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Soulton Hall Estate Master Plan

Pre-Application Document I

Development Team

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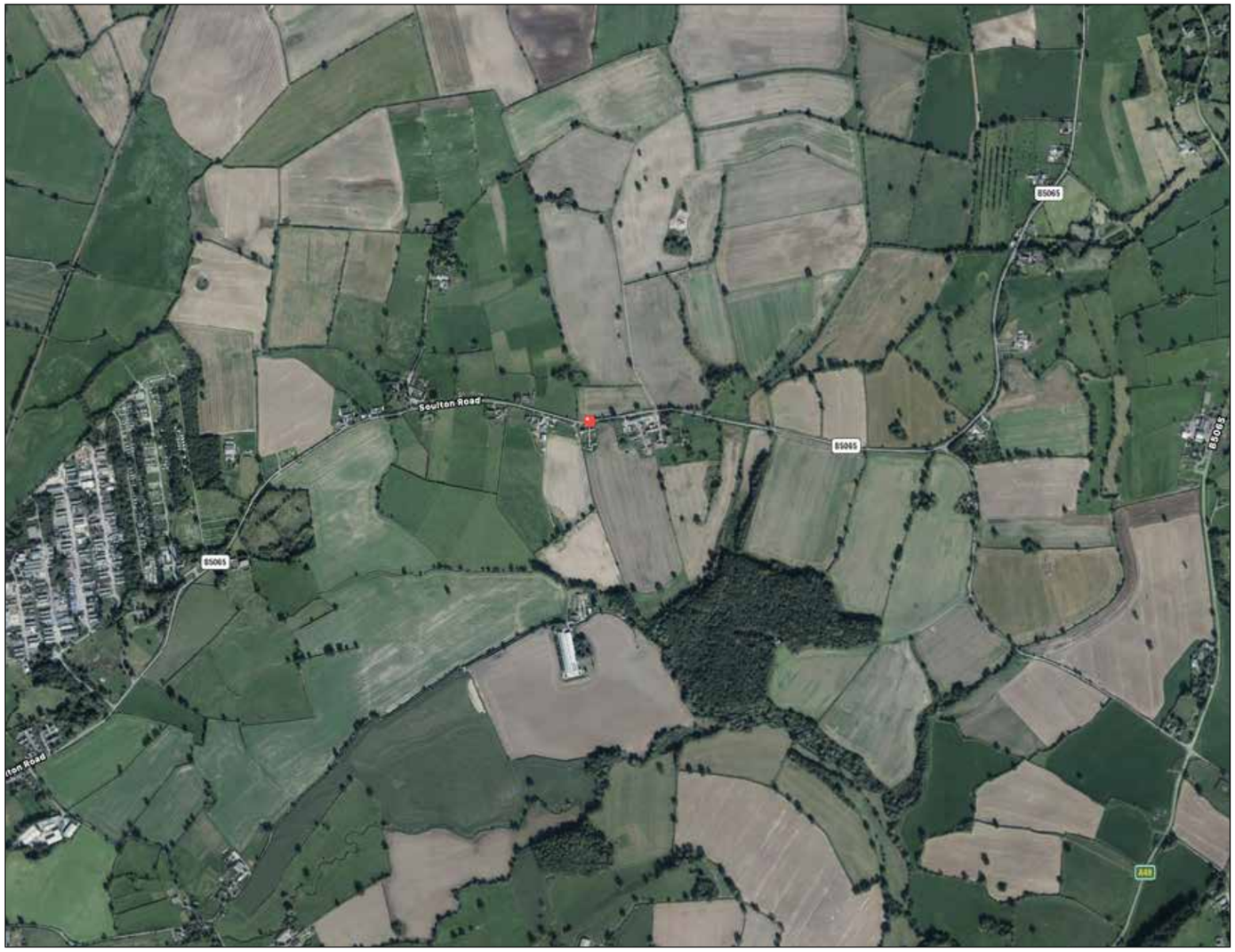

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1 Aerial photograph from Google Earth showing Soulton Hall marked with a red pin

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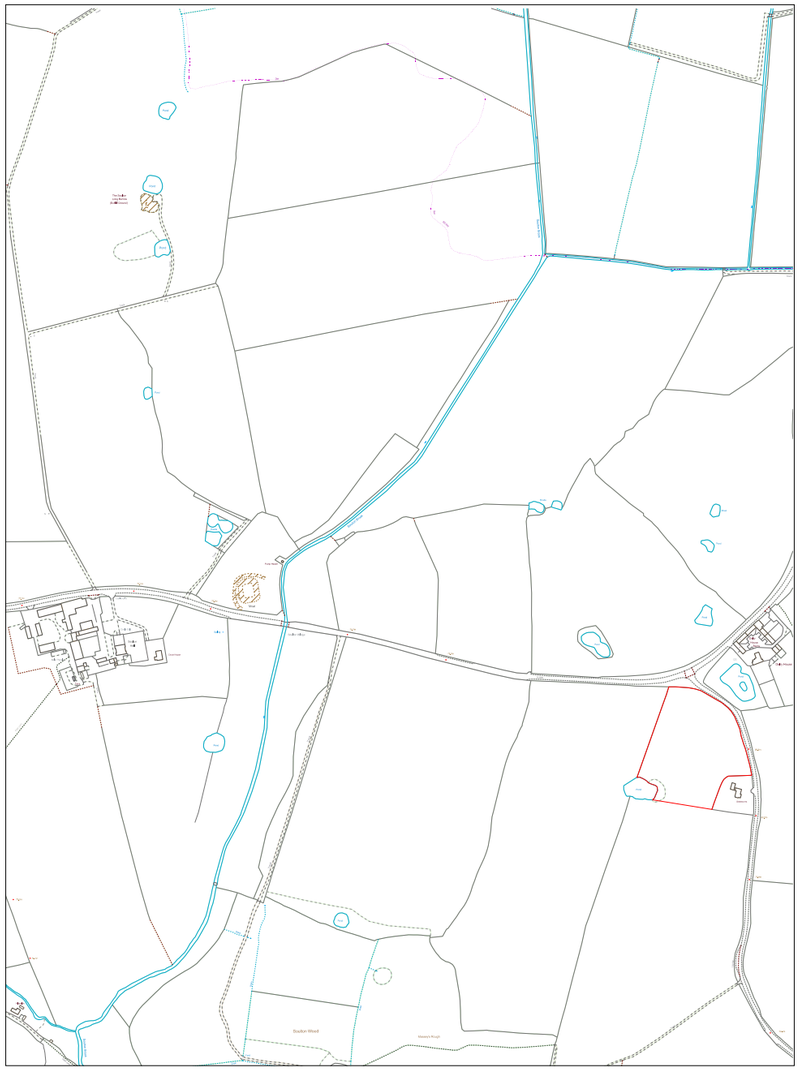

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1 Photograph of Soulton Hall **2** Existing location plan of Soulton Hall estate showing red line of proposed housing development site boundary

Executive Summary
History of Soulton Hall

This document presents proposals for the estate land of Soulton Hall near Wem, and includes initial design ideas for three parts of the site:
- proposals to re-construct the parts of the range of 18th century farm buildings adjacent to the hall, which were mostly demolished in the 20th century, and to match the original structures as closely as possible
- proposals for landscaping to complete the visitor's experience of the recent Long Barrow and open air theatre that opened in the summer of 2020
- proposals for new housing and associated structures to be built on land at the Eastern edge of the estate, at the junction of Soulton Road (the B5065) and Wem Lane

Soulton Hall is a Grade II* listed building, along with its walled gardens, pillared forecourt and carved stone work. Soulton Bridge, crossing Soulton Brook is a Grade I listed structure, built in 1801 by Thomas Telford. It is now a hotel and farm. It is still owned by descendants of Sir Rowland Hill. Some affinity both architectural, and by family connections has been attributed to Soulton with Rosewell (plantation) in Virginia. The manor of Soulton is pre-Norman in origin. What can be seen externally of the present hall is constructed of brick, produced at the site in a field now known as "the Brickle", a corruption of "Brick Kiln", with Grinshill stone dressings. The present exterior of the building was constructed in approximately 1668, but incorporates some hidden older structures. However, in incorporates within the building traces of an older Tudor or medieval building of timber-frame construction, which would have been of considerable extent for its time: four stories high, of three bays, and containing close stud work. Some of the timbers even within this structure were reused from a yet older building.

The hall of the 1550s, which can be seen today, was built by Sir Rowland Hill (MP), who was the first Protestant Lord Mayor of London in 1549, and, as Sheriff of London, was involved in the case which established Parliamentary Privilege. It has been speculated that this building was the work of Walter Hancock, who built the Old Market Hall in Shrewsbury. Within the building are traces of an older Tudor or medieval building of timber-frame construction, thought to date from the late 15th century. There are said to be Masonic influences in this semi-circular pediment, and the hall's cubic appearance may be an early re-interpretation of Vitruvian ideas. To the east of the hall is a walled garden, accessed by steps from the terrace on the north, or by a small gate to the north. At the front of the hall is a Pillared forecourt, again part of the 1550s design concept. Within the grounds of the hall are thought to be the remains of extensive medieval gardens although it is possible that the obvious forms in the fields near the hall may be the remains of a deserted medieval village. These are a Scheduled Ancient Monument. There are also some 18th-century farm buildings, of which a range of buildings now known as Soulton Court, which has a stone tablet dated 1783 relating to later work, incorporates a manorial moot hall of unknown date prior to the mid-1600s.

