Northumbria University Architecture Portfolios

LAND OF OAK AND IRON
A VISITOR CENTRE FOR WINLATON MILL

Dr Peter Holgate

https://www.northumbriaarchitecture.com/research

Northumbria University NEWCASTLE

Front cover

Internal view of cafe space

1.Project Details

Principal Researcher	**Dr Peter Holgate** **Matt Glover | Prof. Paul Jones**
Title	**The Land of Oak and Iron Heritage Centre**
Output type	**Design Proposition | Physical Building | Museum**
Curator	**Dr Peter Holgate | The Land of Oak and Iron**
Function	**A Visitor Centre for Winlaton Mill**
Location	**Gateshead, Winlaton Mill**
Client	**The Land of Oak and Iron**
Practical completion	**2015 - 2018**
Funding source	**Historic England | Heritage Lottery**
Budget	**£3 million**
Area	**Derwent Valley**
Collaborators	**Northumbria Universtiy | The Land of Oak and Iron | Gateshead City Council | Groundwork**
Co-exhibitors	**Dr Peter Holgate | The Land of Oak and Iron**
Support/acknowledgements	**Dr Peter Holgate | Northumbria Universtiy | The Land of Oak and Iron | Groundwork | Gateshead City Council | Historic England | Heritage Lottery**
URL	**Xxxx**

1.Summary

In 2015, a design team from Northumbria University, led by Dr Peter Holgate and Professor Paul Jones, were asked by the charity, *the Land of Oak and Iron*, to help them to design a new visitor centre and external landscape on the site of Ambrose Crowley's 17th century Iron Works. Local historians, with help from Northumbria University, put together a convincing case to Historic England and the Heritage Lottery that this site was the birthplace of the Industrial Revolution, predating the operations in Coalbrookdale in Shropshire, previously considered to be the first location of mass production.

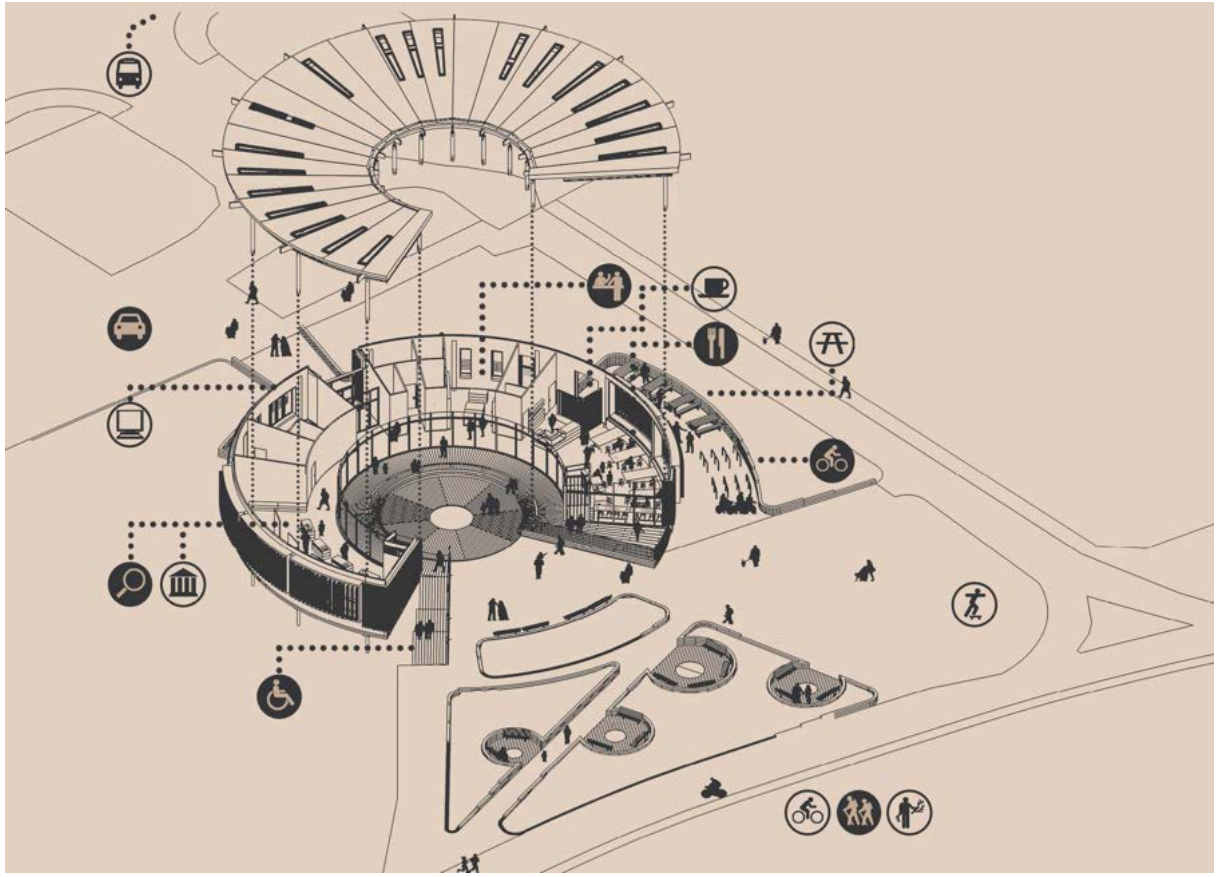
Land of Oak and Iron had previously made an application to the Heritage Lottery, but were unsuccessful. The funder acknowledged the historic importance of the Iron Works in the Derwenthaugh Valley, but they did not think that the design produced by the commissioned architect, for the visitor centre, was of sufficient quality. They argued that a poor quality design would ultimately undermined the site's importance. The Northeast's Scheduled Ancient Monument (NE-SAM) Officer had also rejected the plans outright, regarding the site as being of international significance and therefore requiring a high quality project.

Over the following six months, the team from Northumbria University undertook historic research to inform an extensive codesign and community participation programme. This resulted in working with over 50 stakeholders and 1000 members of the public on the design of the facility, and in the meantime advising the charity on their application for grants to multiple funding bodies. They also liaised with planners and Historic England to gain their support. This extensive and considered approach resulted in planning permission being approved along with the endorsement of the NE-SAM officer. In excess of £3 million pounds of funding was dedicated to the project, over £2 million from the Heritage Lottery. The project represents an interesting collaboration between the charity, Northumbria University, Gateshead City Council, Groundwork and numerous designers and artists. The project had many technical, planning and heritage issues to overcome, due to it being located as a Scheduled Ancient Monument, on a flood plain, and being built on top of important archaeology. The research questions for the project were derived from the issues of the site and the brief set out by the charity.

□

2. Statement of Significance

1. The visitor centre is the first building to be built within the Derwenthaugh Scheduled Ancient Monument. The strength and justification of the multivalent approach taken by the design and research team persuaded Historic England to consent permission for this development to proceed. By contrast, two previous schemes for this locale, developed by other design teams, had been refused.



2. The rigour and application of the design research employed led to funders, including the Heritage Lottery Fund, granting in excess of £3 million to procure the capital works project (incorporating the key building, associated landscaping and a sculpture park). A previous application for the site had been rejected on account of a poor-quality design submission that evidenced a lack of historic understanding and underpinning.

3. The completed capital works project (building, landscape and artwork) has driven an increase of approximately 250 000 visitors annually to the Derwenthaugh Park.

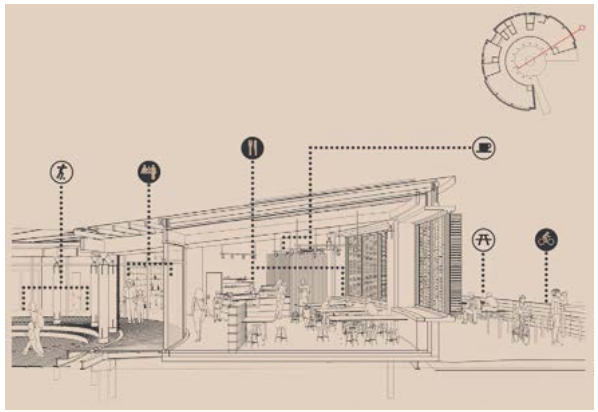
4. Accordingly, this capital works project has created 16 new jobs, as well as demand for 22 additional volunteers towards the running of the park and its associated facilities

5. Financially, the Land of Oak and Iron project is currently generating in excess of £350 000 per year to the local economy.

6. In its first year after opening, the visitor centre was visited by over 500 000 people, including 50 school visits from the North-East. Through the permanent exhibition, visitors and students were exposed to the history and significance of the Derwenthaugh area, and its unique contributions to the Industrial Revolution.

7. The project has won or been placed in nine regional and national design awards, including the CABE Building of the Year award 2019; winner of the Royal Town Planning Institute (RTPI) Planning Excellence award; commended in the RICS Tourism Facility of the year; and Best Small Project in LABC regional awards, receiving commendation in the national awards. ◘

3. Statement of Rigour



The realisation of the project has involved extensive practice and praxis-based design activities, as well as more traditional research methods to answer the three research questions posed.

1. Participatory and co-design research methods, including four one-day codesign workshops with over 50 stakeholders, were employed to shape the brief and reflect the various demands. Five sketch designs were produced from the codesign activities, with over 1000 local people being consulted to express their views and preferences. This consultation process of data collection ran over three weekends.

2. Because of the historic nature of the site, extensive site investigations including a variety of types of surveys and site analysis (both digital and analogue) were employed to establish boundaries, important thresholds, topography, site conditions, contamination, services, existing landscaping, and key views in and out of the site. These surveys also included extensive mapping of potential visitor movements to and through the park, in order to deduce the best location and orientation for the facility.

3. A comprehensive literature review was carried out on the history of the site. This inquiry incorporated archival research on the work and life of the industrialist Ambrose Crowley, mapping the historic layout of the site and the associated route and wagonways, and a comprehensive exploration of the significant contribution Winlaton Mill made to the Industrial Revolution. This research was employed to derive a poetic and site-specific response to the brief.

4. A thorough and systematic design process was employed, utilising drawings, surveys, model-making, painting, computer simulation and visual preference methods. This continual re-framing of the design problem (Schon) focused efforts towards the synthesis of a comprehensive design process towards satisfaction of the brief.

5. Innovation extended to the employment of advanced computer modelling in order to collaborate with the supply chain and manufacturers, facilitating building components to be cut and formed from design drawings. The development of a digital model enabled accurate modular coordination and sizing of building components to be produced, thereby minimising construction waste. This built upon previous theoretical research (Alwan, Jones, Holgate). The complexity of this digital model allowed the building weight to be accurately established, as well as calculating the embodied carbon/energy of the proposal, and its predicted operational energy. ◘

4. Statement of Originality

1. Due to the sensitivity of the site, ground penetrating radar (GPR) was used to locate any archaeological structures; this data was integrated into a BIM model in order to avoid damaging important heritage.

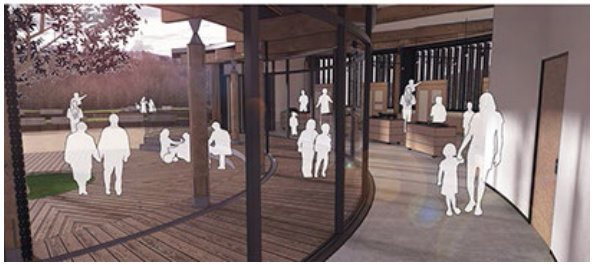
2. The building uses a novel approach to groundworks, including the use of a circular ground beam supported on non-uniformly place mini piles to support the superstructure's dead and live structural oads, while avoiding disturbance to any archaeology or existing services located through the GPR surveys.

3. A project-specific cassette system was designed for the external walls to ensure that the building was ultra-lightweight, minimising the potential for structural settlement and similarly protecting the archaeology below.

4. The project was a collaboration between local artists and designers in the production of project-specific original artwork and design projects within the building and park.

5. The design research revealed new insights into the history and physical nature of the site that was included in the permanent exhibition. This exploration directly informed the design approach. ◘

5. Brief and Contributors



The Contributors

Design Architects: Matt Glover, Dr Peter Holgate, Prof. Paul Jones Northumbria University.

Advisor and consultant on visitor centres, Professor Ruth Dalton. Northumbria University.

Research assistants: Joss Ryan, Bart Vautravers, Elena Ionescu, Leanne Barlow. Delivery Architects: Gateshead Council Architects Department. Dr Vlad Ladinski Engineers: Cundall

Environmental Consultant: Dr Zaid Alwan, Northumbria University. Community Artists: Cathy Duncan, Andrew McKeown

Landscape Architects: Gateshead Council Landscape Department

The Brief

The brief from the charity was to design a visitor centre with a café, a shop, community offices for Land of Oak and Iron (LOI) and for the Northeast division of the organisation, *Groundwork*, exhibition spaces and educational rooms. Groundwork is a partner in the project, providing finance and staff for the café. The visitor centre component would include permanent and temporary exhibition space, showcasing the importance of Winlaton to the Industrial Revolution. The café was to have 75 covers inside, with a further 25 outside, supported by a commercial kitchen.

