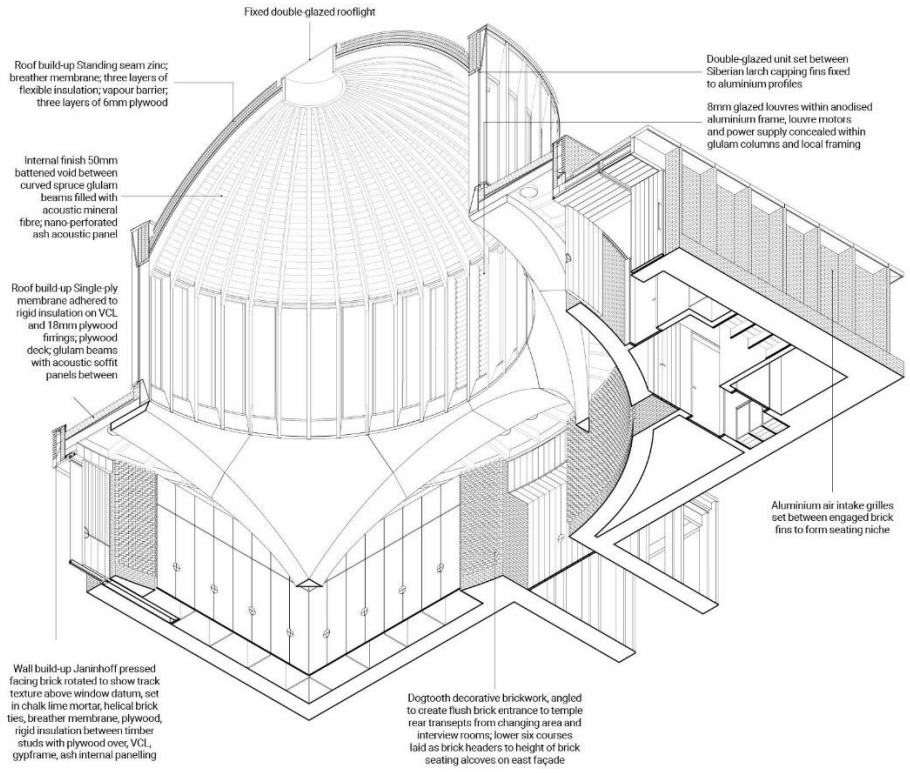
conditioning systems. Two sub-floor ventilation systems provide passive cooling by drawing external warm air through an underground labyrinth beneath the building. The thermal mass of the temple substructure supplies tempered air in the winter and provides free summertime cooling in the areas of the building with the highest occupancies.

This air supply is paired with automated louvres in the façade that allow warm air to escape when the building is in use with a full congregation.

On-site photovoltaic panels provide electricity and power the low carbon Ground Source Heat Pump (GSHP) installation. The buried GSHP array was sized following in-situ thermal conductivity testing of the site ground soil and provides all of the heating requirement of the building by utilising the site's rural location.

The challenge for these innovations came from the fact that there is no gas and only single-phase power on site, so careful analysis of the low building fabric heat loss and expected demand and occupancy profiles was required to ensure systems were not oversized.
Steve Wilkinson, associate, James Gorst Architects, and Luke Walters, senior engineer, Skelly & Couch Environmental Engineers

Temple worm's eye view



SKELLY & COUCH

Project data

Start on site March 2021
Completion November 2022
Gross internal floor area 586m²
Architect James Gorst Architects
Client The White Eagle Lodge
Structural engineer Eckersley O'Callaghan
M&E consultant Skelly & Couch
Quantity surveyor Jackson Coles
Project manager Jackson Coles
Principal designer Jackson Coles
Approved building inspector Assent Building Control
CAD software used Vectorworks
Annual CO_2 emissions 25.9 $kgCO_2/m^2$
Landscape architect McWilliam Studio
Façade and timber frame Pacegrade Architectural Façades
Acoustic consultant Theatre Projects
Main contractor Beard Construction

Performance data

Percentage of floor area with daylight factor >2% 75% (excluding WCs, plant rooms and stores)
Percentage of floor area with daylight factor >5% 47% (excluding WCs, plant rooms and stores)
On-site energy generation 4,550 kWh/yr
Heating and hot water load 19.73 $kWh/m^2/yr$
Total energy load 42.60 $kWh/m^2/yr$
Carbon emissions (all) 25.9 $kgCO_2/m^2$
Airtightness at 50Pa 3 $m^3/hr/m^2$
Overall thermal bridging heat transfer coefficient (Y-value) 0.1 W/m^2K
Overall area-weighted U-value 0.41 W/m^2K
Embodied/whole-life carbon 300 $kgCO_2eq/m^2$ (structure only), 462 $kgCO_2eq/m^2$ (including architectural finishes, MEP fixings, pipe and wires)
Predicted design life 50 years