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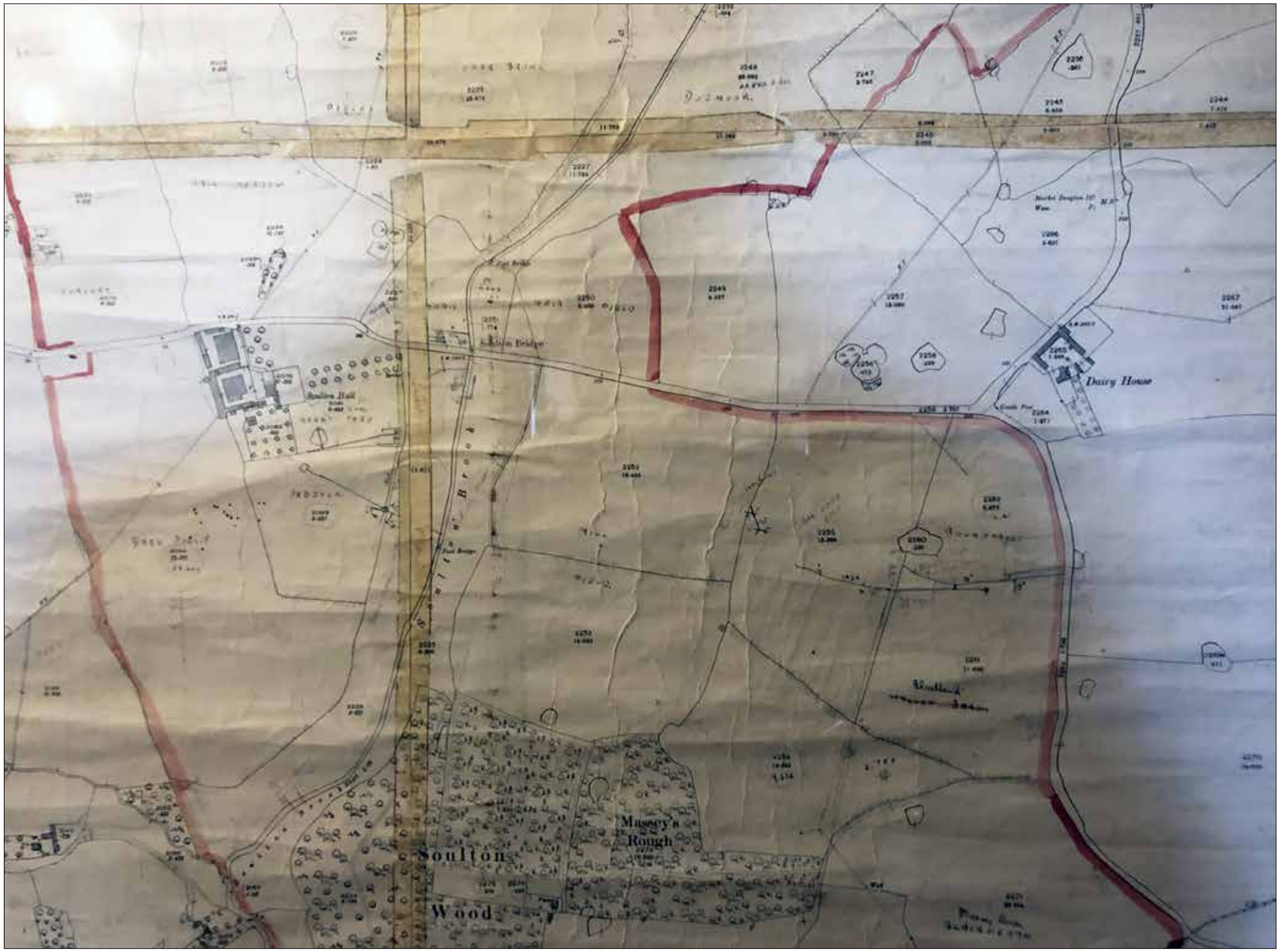
1 Portrait of Sir Rowland Hill (anon.) **2** Anonymous 19th century painting of Soulton (photographed within the Hall) **3** View of Soulton Mound looking towards Soulton Hall **4** View of Soulton Hall from the North East of the entrance



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1 Photograph of a 18th century map on the wall inside Soulton Hall partly showing the extent of the estate marked with a red line (note the extent of the farm buildings to the immediate west of the hall)

Executive Summary
History of Soulton Hall

Saxon and Earlier
Within the manor is evidence Bronze Age habitation, and some signs of Neolithic activity. The name of the manor is Saxon and means either 'settlement with a plough' or 'settlement with reeds' or possibly 'settlement in/near a gully'. The manor supported the clergy of the King's Chapel of St Michael in Shrewsbury Castle. The manor house has probably always occupied the current site with this fortification only being used for military and not domestic purposes. 1086 Entry in Domesdaybook; a grant of the manor of Soulton in 1299.

Early Documentary Accounts of the Manor of Soulton
The manor of Soulton existed at the time of the Domesday Book (see: PASE Domesday) and is recorded as "Svltune". The Domesday Book records the manor as being freely held by Brihtric, the brother of Eadric Streona, who was the Ealdorman of Mercia. Both Brihtric and Eadric were slain by King Cnut on Christmas Day, 1017.

Post Norman
The building on the present site was pre-dated by Saxon ane perhaps earlier structures. A Norman Adulterine castle was constructed approximately 300 meters to the north-east of the hall during the Anarchy in the early 1100s. The location is marked by a mound which can still be seen. This site is located around the point at which the roadway crosses a narrow gap in some wet terrain which would likely have had a strategic reason for establishing a fortification in that location. This building is believed to have burnt down at some point in the late 14th century. A grant of the manor in 1299 indicates that some of the ancient marker posts marking the boundary with Wales were part of the boundary of the manor.

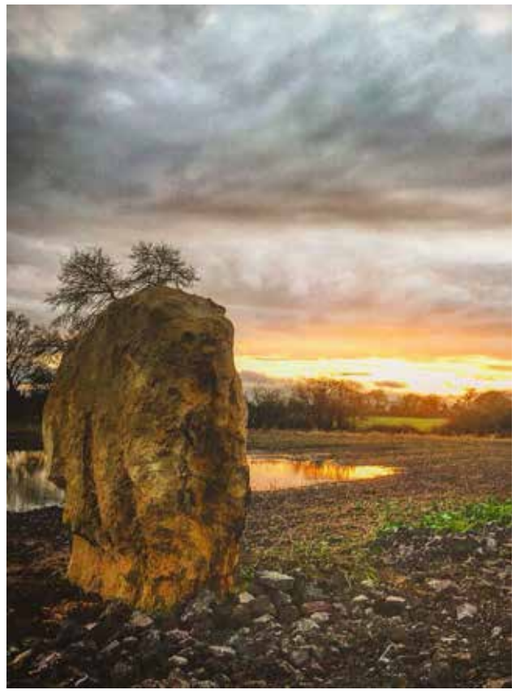
Post 1556
The present hall, described above was built in 1556, remodelling the surviving the earlier hall. There is an 1801 Thomas Telford bridge on the B5065 road known as Soulton Bridge.There are also the remains of a water mill active from at least the 1300s until the mid-to-late 1800s.

Executive Summary
History of Soulton Hall

Long Barrow
A modern long barrow, Soulton Long Barrow, is under construction on farmland north of Soulton Hall.

The site became operational in 2019.[9] The new monument was covered on an episode of BBC Countryfile being visited by Matt Baker and Ellie Harrison in April 2019.

The Soulton Standing Stones, erected in 2017
Three megalithic limestone standing stones are located on the access route to the barrow. These were added to the approach route to the barrow in autumn 2017. The stone for these monoliths, as with the barrow itself came from Churchfield Quarry, Oundle, near Peterborough. There is no deliberate alignment beyond way-marking for these standing stones. In 2020, a standing stone, with an alignment to the setting sun on the winter solstice, was added to the ritual landscape to acknowledged the suffering of the families impacted by the Coronavirus Pandemic.



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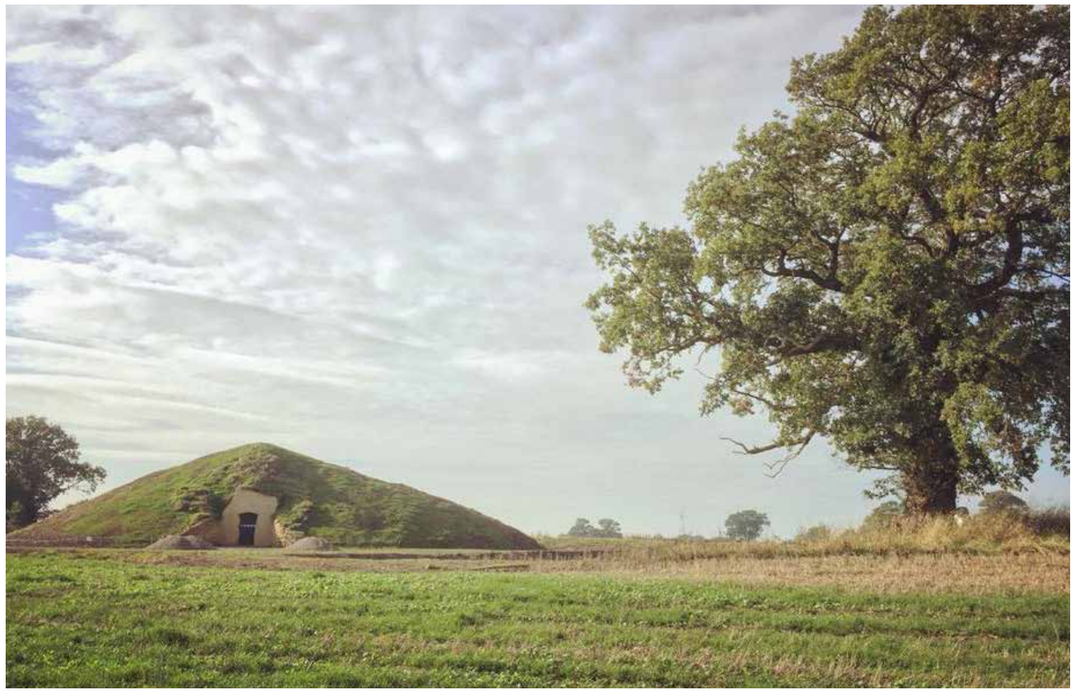

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1 View of one of the recent Standing Stones indicating the way to the new Long Barrow **2** View of the entrance to the Long Barrow from the East **3** Artists impression **3 & 4** View inside the Long Barrow as the scaffolding was removed December 2020

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Executive Summary
History of Soulton Hall

Sanctuary Theatre
“The Sanctuary Theatre” at Soulton hosting its first performance: a new work by the National Youth Theatre of Great Britain
“The Sanctuary Theatre” at Soulton hosting its first performance: a new work by the National Youth Theatre of Great Britain
In 2020, partially as a response to the crisis in live performance and theatre resulting from the COVID-19 pandemic, an outdoor performance area was added in front of the barrow.