The LOI and Groundwork were committed to a ultra-low energy building that was sensitive to its location and preserved the biodiversity of the site through its construction techniques and material use. There were strict stipulations from the NE-SAM officer and *Historic England* about the location and construction of the building, so as to not disturb the archaeology.

The surrounding landscape was also considered to be fundamental to the success of the project, as well as a high quality sculpture park that would emanate from the building and have work scattered across the 20 acre site at key locations of Ambrose's Ironworks. ◘

6. Historic Context

Fig 01 _ Artist impression of Crowley's work c. 1820

Fig. 02 _ Aerial view of Crowley's work c 1965 (massively expanded in the C. 20th)

Fig. 03 _ Early 18th century slipway as part of Crowley original operation

A case was made to funding organisations, including the Heritage Lottery, that Winlaton was the birthplace of mass-manufacturing, as long ago at 1692, instigated by the industrialist, Ambrose Crawley. He set up a nail and chain production business at least 15 years before mass manufacturing at Coalbrookdale in the black country, the site originally considered to be the birthplace of the Industrial Revolution. Crowley moved to Winlaton in 1691 from a small operation in Sunderland, leasing an old corn and a fulling mill, and four acres of land for storage and possible expansion. The site was described as being of high-quality rural land, adjacent to a fast-flowing River Derwent, a tributary of the River Tyne, that was perfect for trade opportunities, Flinn (1962) see fig **1** . Over the next 15 years, he built what has to be considered as the greatest industrial organisation of his age, ibid (1962). Much of the demand for Crowley's products came through shipbuilders, which expanded his business as naval contracts increasingly required iron goods, such as nails and straps. As his business developed, he also began to produce axes, bolts, chisels, shovels, and different types of hinges for the domestic market, as well as over 100 different kinds of nails. He constructed possibly the largest water-powered forge in existence at the time, as well as a slitting mill at a nearby site, which later became known as Winlaton Mill. To deal with the increasing scale of his operation, he also built warehouses, a plating forge, smiths' shops, a second furnace and offices for his many clerks.

Importantly for his legacy, Ambrose was regarded as the first genuine philanthropist, building many workers' houses and setting up a welfare system to look after retired workers and the families of men who died while in his employment. He provided a company doctor, a chaplain and schoolmasters to help educate the children of his workforce. Crowley even set up a court of arbitration for settling internal disputes between his workers. The whole operation was very fair and democratic (Flinn 1962), unlike the industrial operations that followed in the later years of the Industrial Revolution.

Little of the Crowley's buildings exists above ground, but much of his infrastructure is still present, however, including wagonways, trackways, water culverts and dams etc (see fig 2). His operation eventually expanded the site to in excess of 20 acres, with principal facilities connected by the wagonways and trackways that still exist today. ◘

Fig. 04 _ 18th century painting of Winlaton

7. Site Description

Fig. 05 _ Aerial view of site

Fig. 06 _ Ground survey showing archaeology and proposed building location

Site Description

The chosen site for the project was originally council land donated to the *Land of Oak and Iron* charity on a long term (99 year) lease. The land was part of the Derwenthaugh Park; located near to the Gateshead suburb known as Winlaton.

The Country Park runs from Swalwell to Rowlands Gill in Gateshead through the River Derwent Valley and is made up of several countryside sites joined together, including the Derwent Walk and Derwenthaugh Park. This whole area was industrialised in the 18th and 19th century, and over the last 50 years it has been progressively remediated and returned to a natural landscape. What is left of the historically important sites has been preserved, although the majority of the original industrial footprint was demolished at a time, back in the 60s and 70s, when the importance of the heritage was less well appreciated.

The site is located between the A694 and the River Derwent to the west and east respectively. To the North is the Swalwell Rugby Club; the South opens up to the park with continuous views towards Rowlands Gill and Gibside Hall. The River Derwent has trees running along its length; the research team recognised that this would give a natural backdrop of the visitor centre from the east. The site is generally flat, which resulted in flooding in the past as water ran off adjacent hills that surrounded the valley, into the park. The process of river dredging had ceased in recent years through the austerity measures. The council was forced to remove material from the river Material in 2013 after the last flood. All available sites for the visitor centre were in a surface water flood zone, so there was no advantage or disadvantage of choosing one site over another. Despite the flood risk, the design team and Gateshead Council believed we could alleviate the risk by renewing land drains and a Sustainable Urban Drainage strategy. The building was also elevated by 600mm. ◘

8. Research Questions

The research questions have been formulated from the design brief from the client group, Land of Oak and Iron and better articulated through undertaking a literature review and engaging in participatory research and codesign activities with the potential future users of the visitor centre and volunteers from the charity.

1.
How can codesign and participatory methods be used to design the visitor centre and promote community engagement and ownership of the project?

2.
How can site-specific historical research (especially relating to Crowley,'s Iron Works) be used to inform poetic narratives and concepts for the design of building, as seen in its form, materiality and detail?

3.
How can the new facility improve placemaking within the park to maximise visitor experience and revenue opportunities?

4.
How to design the building to be maximise environmental efficiency, while minimising waste and pollution?

Fig. 07 _ Preliminary view of the exhibition space

9. Research Methods

This research project is a case study that utilises mixed methods. The methods have been used in combination to be able to answer the question that have been derived from the design brief.

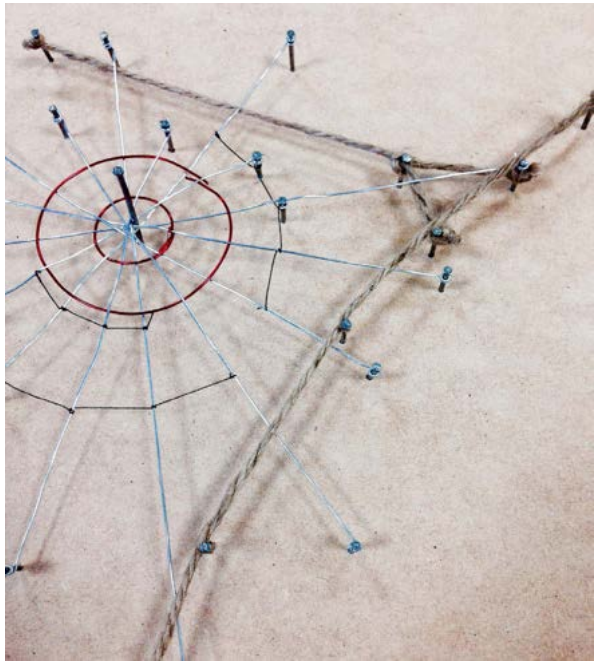


Fig. 08 _ Concept model of building emanating from old oak tree on the site

- Co-design and participatory research through co-design activities.

- Primary and secondary analysis of papers, report and books on history of site and exploration of building precedents, including visits to similar facilities.

- Collaboration with manufacturers and supply chain to undertake designs of building components.

- Practice and praxis-related activities including computer and physical modelling, and drawing, (in combination) used to develop and test design solutions.

- Pnvironmental modelling with use of computer software to calculate embodied and operational energy, carbon u-values and air leakage.

Taxonomy

Conceptual design iterations
Drawing
Model-making
Construction methods
Spatial analysis
Participatory activities
Text-based research
Phenomenology
Theoretical research
Fieldwork
Photography
Topographic survey
Design research
Trial and error experimental design processes
Design-led research
Historical research
Typology research
User experience
Diagramming
Interviews/user consultation
Scale modelling
Digital fabrication methods
Site analysis/study
Visiting similar building types

10. Question 1 & 2

How can codesign and participatory methods be used to design the visitor centre and promote community engagement and ownership of the project?.

How to develop the site-specific poetic narratives and concepts (especially relating to Crowley's Iron Works) to inform the design of the building, as seen in its form, materiality and detail?

Method

Co-design and participatory research through co-design activities.

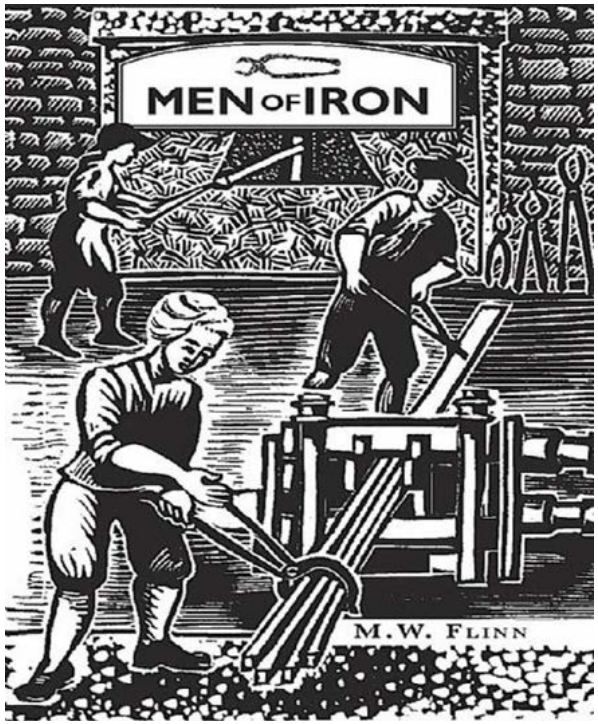
Primary and secondary analysis of papers, report, books.

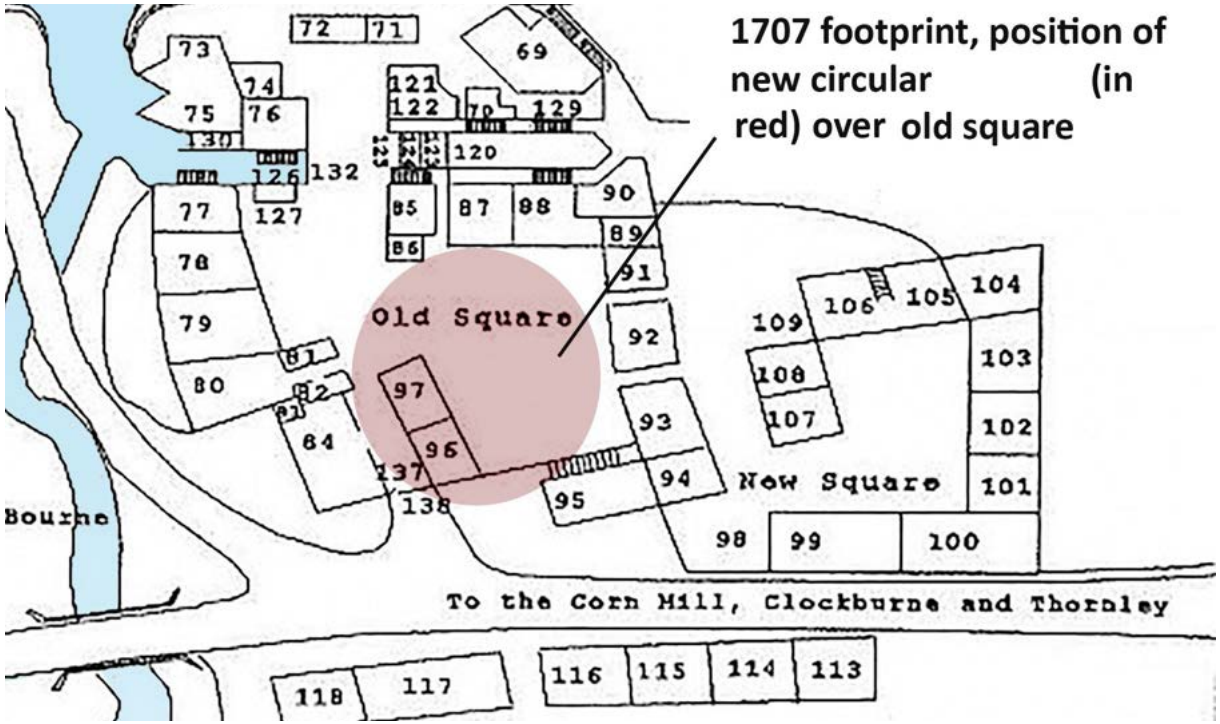
inscriptive methods, surveys etc

Practice and praxis related activities

* Questions 1 and 2 are inextricably linked within the design process for the building, so they will be discussed together.