This was inaugurated by the National Youth Theatre, with their first live in person performance[18] since the restrictions following the lockdown that was brought about by the COVID-19 pandemic. The play was a brand new work called “The Last Harvest”.[20]

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1, 2, 3 & 4 Photograph of the “Last Harvest” by the National Youth Theatre at the Sanctuary Theatre

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Executive Summary
History of Soulton Hall

Farm
View of farmland Soulton: a no-till crop of wheat looking to the woodland
There is a farm at the manor, including Soulton Wood. The farm practices no-till farming. This was covered in an episode of BBC Countryfile in April 2019 with Matt Baker. Research cooperation between Harper Adams University and Oxford University looking at the results of cultivation on Soil ecology, which used DNA sequencing of the soil biome has been hosted on the farm.

The woodland is largely oak with some cherry and ash. In total the woodland covers about 50 acres and it is designated ancient woodland. Material from the wood was supplied for repair of the House of Commons after bomb damage in the Second World War.

Engagement with academics and universities and writers.

Soutlon Hall has directly supported:

PhD,
5 MSc
1 BSc
Secretary of State visit from Gove at DEFRA to inform environmental farm policy on soils

Archaeology
An official excavation with Dig Ventures took place in June 2019.

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1 Aerial view of Soulton Hall and farm buildings in the 1970's prior to demolition of barrel vaulted barns **2&3** Photograph of the ''Last Harvest'' by the National Youth Theatre at the Sanctuary Theatret **4** Photograph of summer theatrical performance on the lawn

Executive Summary
History of Soulton Hall

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1 View of the farmyard today from within the hall with the remaining 19th century barn on the right **2** View inside the Moot Hall within one of the recently refurbished barns **3** View of the remaining 18th century barn looking North **4** Photograph of 18th century farm buildings from the 1890s (the central wing, which we propose to re-build, was demolished in the 20th century)

References and further reading (see https://en.wikipedia.org/wiki/Soulton_Hall)
Rowland Hill (MP) Wikipedia Page
An excursion from Sidmouth to Chester in the summer of 1803 (1803) by Edmund Butcher, Whittingham
Antiquities of Shropshire, Vol. 10 (1860) by Robert William Eyton. J.R. Smith, The Castles & Old Mansions of Shropshire (1868) by Frances Stackhouse Acton, Leake and Evans
Memorials of Old Shropshire (1906) by Thomas Auden, Bemrose & Sons
Transactions of the Shropshire Archaeological and Natural History Society, Volume 40 (1919)
Shropshire Archaeological and Natural History Society, Proceedings of the American Philosophical Society Held at Philadelphia (1939) American Philosophical Society, 1939
Burke's Guide to Country Houses, Reid, P., *Herefordshire, Shropshire, Warwickshire, Worcestershire* (1978) by Mark Bence-Jones, and Peter Reid *Burke's Peerage*
The Tudor and Stuart Legacy, 1530-1730 (1989) by Lawrence Garner. Swan Hill
The World of the Country House in Seventeenth-century England (1999) by John Trevor Cliffe, Yale University Press
Hills of Hawkstone (2005) by Joanna Hill. Phillimore & Co Ltd.
Shropshire (Pevsner Architectural Guides: Buildings of England) (2006) by John Newman, Yale University Press
Design and Plan in the Country House: From Castle Donjons to Palladian Boxes (2008) by Andor Gomme, Austin Harvey Gomme, and Alison Maguire,Yale University Press

4 Concept Master Plan Design

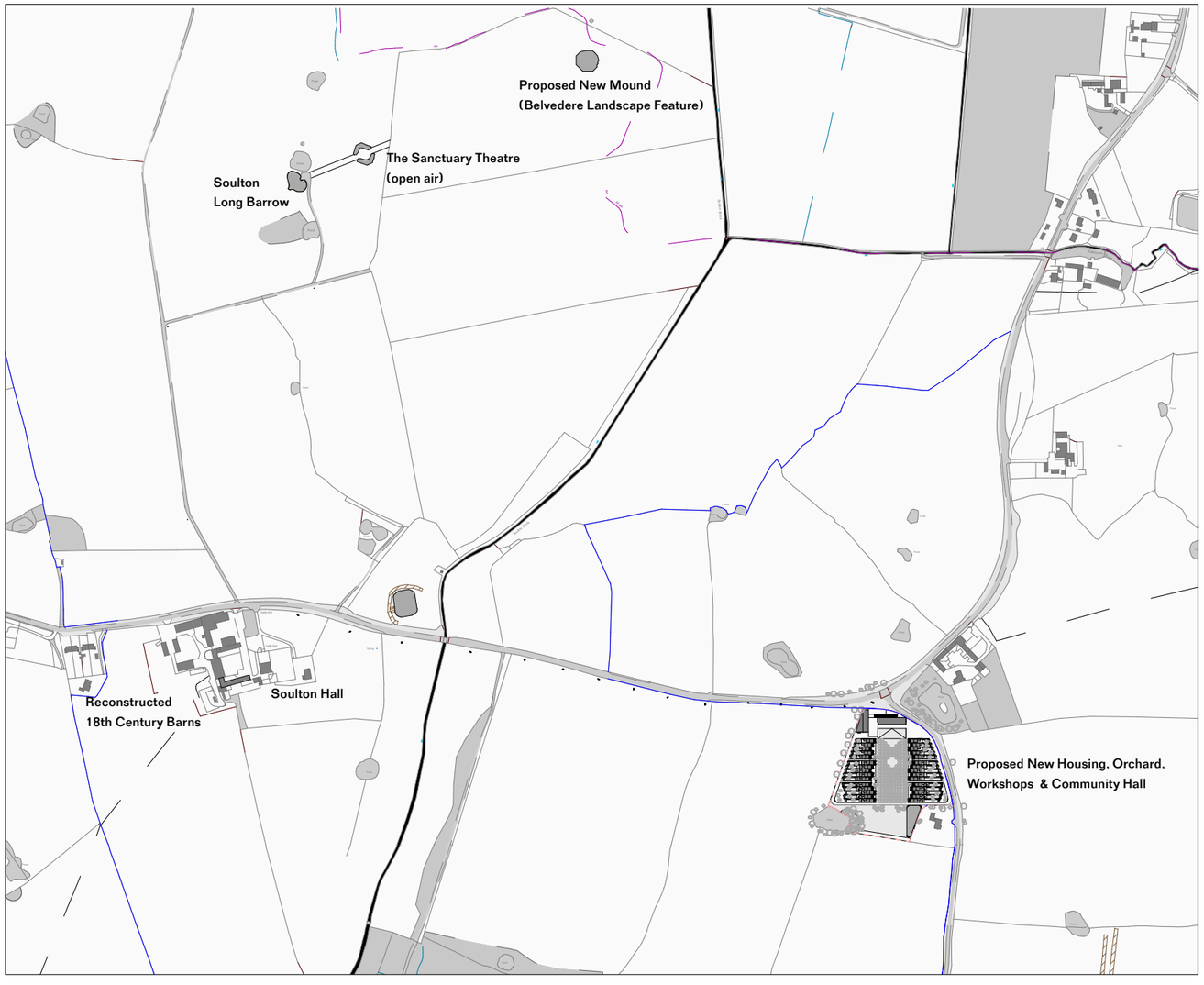
In December 2020, we met The Ashton family at Soulton Hall and visited the estate with them. During this visit they described to us their ambition for a coherent approach to unifying the older and more recent parts of their estate, and in particular their aim to create exemplary, low-energy, high-quality, low-cost housing for local families. We are describing our approach to this task as a “master plan”, which may be somewhat of an exaggeration, as we are not proposing a new approach, but rather one which consolidates and makes sense of centuries of settlement and the use of the land by the Ashtons and their predecessors. In part the intention is to re-build some things that have been lost, and also to develop a pattern and rhythm of development in which some new buildings extend the scale and characteristics of the hall and its adjacent courtyard typology in a complimentary and familiar manner.

Reconstruction of the partly-demolished 18th Century Barns

Soulton Hall is an impressive and fine example of an English country house. It is neither medieval nor Palladian neo-classical but nonetheless exhibits some fine qualities of Tudor architecture: it is a cube in form, made of beautiful local red bricks, and its silhouette is marked by symmetrical, tall brick chimneys. It is a considered and sophisticated architectural statement, built in fact in the shape of a large letter H, in honour of King Henry VIII (the original owner’s patron). Until quite recently, the hall was accompanied by a handsome range of similarly red brick farm buildings, forming a series of 2-storey wings grouped around a courtyard. Our intention is reconstruct the parts of this ensemble that were demolished in the 20th century, for agricultural uses, enabling the existing brick barns that face the main road to be re-purposed as work space for the local community. Our intention is to re-build the 18th century barns as precisely as possible in direct imitation of their original form and details - thus dramatically improving the setting of the Grade 2* listed hall.

Completing the Landscape of the Long Barrow

Following the recent success of The Sanctuary Theatre during the 2020 pandemic, and the completion of the Long Barrow at the end of last year, the number of visitors to the estate has risen dramatically. The danger is that a conventional visitor experience landscape grows up in an ad hoc and thoughtless manner. Instead, the aim is to create a new, taller earth mound to the East of the barrow and amphitheatre. Ramps cut into this mound will allow it to become a Belvedere, with views over the surrounding countryside.



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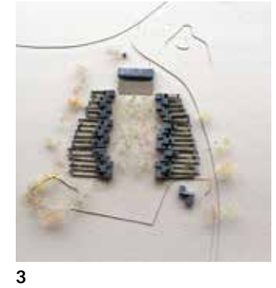

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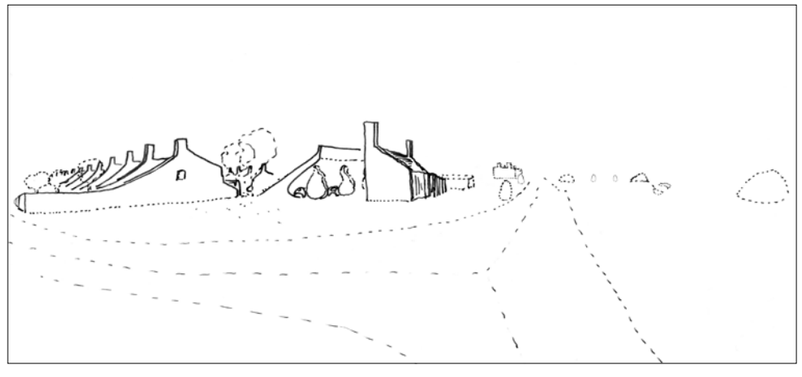

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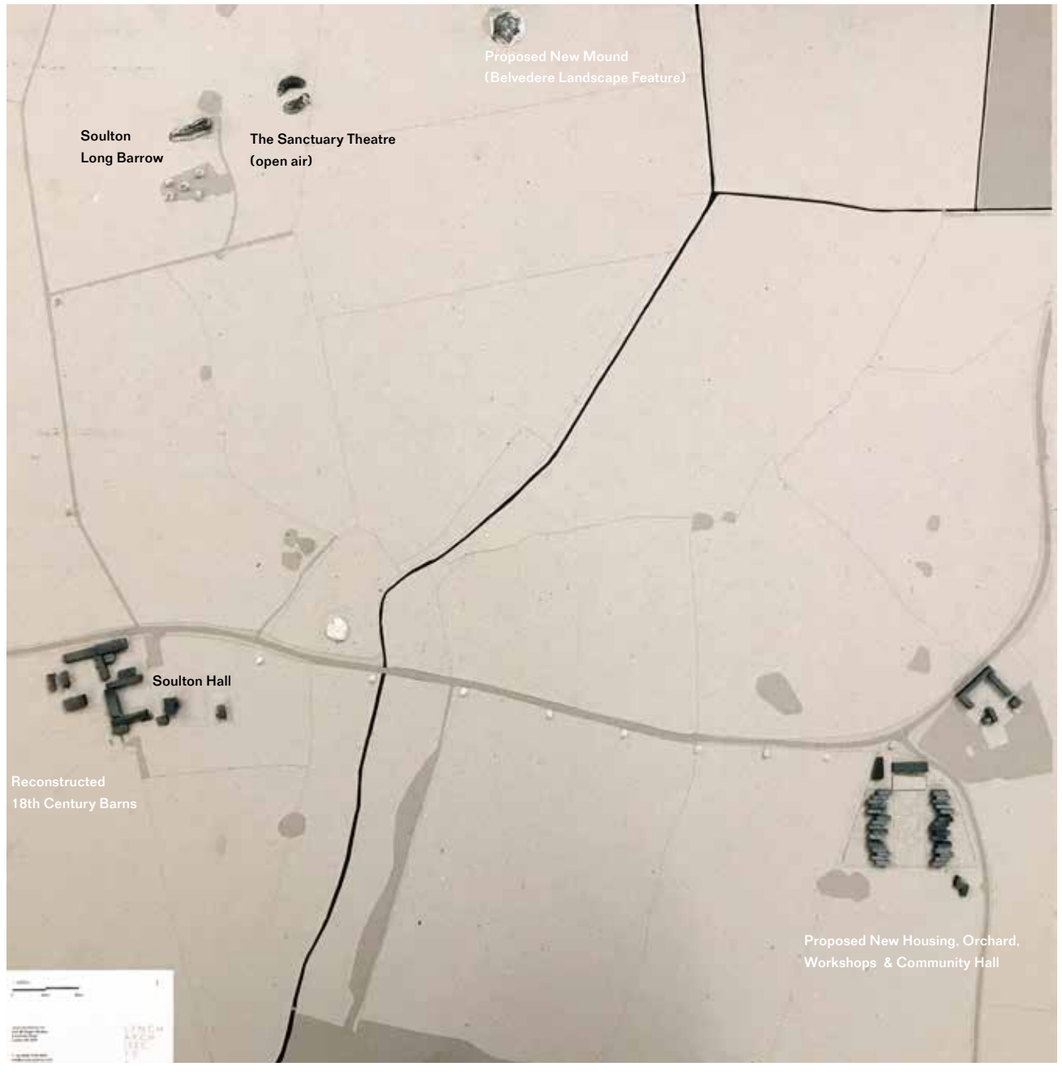
1 Site plan showing existing & proposed features forming part of a coherent master plan for Soulton Hall Estate **2&3** Model photograph 3 showing proposed local master plan for 30 new homes in at the Western edge of the estate **4** Concept sketch showing the approach to the housing from the west with the proposed tall brick chimneys echoing the silhouette of Soulton Hall in the near distance

4 Concept Master Plan Design



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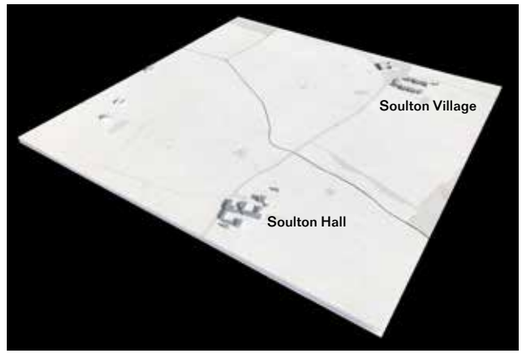
1 Site model at 1/2000 showing existing & proposed features forming part of a coherent master plan for Soulton Hall Estate **2** Model photograph **3&4** Photographs of Milton Abbas **5** Wenlock Priory Shropshire **6** Cover of Pevsner's guide to the architecture of Shropshire showing the typical characteristics of the local "Tudor" vernacular - tall brick chimneys and walls combined with exposed timber framing **7** Concept sketch showing how our housing proposals differ fundamentally from typical mass developer car-based cul-de-sac master plans



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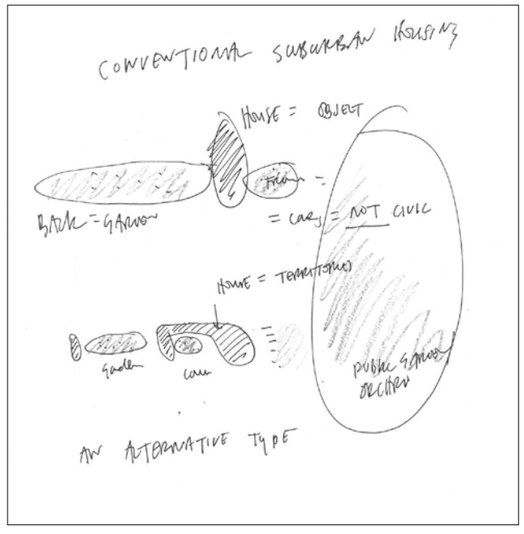

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Soulton Village - New Housing in an Orchard
Soulton Hall estate is perhaps somewhat unusual in that unlike many substantial country farm estates, it lacks a village of farm worker's cottages. In contrast, for example, in 1780, Joseph Damer, Lord Milton, the first Earl of Dorchester and owner of the estate known as Milton Abbey (near Dorchester in Dorset) commissioned architect Sir William Chambers and landscape gardener Capability Brown to design a new village, Milton Abbas. The village is sat in a wooded valley, Luccombe Bottom, to the southeast of the Abbey. Our aim is to create a contemporary version of this sort of exemplary estate village. One that responds in a similar way to the vernacular architecture of the county of Shropshire, embodying also the best principles of Passivhaus ecological design. Appended to this report is an outline energy strategy produced by Max Fordham which describes this strategy.

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5 Design Principles for Housing

We propose to use a party wall house type, clustered together in terraced rows of 5 houses lining a central communal orchard. The benefit of this particular type of housing is both its economy in terms of construction, and its thermal efficiency in comparison to detached, isolated house types.