The research team, with the help of the client group, organised codesign, participatory and community consultation events over a six month period to engage local people in the design the visitor centre at Winlaton. The participants were generally people from Winlaton, volunteers from the Land of Oak and Iron, local historians, members of Groundwork NE and Gateshead Council. To begin with the research team ran a number of full day codesign workshops with the client group, with a view to define the brief and start the process of designing. There was full engagement in defining the brief, but from a very early stage in the process it was clear that the client group were uncomfortable with any of the design activities. A successful co-design process engages participants on their terms and through their lens (Lee, 2008). Producing *physical* design output is not always appeal to certain groups and can be an ineffective process. Client input can be just as effective through verbal discussion around ideas and can help professional designers gain new insights towards a successful project (Zamenopoulos and Alexiou, 2012). It quickly became clear that the participants, especially the local volunteers and historians, were a very useful resource for the research team to inform their design process. The local historians had extensive knowledge of Crowley's operation and the history of Winlaton, which the research team could use to develop interesting and poetic narratives and concepts to input into the design of the visitor centre. Indeed, the input of two of the local historians, Val Scully and Geoff Marshall, was particularly helpful as they had unearthed a fascinating narrative written by Prof. Michael Flinn in 1962 about the work of Ambrose Crowley. The original text had been lost and was out of print. This pair spent hundreds of hours transcribing Flinn's handwritten and typed notes into a new book using the same title: *"Men of Iron"* see fig 9. Flinn's archive had extensive information on many of Crowley's original buildings. Their advice directly informed the design process through their visual descriptions of the original buildings, advice of the arrangement of buildings, their character and location. Crowley's buildings were demolished in the 1960s due to them being dilapidated and dangerous, so this information was especially useful. They also provided information on Flinn's description of the natural features of the site; the processes involved in the production of the iron; the social structure and governance models; and Crowley's philanthropic sensibilities and how this impacted on the layout of the site. The design team independently also unearthed important information in the Tyne and Wear Archives, including a survey undertaken in the 60s of the industrial buildings see fig 10. It was believed that this was carried out in advance of the demolition. There were also a number of photographs taken in the Victorian period.





above

Fig. 09 _ New edition of Flynn's book by Scully and Marshall

above right

Fig. 10 _ Survey of Crowley's works

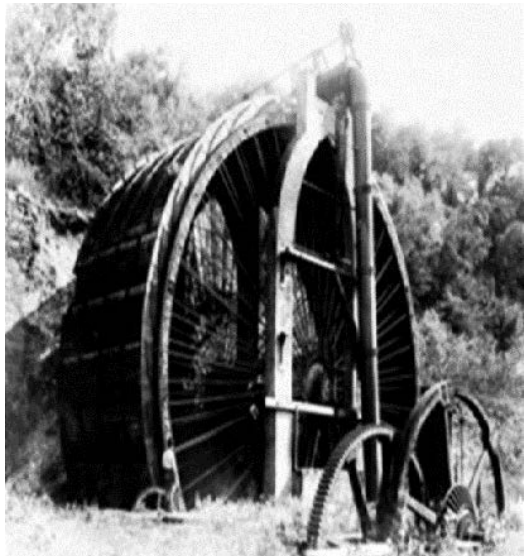
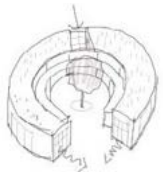
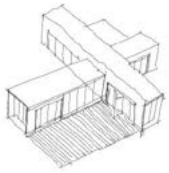


Fig. 11 _ Photos of Crowley's works taken in the Victorian Period

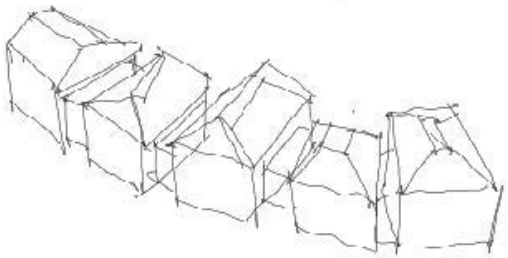
Industrial Building



Waterwheel Form



Forming Courtyards



Foundry Collection

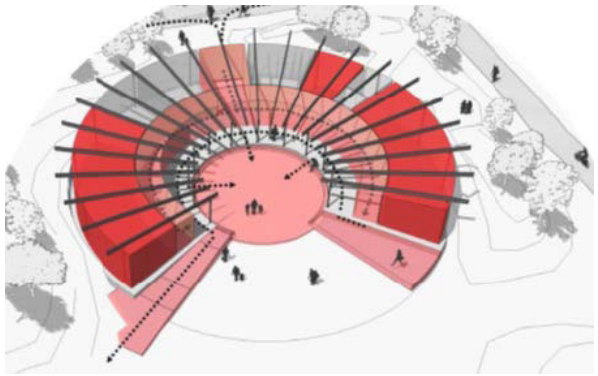


Fig. 12 _ Examples of concept drawings developed from codesign

To promote discussion in the second codesign workshop on the design of the visitor centre, the research team produced a number of sketch schemes. These designs were inspired by the research at the Tyne and Wear archives; the general history of the area, and the information from Scully and Marshall from Flinn's book. Five sketch schemes were presented. These were derived from industrial forms, such as Crowley's factories, particularly their layout i.e courtyard buildings and linear blocks seen in the old photos. Other schemes borrowed from Crowley's industrial process, such as the water-powered forge and the foundry. This approach was a much more successful: the client group were able to visualise the buildings on the site, albeit as sketch ideas. They were therefore much more engaged and vocal than in the previous meeting about the design, expressing views and ideas on each project presented. They even began to express ideas through drawings and diagrams. The sketches in fig 12 (upper left), are summaries of schemes presented and ideas from the client group.

The next phase of codesign involved the input of the general public. The client group and the research team were committed to involving the community of Winlaton in the design process, so the five sketch schemes presented to the client group were developed to a standard that could be used for community consultation events with the residents. These projects were described as being preliminary designs and that all feedback would be recorded and used to inform the final scheme. The residents were asked to choose their favourite. Four community consultation events were organised and over 1000 local people contributed. The research team described each scheme as poster presentations and engaged the public in semi-structure interviews (see fig 13). There was also a book for anonymous comments. This community consultation process was an important part of the planning application, due to the sensitivity of the building being located within a Scheduled Ancient Monument, and a public park where there had been no buildings built since the 1960s.

The scheme that scored the highest in the public vote was the waterwheel project (see fig 12 and fig 14 upper right). The design team and the client group thought that this had the capacity to complement the park and develop sense of place (discussed in Q3). The original idea for the scheme was derived from the Victorian waterwheel that powered Crowley's forge. In a description in the archives this wheel was described as being removed from its supports in the 20th century lying horizontal for several decades near to the proposed site. This concept appealed to the client group and the community on a number of levels: they particularly liked the connection to the site and the industrial process. By adopting the circular form, they thought that its softness, would be better integrated into the landscape than the other projects presented. They also favoured the materiality, with the proposed scheme using oak and iron as principal external materials. One of the local historians thought the circular form referenced Crowley's egalitarian beliefs and the democratic governance model. Historic England, Gateshead Planning department and ultimately the heritage lottery (through providing funding for its build) were very supportive of the proposed scheme; they thought it was worthy of this important location.

Fig. 13 _ Poster presentation at Winlaton Community Centre

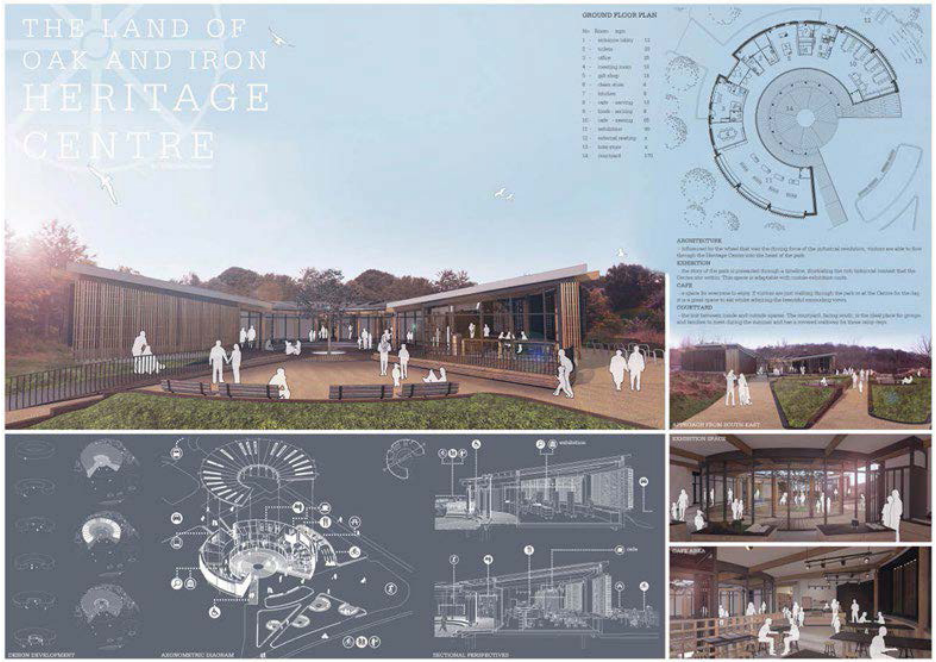


Fig. 14 _ Examples of preliminary schemes for community consultation

Fig. 15 _ Iron fins referencing paddles

Fig. 16a _ Artwork and sculpture

Fig. 16b _ Artwork and sculpture

Fig. 17 _ Dredged aggregate

The design process remained an ongoing continuous dialogue with the client group. Once the brief and the building strategy and location were agreed, the research team, within codesign workshops, looked to strengthen the contextual connection that the building made with its site, as part of the detail design phase. A popular project was the installation of an intensive green roof. Originally it was conceived as sedum, but the research team suggested growing species of plants found in the park, which in turn would contribute to the site-specific nature of the scheme and attract local biodiversity. Another project was a collaboration with a local metal fabricator to produce the fins for the buildings; these were a reference to the paddles of the waterwheel. The codesign activity also included producing artwork and sculptures for the building as a collaboration with local artists; these referenced Crowley's operations and the wildlife found in the park (see fig. 16 a and b artwork by Cathy Duncan, Andrew McKeown). Another interesting contextual reference was the use the pebbles that were dredged in 2013 from the river (to mitigate flooding risk) as aggregate for the polished concrete floor, rather than using brought-in aggregate (see fig 17).

The concepts derived from the industrial process, the materiality, the site specific green roof, the architectural details were all interesting codesign collaborations and conversations with the client group and volunteers from the charity. The building brought the community together and has been hugely successful. This is confirmed by feedback from visitors to the building and from member of the client group; the comments have been universally positive.

'I have lived in Winlaton all my life, I am embarrassed to say I knew little of the importance of this area to the UK's industrial history. This much needed facility is fantastic for the people of Winlaton. I was pleased to be given the opportunity to input into the design'. (

Anon from visitor book)

'The team at Northumbria were fundamental to the client group realising a successful project. Their approach was inclusive, inspiring and incredibly thorough. We now have a building that has far exceeded our expectations in terms of quality; this has resulted in a huge amount of community pride and involvement in the park. It has also helped generate significant income through the café and shop'.

(Paul Scott, Senior Funding officer Gateshead Council)

'One of the many notable areas of success relates to a boost in local understanding and appreciation of the contribution of Derwenthaugh Valley to the Industrial Revolution. Visitor feedback has emphasised how much individuals, even locals, have learnt about the area from the visitor centre'.

(David Marrs, Chairmanof Land of Oak and Iron)

□

11. Question 3

How can the new facility improve placemaking within the park to maximise visitor experience and revenue opportunities?

Method

Co-design and participatory research through co-design activities.

Primary and secondary analysis of papers, report, books, on history of site and exploration of building precedents including visits to similar facilities.

Practice and praxis related activities including computer and physical modelling, and drawing, (in combination) used to develop and test design solutions.

Placemaking is an important activity that connects people to their physical environment, through the creation of public spaces and amenities. This activity is fundamental to shaping and enhancing where people live, work and socialise; places are settings for social interaction. According to Meadows (2020), as a process it concerns building and improving facilities that serve physical, cultural, and social objectives promoting of civic pride, neighbourhood connections, economic development, environmental sustainability and cultural education. It should lead to better health outcomes, happiness and wellbeing of people. Local people become intrinsically motivated to create enriching places that relate to them, Silberberg et al. (2013). Communities have their own cultural identity that needs to be acknowledged when placemaking- it is not a universal application or procedure, Bosman (2011).

Visitor centres and placemaking

Ruth Dalton was a collaborator and advisor on this project; in her 2017 book: *Designing for Heritage: Contemporary Visitor Centre*, she argues that a good visitor centre implicitly enhances a sense of place. In addition to their community function they fulfil other placemaking roles: they should be a *lens* that not only reflects back the building's setting, but focuses people's attention on what is special or important about a landscape. Visitor centres should enhance placemaking by amplifying the phenomenology of a landscape, its memory and the vernacular. On a more pragmatic level, they can aid orientation, and help organise existing routes and paths and other extant features in the landscape. She argues that the building's orientation is fundamental to good placemaking: people will not engage if the climatic conditions are incorrect. Facilities being located in cold or windswept locations and those too removed from activity are unlikely to be successful. Opening up the visitor centre to views or activities is also very important. These building undoubtedly improved the visitor experience, which is fundamental to good placemaking. They have an educational role, most often supporting a heritage site or wildlife area, through their exhibitions and educational facilities they help interpreting the landscape for non-experts. All of the above were key placemaking functions that the research team considered when designing the visitor centre and its associated landscapes. The use of codesign and participatory methods with the client group, the volunteers of the park and the general public, has already been discussed, particularly in the sense of establishing contextual narratives that help *anchor* the building to the site and create a *placemaking lens* as described by Dalton.