To break up the mass of housing as a linear block, we propose to stagger the houses in plan, mediating between the individuality of each house and its part in the broader village estate, whilst improving privacy between dwellings. This is something that can seen in Arne Jacobsen's 1940'3 Søholm housing in Copenhagen, which inspired our initial conceptual collage.

Rather than the front of the houses being dominated by car parking, we propose to use planting, colonnades and pergolas to mediate between the domestic and the central civic orchard. This type of spatial depth and layering can be seen in Heinrich Tessenow's housing at Hellerau.

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1 Conceptual collage of proposed housing in an orchard **2,3&4** Søholm **h**ousing at Copenhagen by Arné Jacobsen late 1940s **5&6** Housing at Hellerau near Dresden by Heinrich Tessenow, 1930s

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5 Design Principles for Housing

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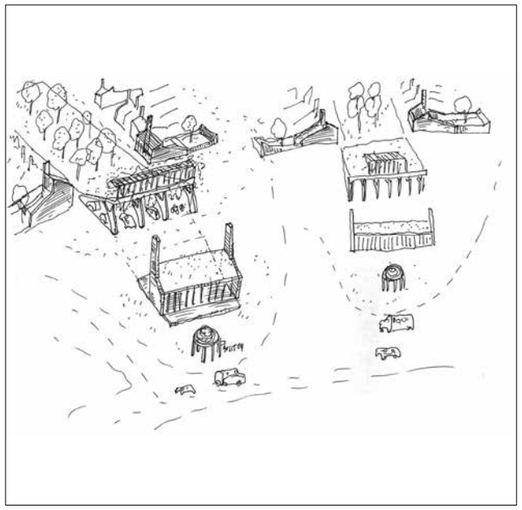

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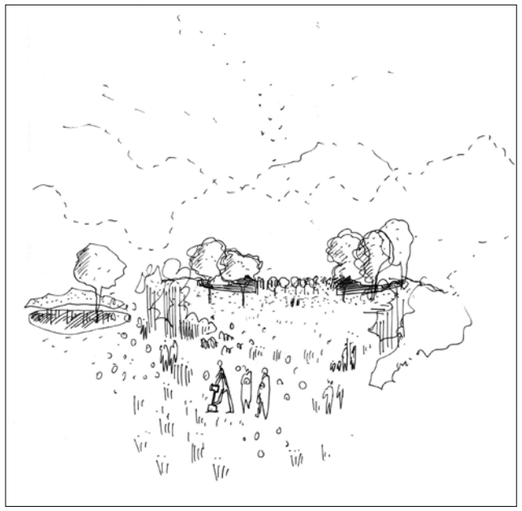

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The site naturally tapers to the north and opens up to the south. The initial idea of housing in an orchard implies a robust strategy concerning the shared infrastructures and car parking. In that sense, we propose to develop on the natural characteristics of the site by concentrating the public programs to the northern edge of the site adjacent to the existing bus stop and main road. The access to the site, via bus, or foot, is therefore through that northern edge, whilst car access is proposed from the quieter side road to the east.

To prevent the village estate and orchard from being dominated by cars we propose a shared surface is created around the perimeter of the site, providing access to the rear of each dwelling for residents, emergency vehicles, refuse collections, and deliveries. Residents car parking is proposed to the northern edge of the site, close to the vehicle entrance to the site.

This creates car free relationship between the house and the orchard, whereby plants can grow, people can meet and children can play. Housing is placed to the east and west of the orchard, on an east-west orientation, most suitable for housing. The natural taper to the site means that the plots are smaller to the north and larger to the south. As such, we propose to place two bed houses to the north and larger three bed houses to the south, where the gardens are larger.

Houses are placed in clusters of 5, breaking up the mass and formality of the row houses. Pedestrian routes through the houses are proposed between these clusters, connecting the orchard to the shared surface road at the periphery. These clustered terraces are further staggered on plan, relating to views across the orchard and pedestrian routes east west across the site.

No houses are proposed to the south of the site, opening up a view from the orchard out over the hills beyond. We propose this space is used as allotments, where it will benefit from the southern light and fresh air.

4

1 Site model at 1/500 showing the proposed housing around the orchard, view from the south looking north **2** Concept sketches showing the community structure and communal car park to the north edge of the site **3** Concept sketch of the orchard **4** Site model at 1/500 from the south-east looking north-west, showing the back garden of the proposed houses

5 Design Principles for Housing

The relationship between the orchard, houses and gardens is established primarily by the brick party walls and chimney that runs parallel to the east-west axis, extending from the orchard through the houses to form garden walls to the rear. A secondary rhythm, perpendicular to the first, establishes a series of thresholds between the orchard, houses and gardens, as one moves from the more public to private spaces.

The brick party walls are set on a 5.5m grid, and rise up through the dwelling to the form the chimney at the centre of the house. The ground and immediate territory of the dwelling is formed in matching brick work, creating entrance thresholds, patios and garden paths, with low level planters and walls placed between dwellings.

Set between the brick party walls, timber pergolas allow planting to grow and change with the seasons and mark the entrance. A timber balcony is set above and allows one to sit and enjoy a view over the orchard or where parents can sit and watch over the children playing, create a civic depth to the project where the collective and the individual are mediated across the various scales of the architecture.

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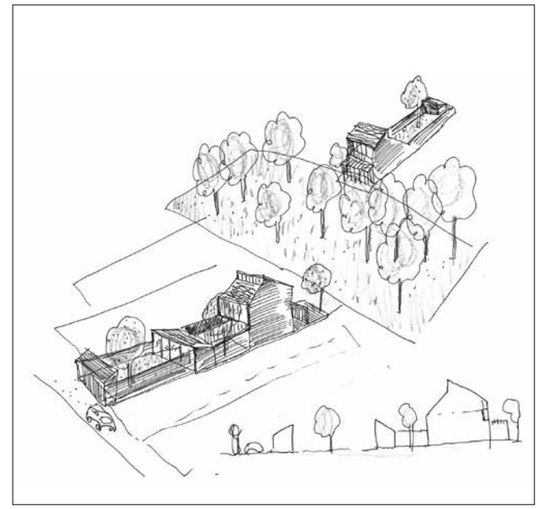

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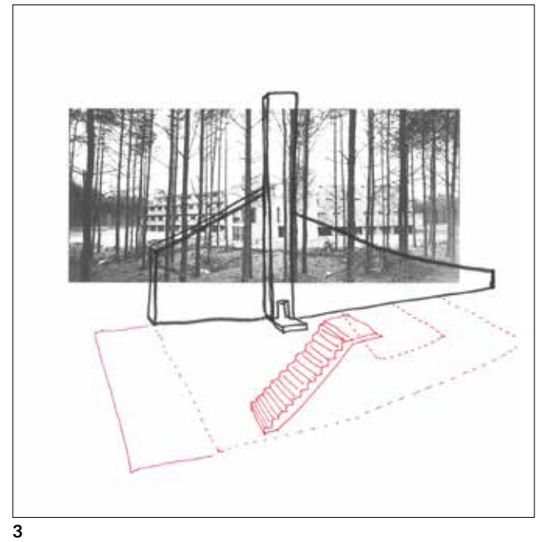

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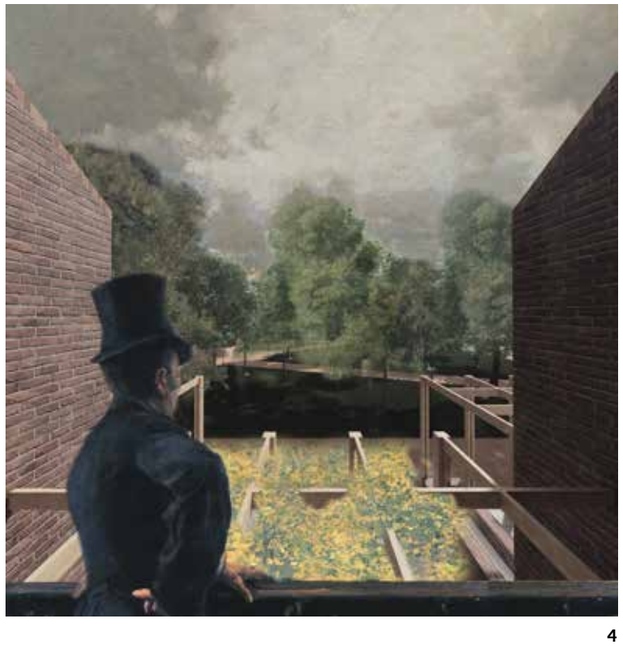

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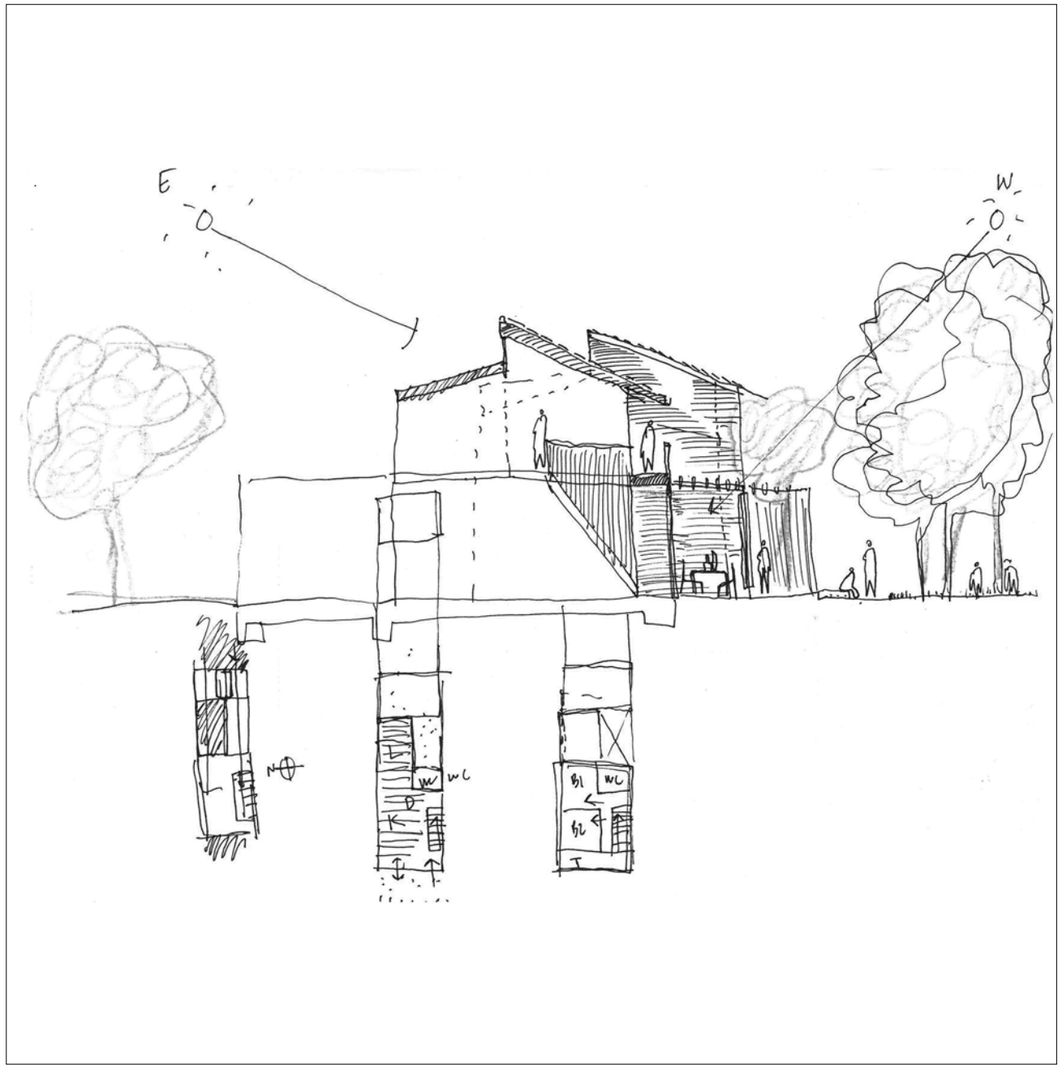
1 CGI from within the orchard looking towards the houses **2** Concept sketch showing the layering of the projected houses **3** Conceptual collage of a house in an orchard showing the party wall, chimney and staircase **4** Conceptual collage of the view from the first floor balcony looking above the pergola into the orchard

5 Design Principles for Housing



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The spatial layering is present in both in plan and section. In section the roof is articulated to bring light in to the centre of the house via a vertical rooflight over the staircase and bedroom. Facing the orchard, the roof extends over the balcony to provide shelter from the elements. Towards the garden, the roof pitch continues down to the height of the ground floor, and garden wall, reducing the apparent mass of the house from the garden.

The relationship to the orchard at the front of the dwellings is consistent across two bedroom and three bedroom dwellings. The relationship to the garden differs between the two house sizes, with the third bedroom in the larger homes placed overlooking the garden at ground floor. This room is separated from the more public rooms of the house by an inner courtyard. In the two bed house, a flexible room at ground floor provides a space overlooking the garden, which could be used to work from home, or could be used to accommodate a future bedspace if required.

All dwellings open onto a paved patio within the garden, and is connected to a rear entrance gate via a brick path along the party wall. This path leads to a timber shed which provides space for bike and bin storage, accessible from the peripheral road.

The south facing wall along the path creates a space suitable for plants and herbs to grow. The garden walls will have hit and miss brickwork to their upper part to allow air and light to flow between the gardens.

All dwellings would by approximately 10% larger than the minimum area applicable to the proposed occupancy as defined in the ‘Technical Housing Standards – nationally described space standard’. All two bedroom dwellings would be for four persons. All three bedroom dwellings would be for six persons.

4

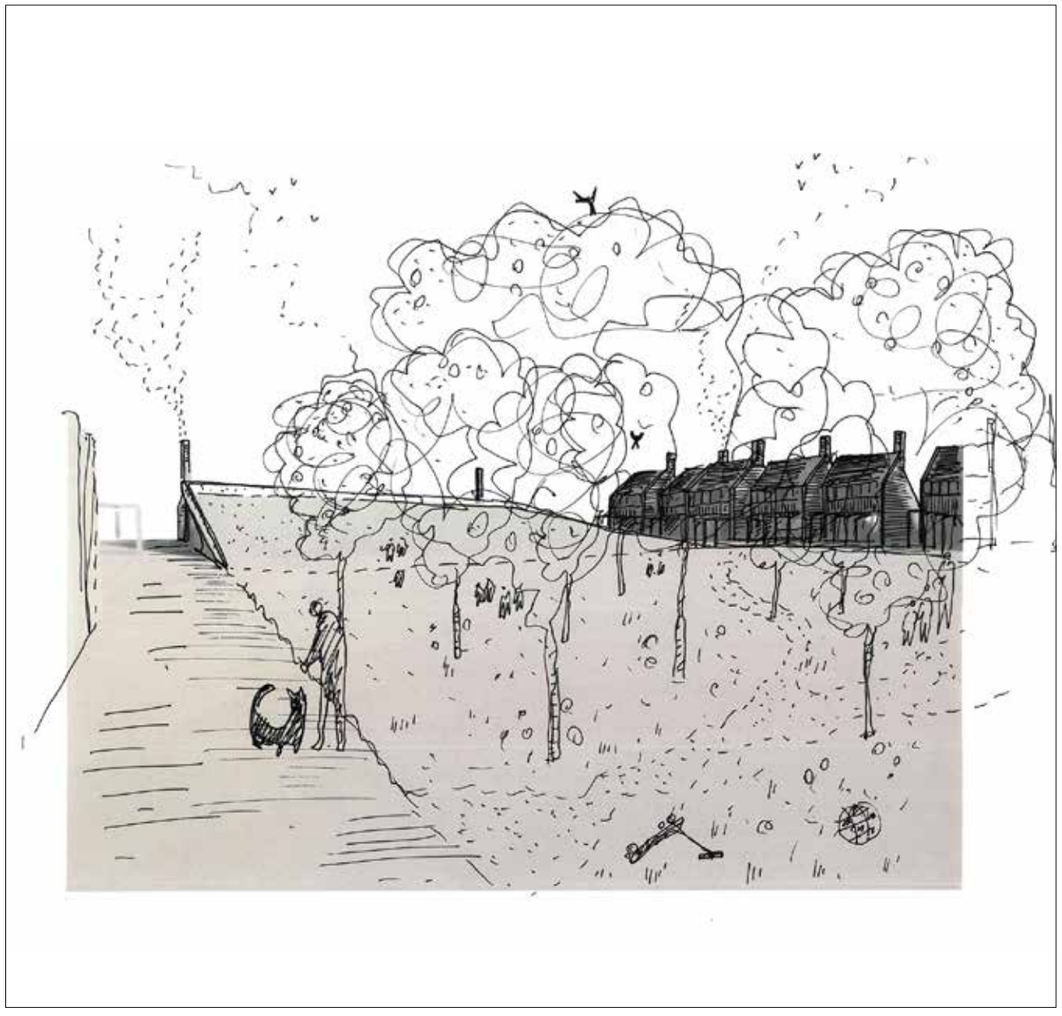
1 Typical plan and section of the 2B house **2** Perspective drawing from the garden looking back to a 3 bed house **3** Perspective drawing from the garden looking back to a 2 bed house **4** Conceptual collage of the view from the garden looking back towards a three bed house.

5 Design Principles for Housing

We propose that apple trees are planted in the orchard. These are to be placed on a 4m grid in order to allow the existing machines used by Soulton Farm to mow the grass beneath the trees.

To the northern edge of the orchard the ground folds up to form a mound, concealing a car park beneath, and shielding the housing from the noise of the main road. This south facing slope becomes place for informal seating, and faces a clearing in the trees which can be used for informal performances.

Purpose designed built in street furniture forms part of the landscape public realm, extending the language of the brick architecture. This built in street furniture provides seating, lighting and planting and is carefully placed across the site, articulating the secondary squares and paths between the houses.