Fig. 18 _ Site plan showing access points into park.

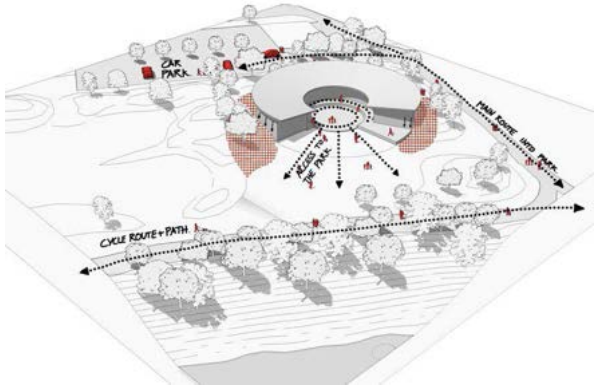
Fig. 19 _ Local historian taking visitors on a heritage trail, starting at the visitor centre.

As well as the placemaking activities with the client group, the research team also worked with the park warden and the volunteers to develop the strategy to improve the park as a community resource. This was done by connecting the new facilities to the existing historic and geographic features within the Scheduled Ancient Monument. In accordance with Dalton's assertion, that the correct placing of the building is vitally important to maximise footfall, prior to designing the building, the research team recorded how many visitors entered the park through the five principal entrances. This exercise was carried out during a weekend, when 70% of weekly visits occur. It was found that 60% of visitors arrive on foot and enter near to Swalwell Rugby Club. There are several other access points to the park see fig 18, but our modelling demonstrated that this location was by far the busiest. When the rugby club is not in use, the public travelling by car to the park generally use the club's overspill carpark. This also helped to establish it as the busiest entrance. The mapping information was presented to the charity and Gateshead Council; we proposed locating the visitor centre near to the Swalwell Rugby club (also see fig 5). Gateshead planning department argued that a new carpark was needed, due to the anticipated increase in visitor numbers. The building's location was on the site of Crowley's main buildings (see fig 6); the new building therefore had the capacity to become a hub from which to begin walks and access the heritage trails.

Once the building location was decided, the research team could then concentrate on how it could maximise footfall. It was agreed that all nature walks and heritage trails for locals would begin at the visitor centre. There is over 20 miles of pathways that could be utilised to improve fitness levels. The visitor centre's form with the circular courtyard was a perfect space to meet and join the activities (see fig 19). The café and shop would benefit from the footfall and people would view the exhibition. Prior to building the facility there was no obvious place for people to meet for such events and nowhere to get refreshments.

Dog walkers were recognised as an untapped market. The visitor data showed that there were in excess of 100 000 dogs walks a year in the park, accounting for almost 50% of visitor footfall (excluding cyclists). Dogs and their owners are often excluded from cafes and visitor centres; the client group and general public, in the community consultation exercises, expressed that they were keen that the facility was dog-friendly.

150 000 cyclists that ride the *Coast to Coast* route go through the park annually. Winlaton is 21 miles from the sea. Before building the facility, cyclists had no reason to stop in the park. The visitor centre café is perfectly located to attract cyclists who would benefit from some refreshments before the last stretch of their journey. Therefore, it was very important that the cyclist could see the building, from the cycle path. Thought was given to how the landscaping could be altered to enhance the view of the cafe. The original sketch scheme showed the courtyard opening up to the south west and outstanding views of the park. This orientation was not conducive to attracting cyclists and any visitors using the main route through the park, due to the courtyard (and café) being obscured by existing bunds created when Crowley's buildings were demolished. We therefore rotated the building around by 90 degrees, and with the permission of Historic England and the planning department we proposed removing a number of the bunds so that the building could be seen and be better connected to the principal route (see fig 20 and fig 21). Bike racks and seats were also integrated into the external space. This approach was universally accepted as a positive placemaking move that would draw people into the building. The outlook from the courtyard to the wider landscape was not compromised, looking out to the river and the eastern hillside was an equally stunning view.



above

Fig. 20_ Diagram showing how building connects to cycle route and path.

left

Fig. 21_ Finished building opening up to cycle path and main route through park.

The educational function of the new visitor centre adds to the placemaking experience: it enables the visitor to learn about the context through its exhibitions and educational facilities. Most visitor centres support a special place, such as a heritage site or a wildlife area. These assets often need explanation to non-experts. The Land of Oak and Iron charity and the research team were committed to the educational function of the building, perhaps more than any other. Visitor experience is increasingly understood as a phenomenon. In the late 1990s, the Harvard economists, Pine and Gilmore, wrote about how developed economies were transitioning from a *Service* to a *Experience* economy. A consequence of this is that consumers in the new Millennium would rather spend their money on experiences than on material possessions. In this environment visitor centres (that have experience at their heart) have flourished, while other social structures such as the High Street have struggled. Pine and Gilmore (1998) argued that consumers have an expectation of distinct types of experience, that are classified as being either *passive* or *active* (see fig 22). In the context of the Derwenthaugh park, prior to building the visitor centre, *passive* experience involved moving round the park, absorbing the context and either searching out interesting features or stumbling upon them by chance. There was little or no explanation as what people were looking at. With passive experience there is the potential of escapism, where people find (or not) their own knowledge and experience.

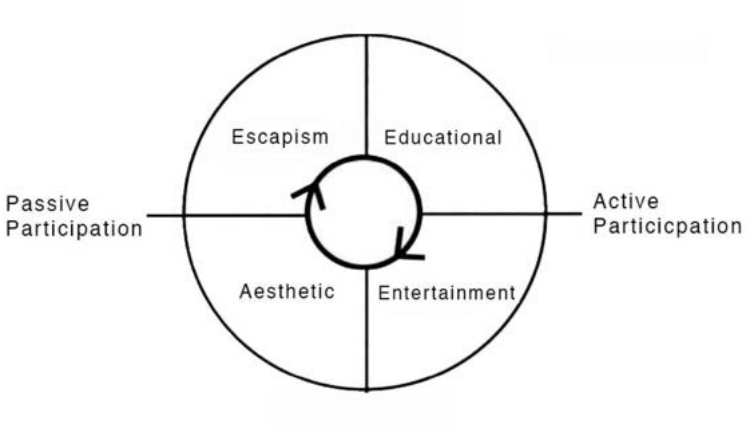


Fig. 22 _ Pine and Gilmore model of Consumer Experience.

Fig. 23 _ Volunteers room for preparing heritage and wildlife walks.

Fig. 24 _Activities put on by local volunteers for school children

The majority of visitors in the modern era have an expectation of an *active* experience. To ensure the viability of the visitor centre, and to appeal to more contemporary approaches to placemaking, the research team recommended providing for this change in consumer behaviour. The exhibition budget would not stretch to immersive exhibits and digital screens; the research team, with the client group's support, suggested the addition of multi-use educational spaces that could be used by school groups to receive talks and do activities prior to going into the park for heritage and wildlife trails. There were grants that could be applied for, for this provision. It was important for local historian volunteers to have space to prepare walks around the park (see fig 23). The scheduled ancient monument is, in effect, the primary asset of the park and the research team argued that a more authentic *active* experience would be to introduce the public to the heritage and wildlife, rather than place them in front of yet another screen. The exhibition was therefore seen as a 'staging' or 'framing' device with curated information within the building that enabled the visitor to go into the park and find historic artefacts that are hidden in the undergrowth, or spot rare animals species. The exhibition was expanded outwards to the park by way of notice boards and audio stations etc. located in important locations.

The response to the visitor centre and external spaces and exhibitions have been universally positive and there is a palpable sense of local pride in the quality of the place. The increase in numbers to the park and the visitor centre, and the revenue generated by the building, has hugely surpassed the client group's expectations and is testimony to a comprehensive placemaking strategy.

□

12. Question 4

How to design the building to be maximise environmental efficiency, while minimising waste and pollution?

Fig. 25 _Interior with high luminance through plenty of glazing.

Due to the sensitivity of the project in the site, the charity and the wider client group were committed to a ultra low energy building that was constructed on environmental materials with low embodied energy. This was also a stipulation by Gateshead Planning Department and that permission was contingent on a low energy environmental strategy. The research team are all committed to sustainable design and have expertise in this area.

Fabric First approach

The focus on energy efficiency started with fabric first principles utilising highly efficient external walls, floor and roof components, ensuring low air permeability to below ≤ 2.0 h-1 @ 50 Pa and energy-efficient mechanical and electrical installations, and achieving a U-value of 1.5 W/m^{2}k This is largely due to the expanse of windows and doors. Passivhaus, by comparison has U-Value of 0.1 W/(m^{2}K) and an airtightness ≤ 0.6 h-1 @ 50 Pa. We have 35% glazing to floor ratio comprising windows, doors and rooflights as part of the externals skin (see fig 25). One huge advantage by doing this is the quality of light internally and less need for artificial lighting. Average daylight factors in passivhaus schemes can be as low as 2.5% in certain rooms (Passivhaus Trust). By comparison, the Land of Oak and Iron has been calculated on our computer model to average 12% across internal spaces (see fig 25.

There are obvious environmental concerns due to an increase in window provision through potential heat loss and overheating, as well as glare. But we have specified, high quality triple glazed units achieving 1.0 W/m^{2}k, which is offset by the roof and walls that average a U-Value of .08 W/m2K. The orientation and roof overhangs mitigated against these issues. Along with increased windows we have also used more subtle design strategies such as adopting an open plan layout for light to penetrate. The wall and roof units are a factory assembled, light weight cassette system. Originally, we intended to use CLT panels, with an outer layer of insulation, this was to carry the green roof, but due to the spans involved the engineer argued a minimal steel frame was required. CLT panels became less efficient and cost prohibitive. A benefit of this new approach was that the insulation was integrated into the panel and therefore more efficient, which to some extent offset the embodied energy of the steel frame.

Fig. 26 _Planting trees to offset carbon.

Fig. 27 _Materials with low embodied energy.

Lighting systems

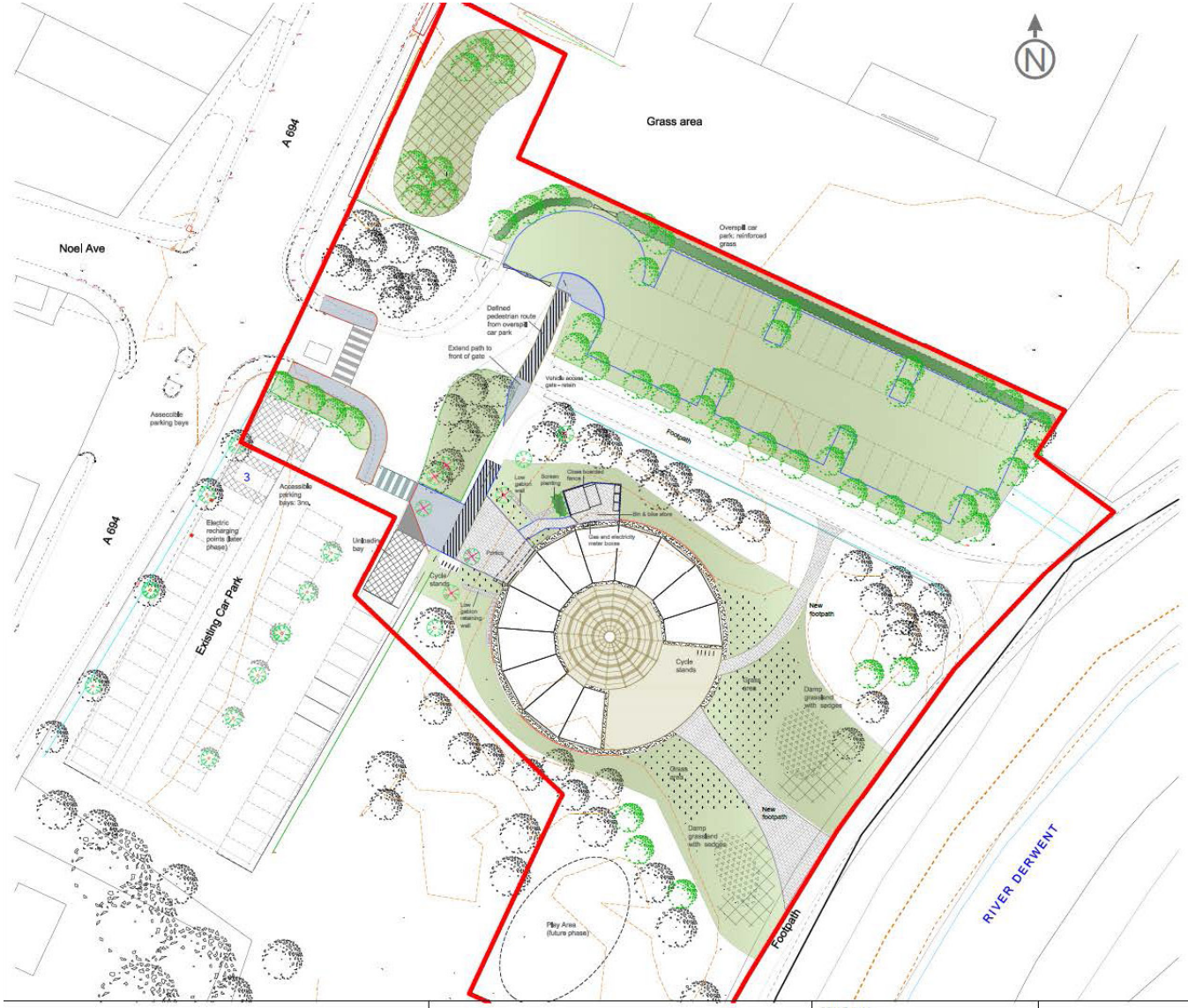
The lighting system is super-efficient LEDs with sensors set at 300 lux at 2.5 W/m2/100 lux. The extent of glazing has meant that the lights are on less than 10% of the time through the day, saving the charity up to £1200/year, based on average usage of similar buildings.

Heating strategy

Our heating strategy is based on installing 2 No. 15 KW air source heat pump, with underfloor heating. After 18 months the heating has only been needed in the winter months (Dec-Jan) due to the energy efficient skin, solar gain and heat generated from the open plan kitchen. The internal temperature is set at 18 degs instead of 21 degs (the default internal temp, source DECC 2016) to make further savings of approximately £2520 per year. Thus far there has been no complaints by the public about this temperature.

Renewable Energy

Unfortunately due to increased costs with groundworks, there was not the budget for renewable technology, but instead the client group have planted 30 trees per year an will do for the next five years (see fig 26). Each tree is estimated to absorb two tonnes per year over its life, equating to 300 tonnes being removed annually. The building is estimated to use 19.65 tonnes per year of C02 and has used 55 tonnes of carbon in its construction (source Dr. Alwan- environmental consultant). ◘



KEY

EXISTING

Trees to be removed

PROPOSED SOFT LANDSCAPING

Tree planting - on raised areas of topsoil

Native hedge planting and timber post and pigwire fencing

Reinstated or newly created grassland

PROPOSED HARD LANDSCAPING

Road kerb

Pin kerb

Resurfacing of existing bitmac path

New bitmac footpath surfacing: 30/50 over 100mm depth sub base

New bitmac road surfacing 30/60/70 over 290mm sub base

Thermoplastic marking

Yorkstone flags alternating with rows of permeable block paving laid over open-graded sub-base

'Flexipave' permeable surfacing

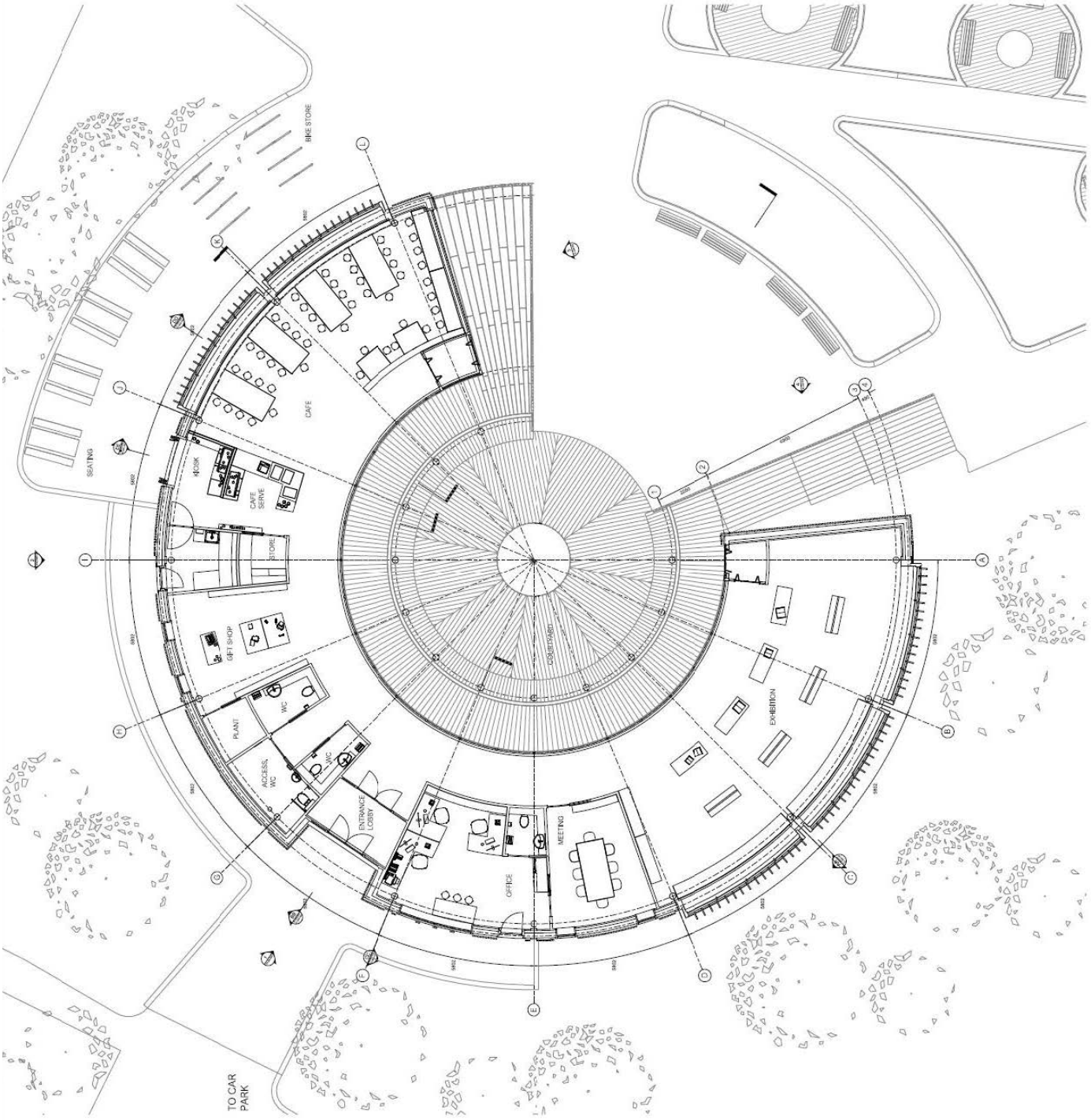
Filter drain

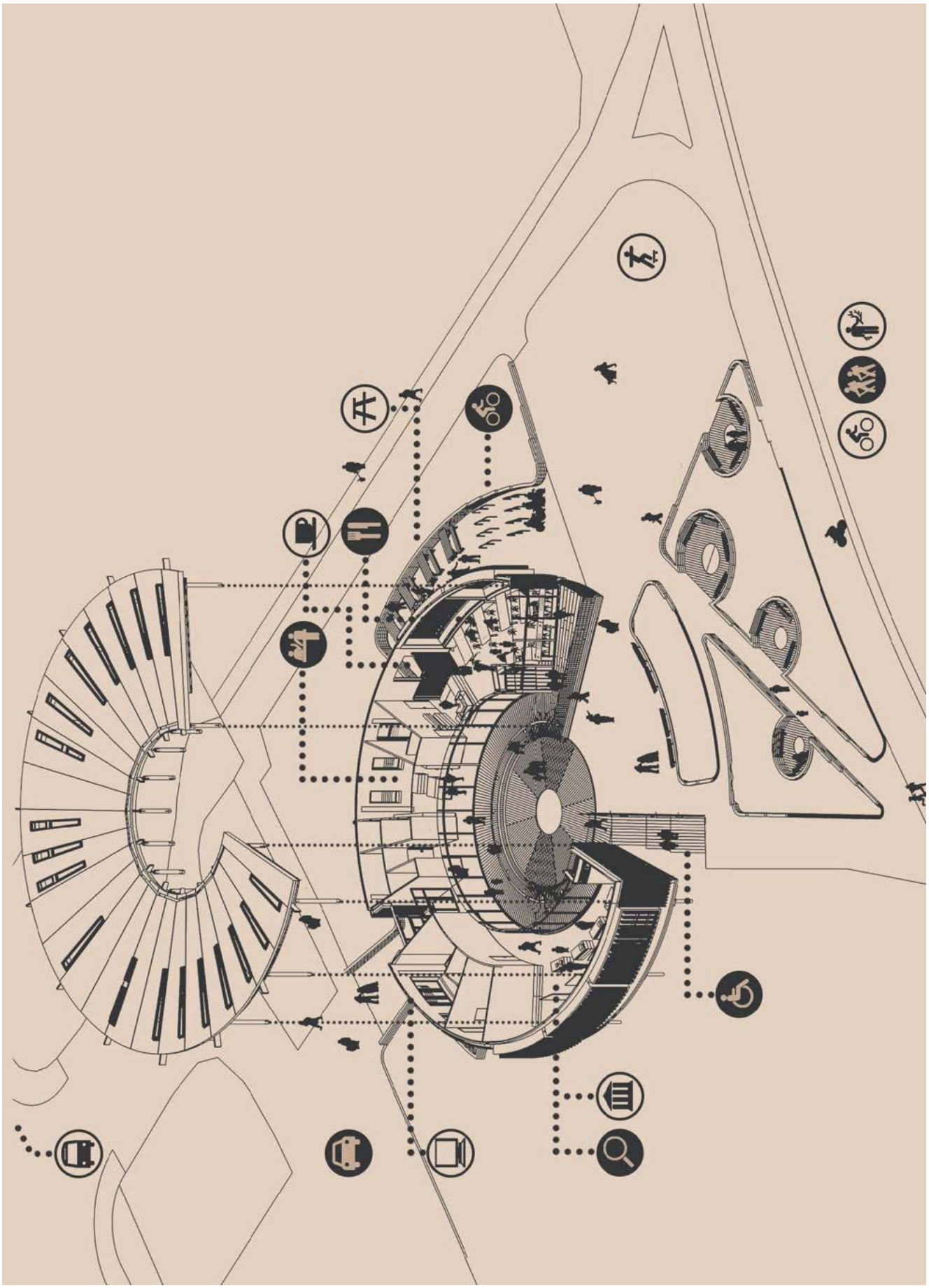
Slot drain

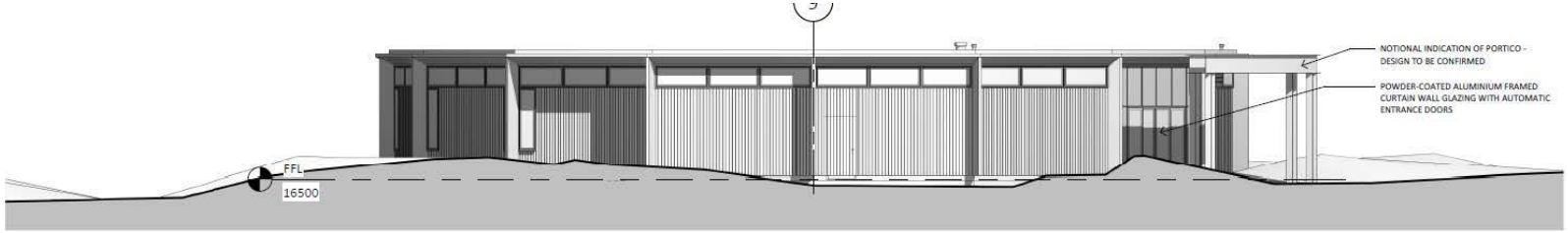
Reinforced grass matting 'Golpla' system or similar laid over open-graded sub-base

TITLE LANDSCAPE PROPOSALS	SCALE @ A1 1:250	June 2016	
CLIENT Land of Oak and Iron Partnership	DRAWN BY MM	CHECKED BY	Drawing No NE076_02
PROJECT HERITAGE CENTRE	Do not dimension off drawings. The contractor must check all dimensions on site. All discrepancies must be reported to the project architect immediately.		