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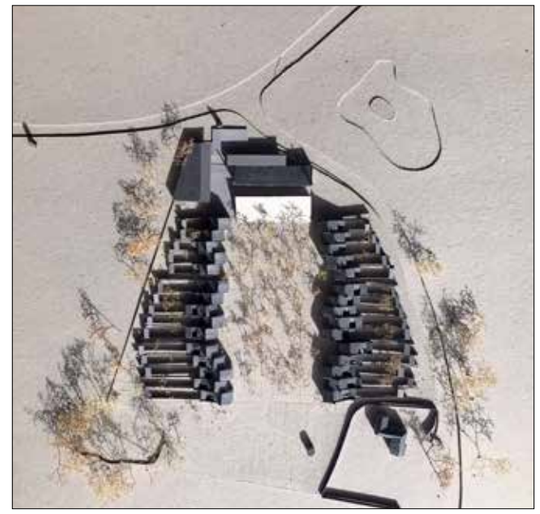

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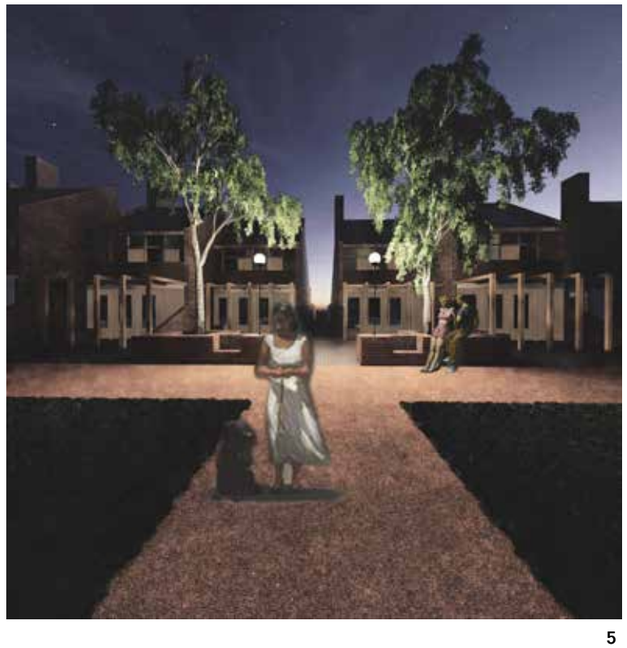

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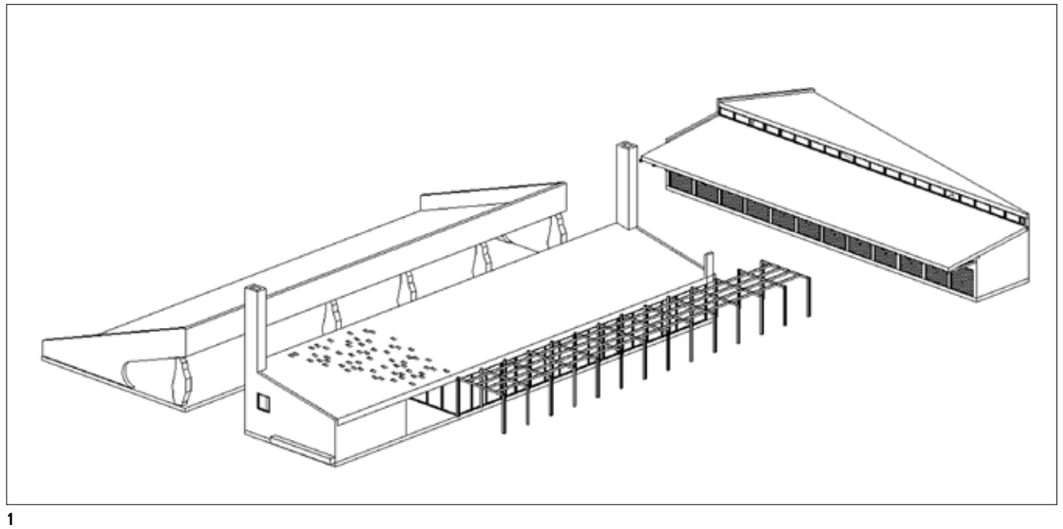
1 Concept sketch of the ground of the orchard folding up to create the earth mound of the communal car park **2** Photograph of model 1/500 from above with the orchard and communal car park mound to the north **3** CGI from within the orchard looking towards the north with the communal car park mound in the background **4** CGI from one of the secondary square between the houses looking into the orchard **5** Conceptual collage of the view from orchard looking towards the public furniture at dusk

5 Design Principles for Housing



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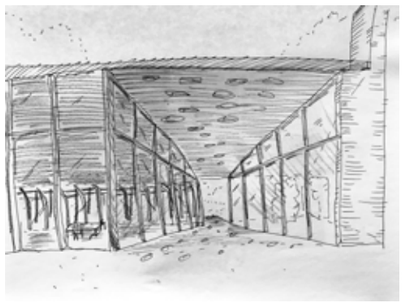


5

3

4

1 CAD Axonometric showing the mound, community structure and pergola and the garages/workshop **2** Concept sketch looking at the entrance to the site **3&4** Model photographs of the north edge of the site **5** Sketch looking north through the passage between the community structure and the communal plant **6** Conceptual collage from the north looking south into the public square used as a flower market

The building fronting the main road provides a space for use by the community, potentially with some ancillary retail space to buy groceries etc. This building opens onto a hard landscaped public square, which can be used for different activities throughout the year: food markets, flower markets, car boots etc. A timber pergola, similar to those placed at the entrance threshold to the dwellings, fronts onto the square, as a threshold to the community building. A communal plant room is proposed to the east of the community structure serving the new village estate with sustainable energy. A covered passage is proposed between these uses providing a direct pedestrian connection from the square to the east of the village estate.

To the north a standing stone is proposed to mark the bus stop.

To the south west of the square cars or vans can be parked in garages. There are 15 proposed for 50% of the dwellings. A further 15 car parking spaces are proposed beneath the raised mound, providing space for the other 50% of the dwellings to park cars. Some of these spaces can be fitted with electric charging points.

A large communal workshop is proposed to the rear of the garages space, which it to be lit by a continuous rooflight.

6

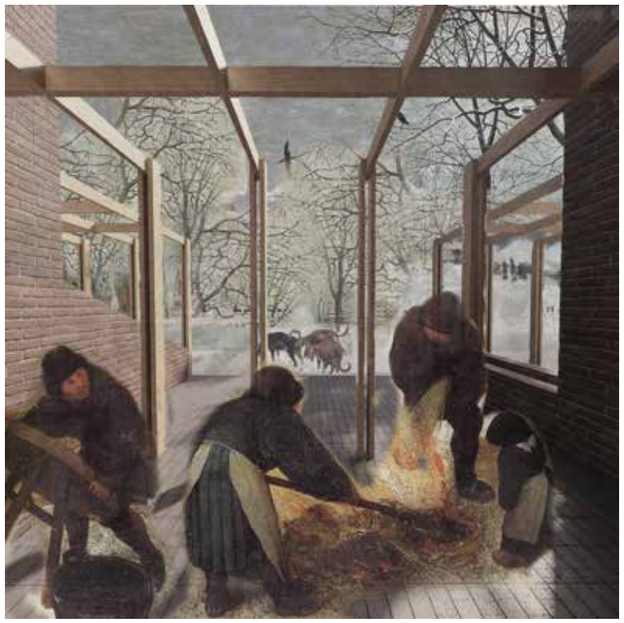
5 Design Principles for Housing

1

2

1 Conceptual collage of the view from the pergola looking into the orchard, summer **2** CGI from within the orchard looking towards the houses, Soulton Hall in the distance, summer.

5 Design Principles for Housing

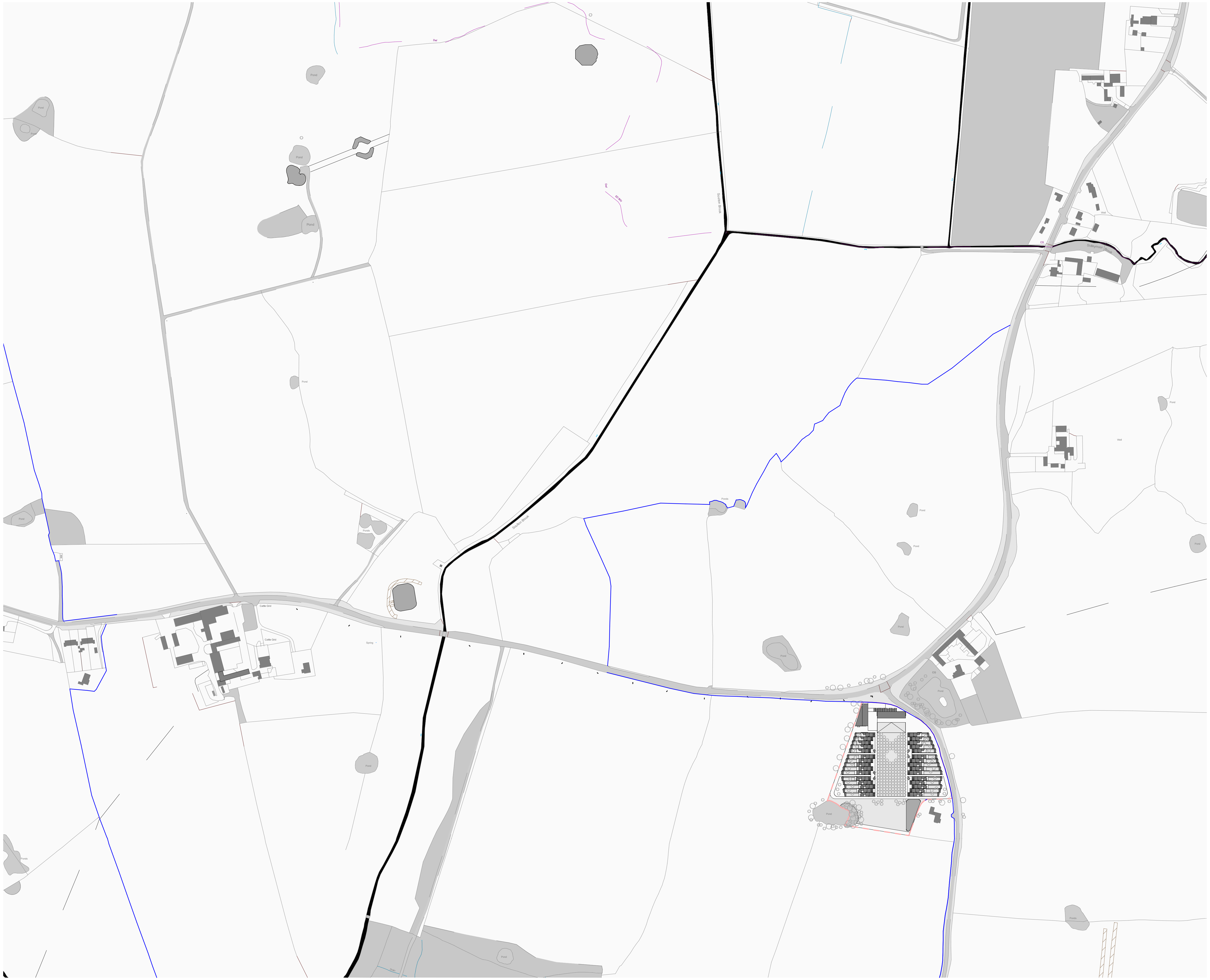


1

2

1 Conceptual collage of the view from the pergola looking into the orchard, winter **2** CGI from within the orchard looking towards the houses, Soulton Hall in the distance, winter.