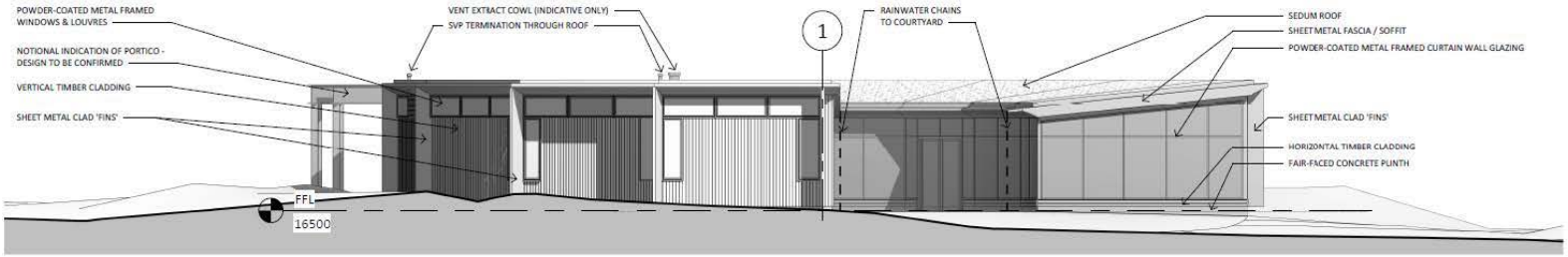
GROUNDWORK N E & CUMBRIA
Linthorpe Cemetery Lodge
Burlam Road
Linthorpe
Middlesbrough TS5 5AP
Tel: (01642) 815 663 Fax: 01642 816 024


BIKE STORE
SEATING
CAFE
KIOSK
CAFE SERVE
STORE
GIFT SHOP
PLANT
WC
ACCESS WC
WC
ENTRANCE LOBBY
OFFICE
MEETING
COURTYARD
EXHIBITION
TO CAR PARK

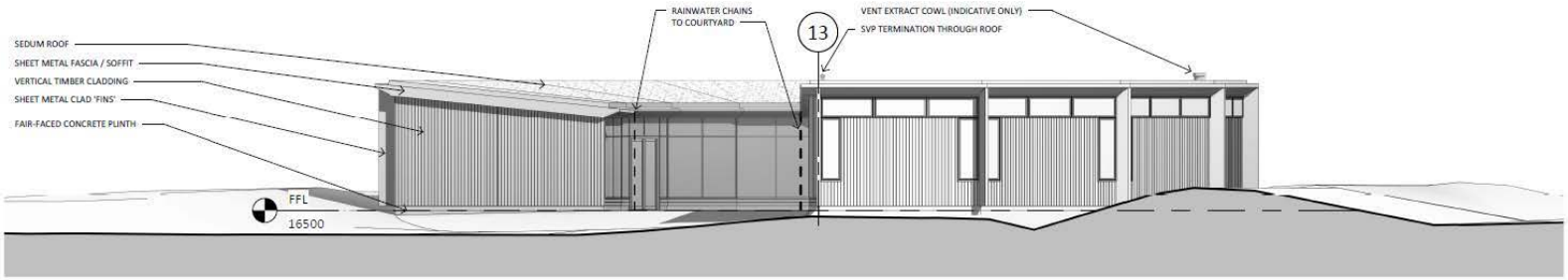




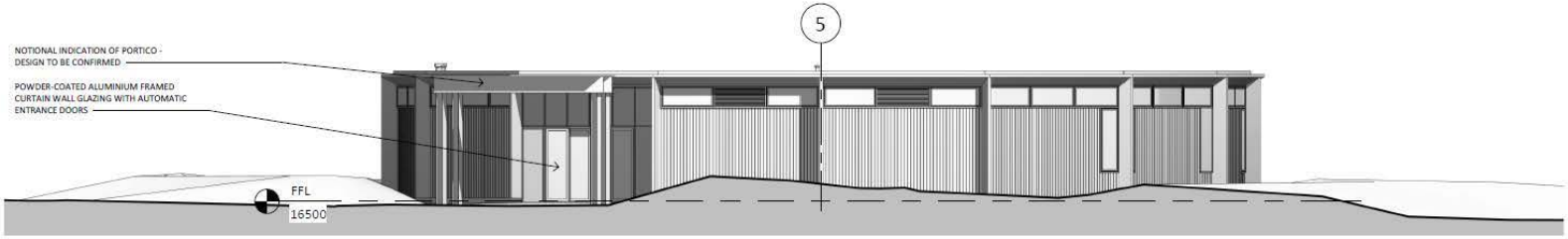
NORTH
1 : 100

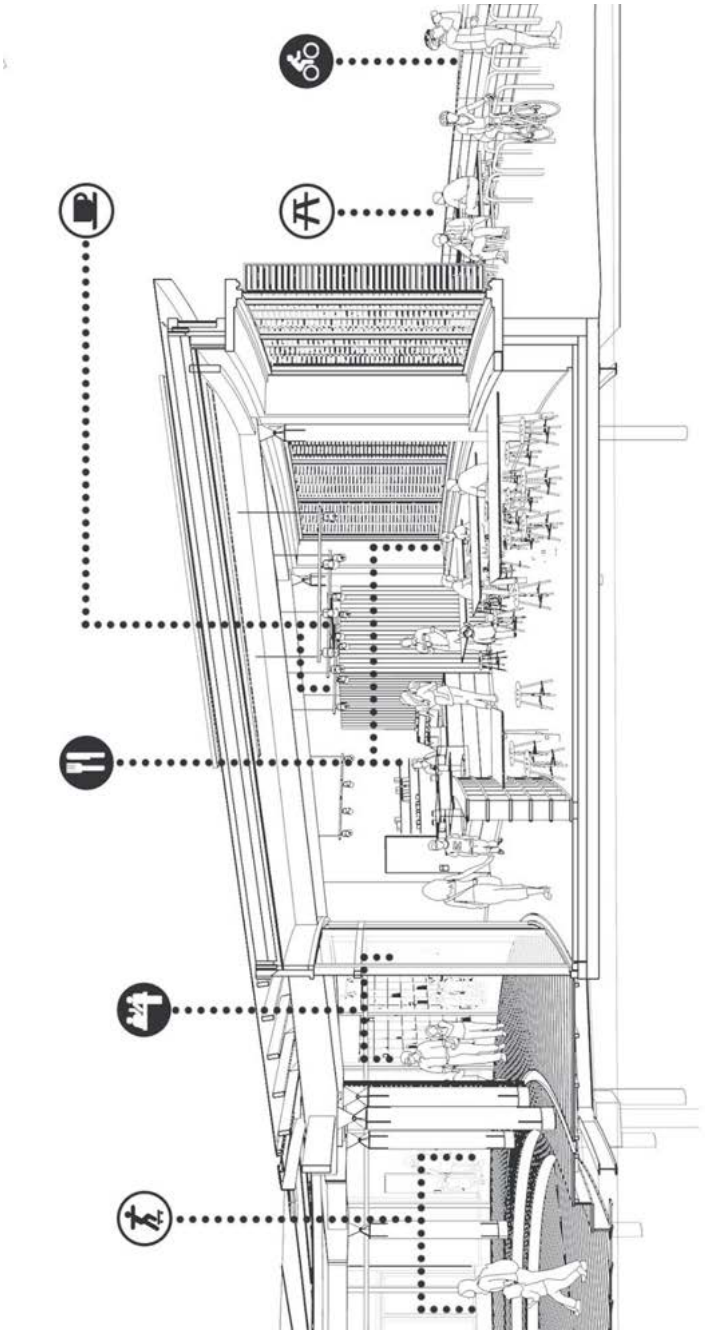


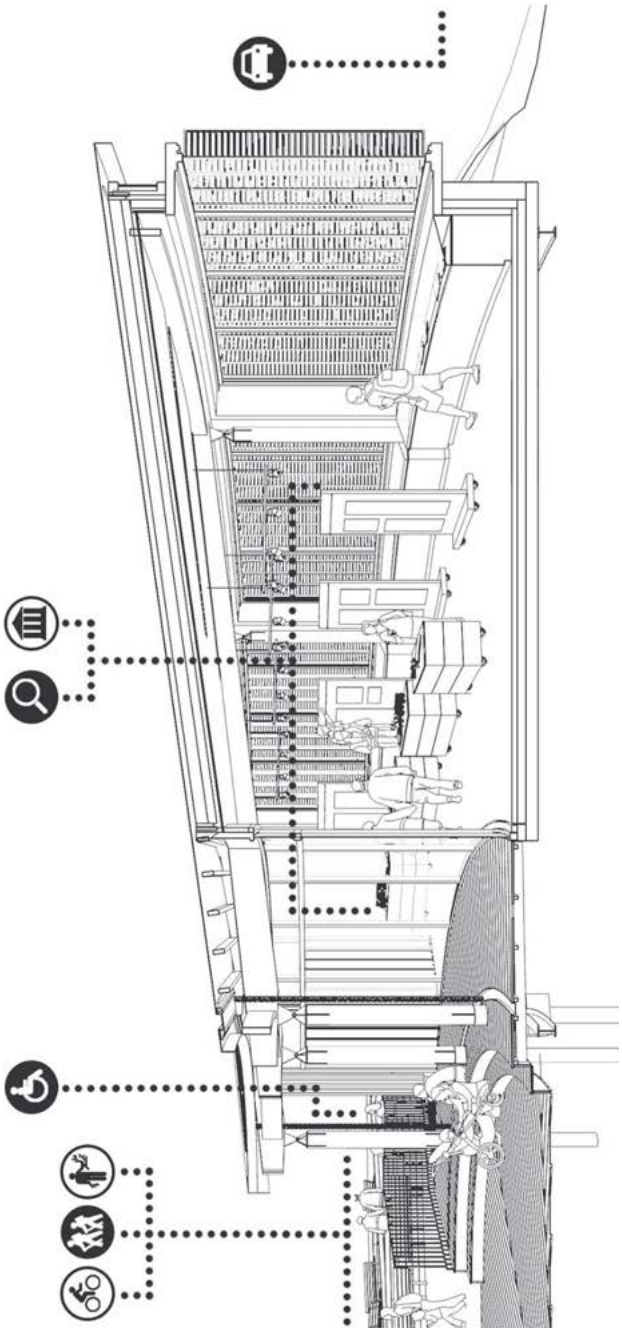
SOUTH
1 : 100

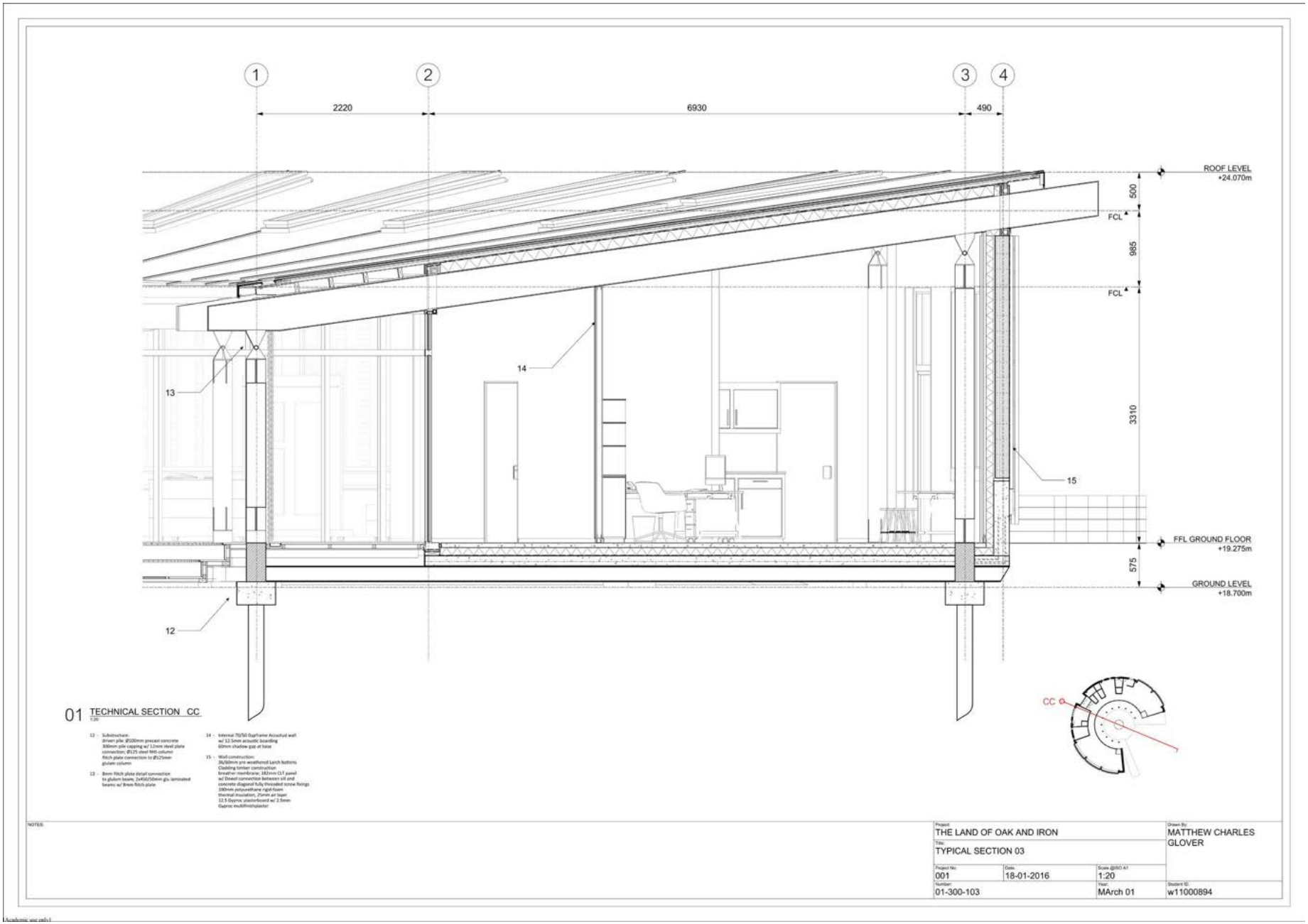


EAST
1 : 100









01 TECHNICAL SECTION CC
1:20

12 - Substructure;
driven pile: Ø100mm precast concrete
300mm pile capping w/ 12mm steel plate
connection: Ø125 steel RHS column
fitch plate connection to Ø125mm
glulam column

13 - 8mm fitch plate detail connection
to glulam beams, 2x450/50mm glu laminated
beams w/ 8mm fitch plate

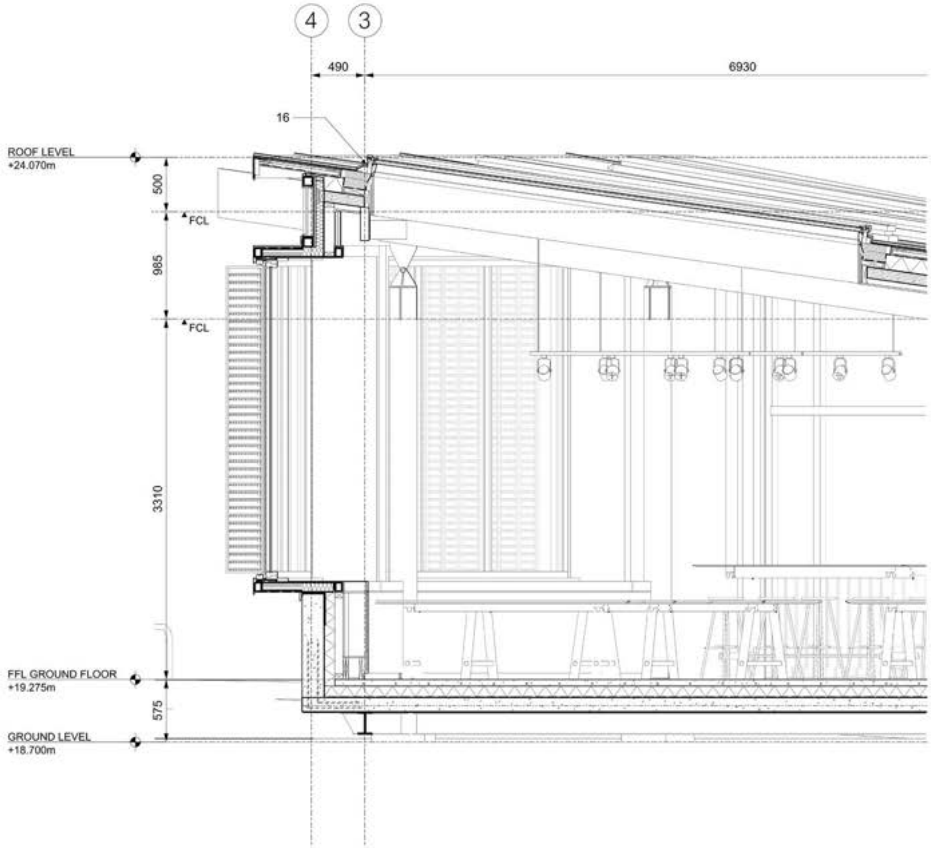
14 - Internal 70/50 Gyproc Acoustic wall
w/ 12.5mm acoustic boarding
60mm shadow gap at base

15 - Wall construction;
36/600mm pre weathered Larch battens
Cladding timber construction
breather membrane; 182mm CLT panel
w/ Dowel connection between sill and
concrete diagonal fully threaded screw fixings
100mm polyurethane rigid-foam
thermal insulation, 25mm air layer
12.5 Gyproc plasterboard w/ 2.5mm
Gyproc multifinishplaster

NOTES:

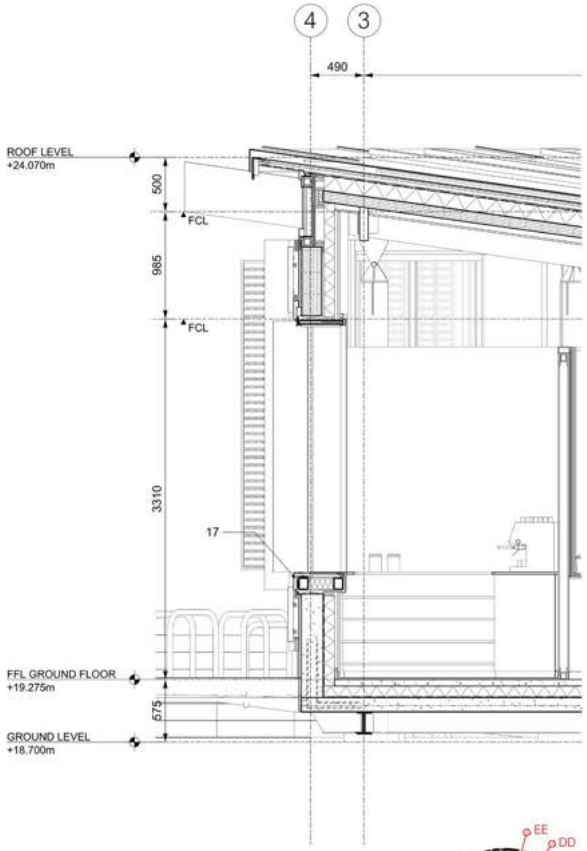
Project: THE LAND OF OAK AND IRON			Drawn By: MATTHEW CHARLES GLOVER
Title: TYPICAL SECTION 03			
Project No: 001	Date: 18-01-2016	Scale @ISO A1: 1:20	
Number: 01-300-103		Year: MArch 01	Student ID: w11000894

Academic use only



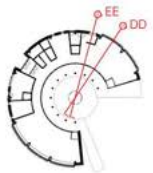
01 TECHNICAL SECTION DD
1:20

18 - Roof window.
Roof window detail to manufacturers specification.
Lined with standard aluminium flashing incl. EPS insulation



01 TECHNICAL SECTION EE
1:20

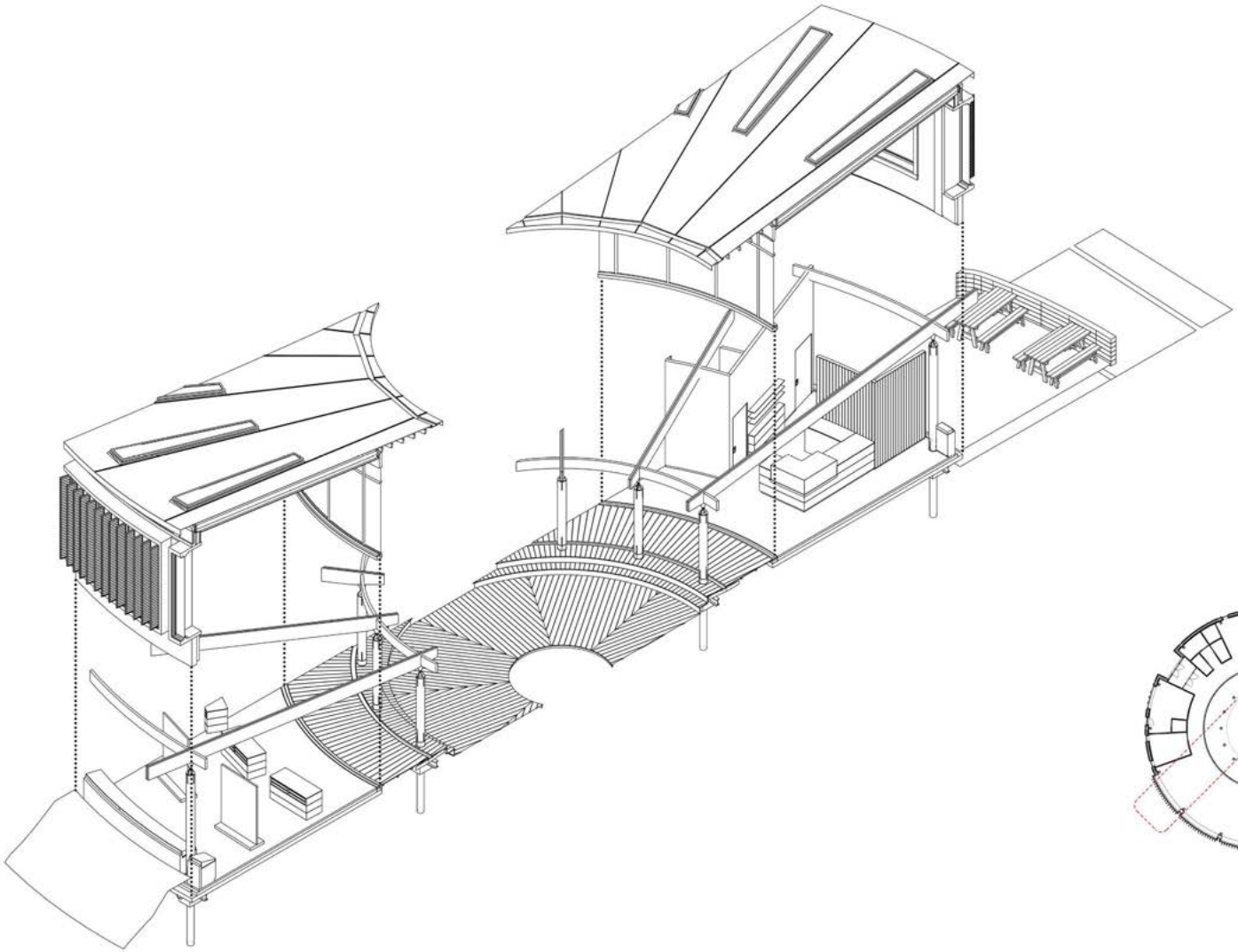
17 - Kiosk Opening:
Powder coated aluminium treatment to box frame. Detail to subcontractor specification.



NOTES:

Project: THE LAND OF OAK AND IRON			Drawn By: MATTHEW CHARLES GLOVER
Title: TYPICAL SECTION 04 & 05			
Project No.: 001	Date: 18-01-2016	Scale @ISO A1: 1:20	
Number: 01-300-104		Year: MArch 01	Student ID: w11000894

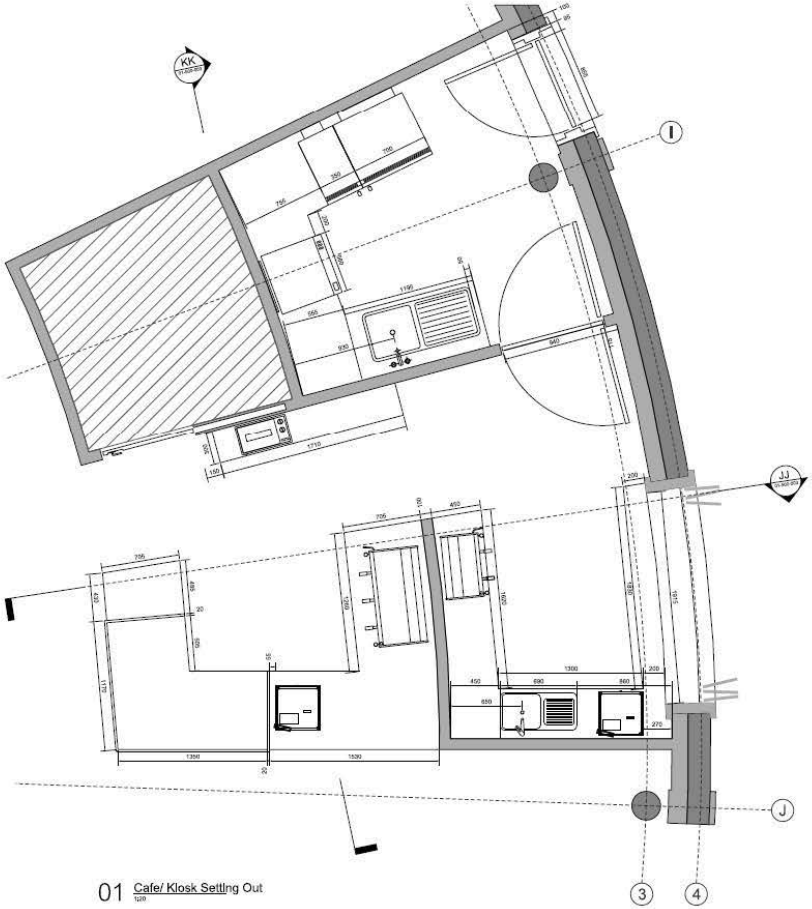
Academic use only



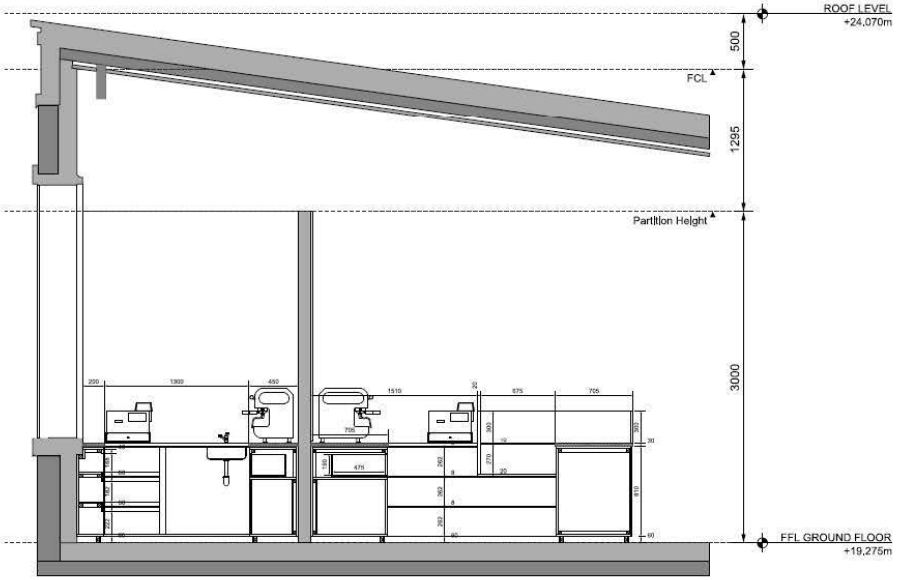
NOTES:
Drawing is not to scale

Project: THE LAND OF OAK AND IRON			Drawn By: MATTHEW CHARLES GLOVER
Title: TECHNICAL AXONOMETRIC			
Project No: 001	Date: 18-01-2016	Scale @SO A1: NA	
Number: 01-400-001		Year: MArch 01	Student ID: w11000894

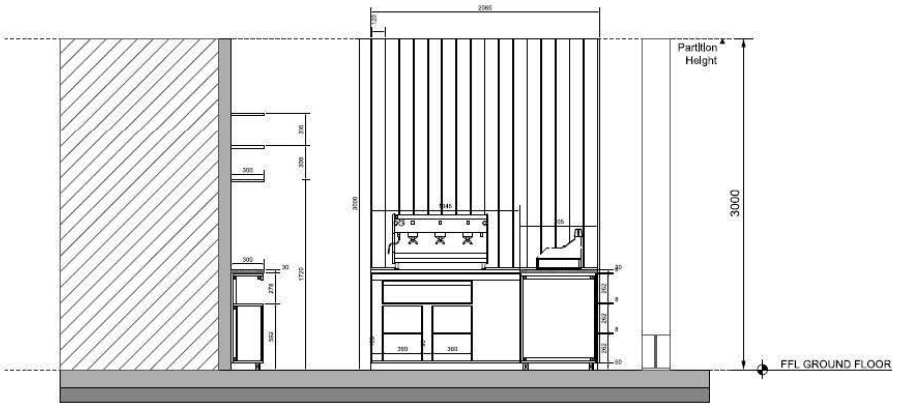
Academic use only



01 Cafe/ Kiosk Setting Out
1:20



02 Section JJ
1:20



03 Section KK
1:20

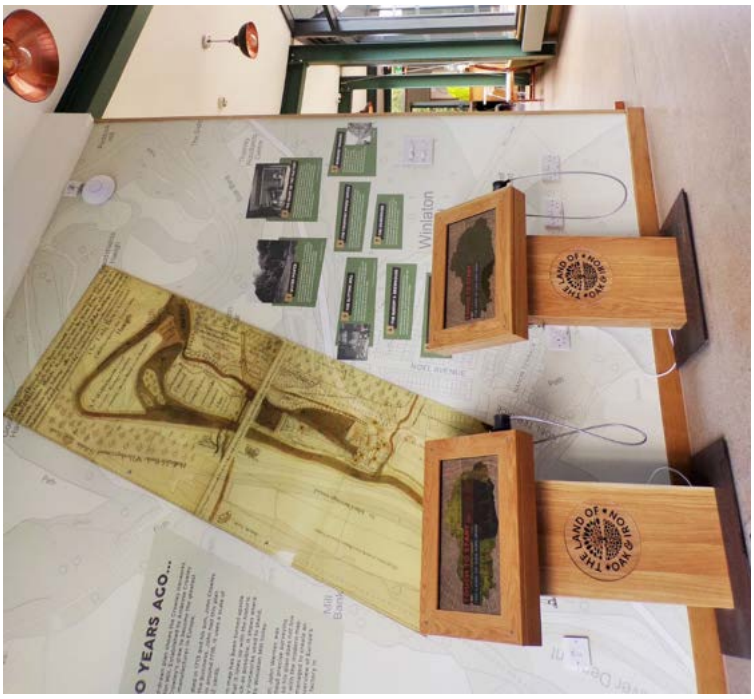
NOTES:

Project: THE LAND OF OAK AND IRON			Drawn By: MATTHEW CHARLES GLOVER
Title: CAFE/ KIOSK DRAWINGS			
Project No: 001	Date: 18-01-2016	Scale @ ISO A1: 1:20	
Number: 01-500-003		Year: MArch 01	Student ID: w11000894

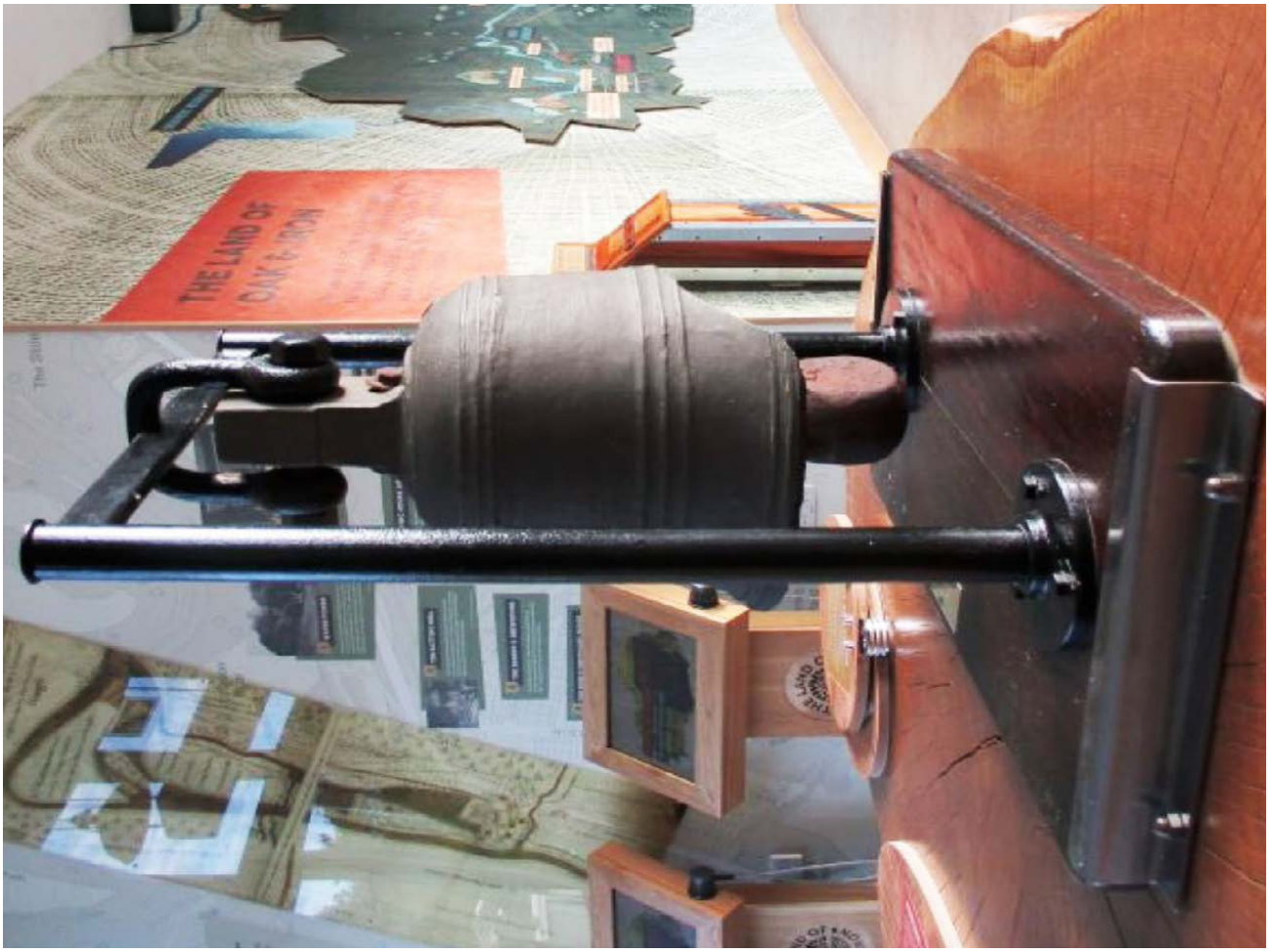
CAR PARK LOCATION
BREAK UP ROOF WITH SKYLIGHTS.
PRESENT ENTRANCE INTO PARK
SOLID WALL
FULL HEIGHT GLAZING
ROUTE THROUGH
ACCESS TO THE PARK FROM CENTRE

THE LAND OF
OAK & IRON
DERWENT RESERVOIR
PRUDHOE
RYTON
BLAYDON
CONSETT
WINLATON

Before they'll submit they will take their discharge,


THE LAND OF
IRON
Winlaton
O YEARS AGO...


welcome to the
land of oak & iron
heritage centre
and café shrub


THE LAND OF

13. Bibliography

Baka (2005) Understanding Valuing Devices in Tourism through "Place-making" Valuation Studies 3(2) 2015: 180

Bosman. C. and Dredge, D. (2011). Histories of placemaking in the Gold Coast City: the neoliberal norm, the State story and the community narrative. Urban Research Program, Research Paper 33 (April), Griffith University, Brisbane.

Cilliers, E.J. and Timmermans, W. (2014). The importance of creative participatory planning in the public place-making process. Environment and Planning B: Planning and Design 41: 413 – 429.

Coates, G.J. and Seamon, D. (1984). Toward a Phenomenology of Place and Place-Making: Interpreting Landscape, Lifeworld and Aesthetics. Oz, 6, 6-9.

Flynn, MW. (1962) reprinted in 2019. Men of Iron. Land of Oak and Iron Press, Gateshead.

Hall-Lew, L.A. and Lew, A.A. (2014). Speaking Heritage: Language, Identity and Tourism. In A.A. Lew, C.M. Hall and A.M. Williams, eds., The Wiley-Blackwell Companion to Tourism, pp. 336-348. Oxford: Blackwell.

Hou, J. and Rios, M. (2003). Community-Driven Place Making: The social practice of participatory design in the making of Union Point Park. Journal of Architectural Education 57(1): 19-27.

Hoelscher, S. (1998). Heritage on Stage: The Invention of Ethnic Place in America's Little Switzerland. Madison: The University of Wisconsin Press

Lee, Y. (2008) Design participation tactics: the challenges and new roles for designers in the co-design process International Journal of CoCreation in Design and the Arts
Volume 4, 31-50

Martin, D.G. (2003). "Place-Framing" as Place-Making: Constituting a Neighborhood for Organizing and Activism. Annals of the Association of American Geographers 93(3): 730–750.

Massey, D. (2005) For Space. London: Sage. Manzo, L.C. and Devine-Wright, P., eds. (2014). Place Attachment: Advances in theory, methods and applications. London: Routledge.

Meadows, M (2020) Placemaking for Health and Happiness, report for British Lands, available at: https://officeagenda.britishland.com/article/placemaking-for-health-and-happiness.

Othman, S., Nishimura, Y. and Kubota, A. (2013). Memory Association in Place Making: A review. Procedia - Social and Behavioral Sciences 85: 554–563.

Pine, B. and Gilmore, J. H. 1999. The experience economy, Boston, MA: Harvard Business School Press.

Silberberg, S., Lorah, K., Disbrow, R., & Muessig, A.(2013). Places in the making: How placemaking builds places and communities. Boston, MA: MIT.Retrieved from http://dusp.mit.edu/cdd/project/placemakingSteele, F. (1981). The sense of place. Boston, MA: CBI Pub-lishing Company, Inc.

Stelzle, B., Jannack, A., & Rainer Noennig, J. (2017).Co-design and co-decision: Decision making oncollaborative design platforms. Procedia ComputerScience,112, 2435–2444. https://doi.org/10.1016/

Wortham-Galvin, B. (2013). An Anthropology of Urbanism: How People Make Places (and What Designers and Planners Might Learn from It. The Participatory Turn in Urbanism, Autumn. 21-40. http://www.footprintjournal.org/issues/show/the-participatory-turn-in-urbanism

Zamenopoulos, Theodore and Alexiou, Katerina (2012). Complexity: what designers need to know. In: Garner, Steve and Evans, Chris eds. Design and Designing: a Critical Introduction. Berg

14. Illustrations