Appendix A
Lynch Architects Drawings



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project title
Soulton Village

drawing title
Estate Plan

scale
1 : 2500 @A1

status

date of origin
February 2021

project origCode zone level type role dwg no	revision
120-LA-XX-XX -DR-A-0100	**1**

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project title
Soulton Village

drawing title
Site Plan Existing

scale **1 : 500 @A1**
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date of origin **##/##/16**

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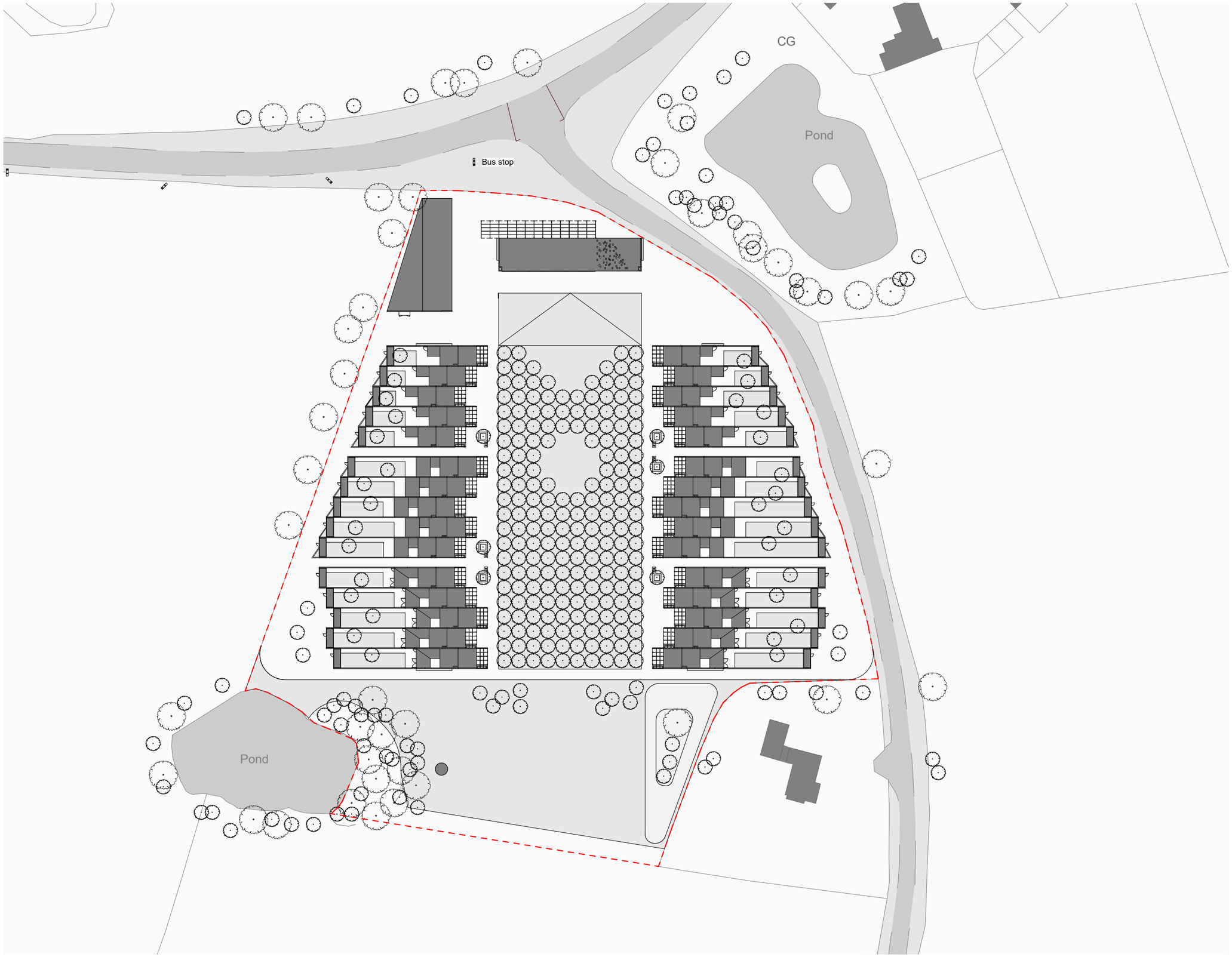

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project title
Soulton Village

drawing title
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scale **1 : 500 @A1** status

date of origin **February 2021**

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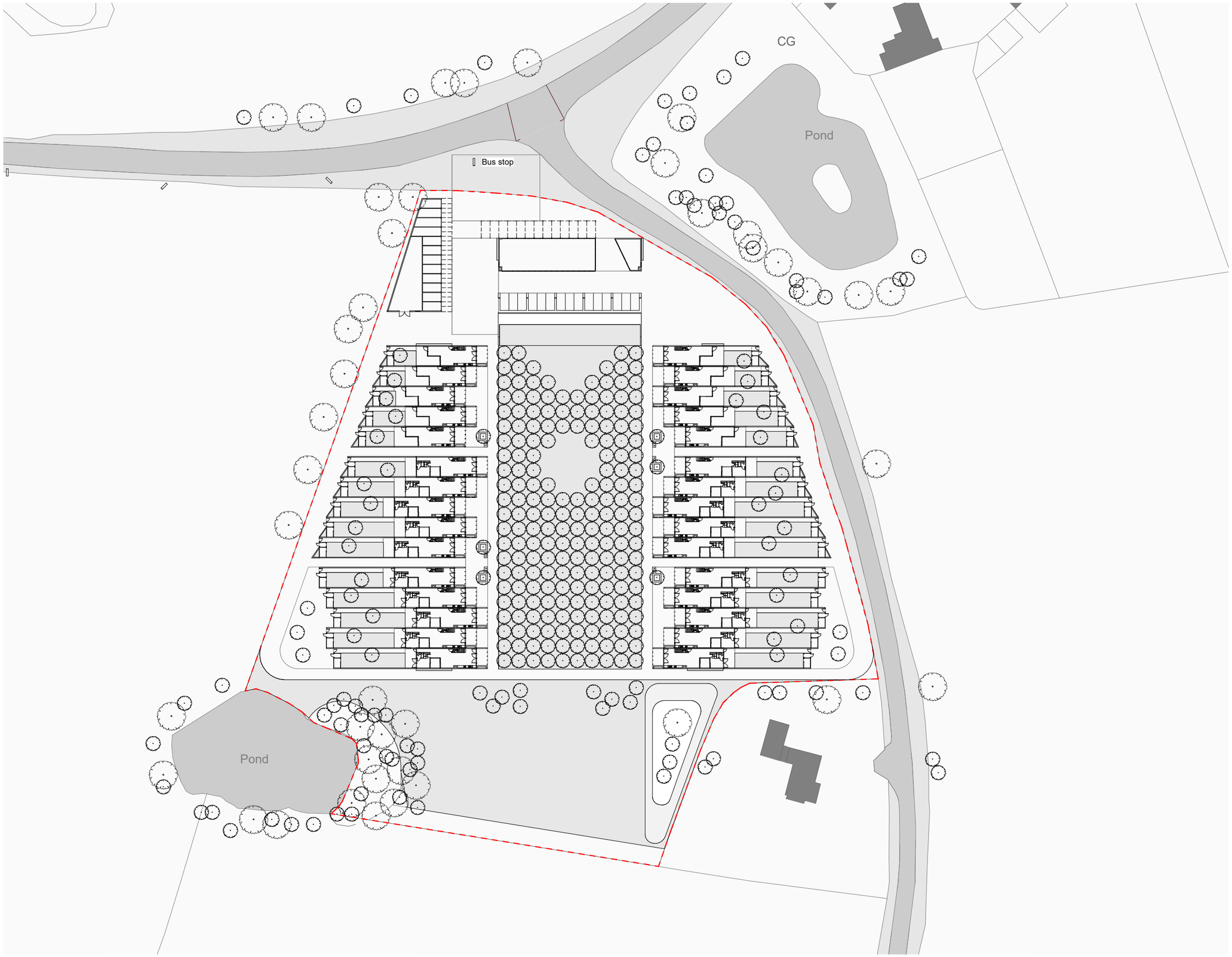

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project title
Soulton Village

drawing title
Sitewide Ground Floor Plan

scale **1 : 500 @A1**
status
date of origin **February 2021**

project	origCode	zone	level	type	role	dwg no	revision
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1 **Longitudinal Site Section**
1 : 200

2 **Site Cross Section**
1 : 200

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project title
Soulton Village

drawing title
Sitewide Sections

scale: **1 : 200@A1**
status:
date of origin: **February 2021**

project origCode zone level type role dwg no: **120-LA-XX-XX- DR-A-0104**
revision: **1**

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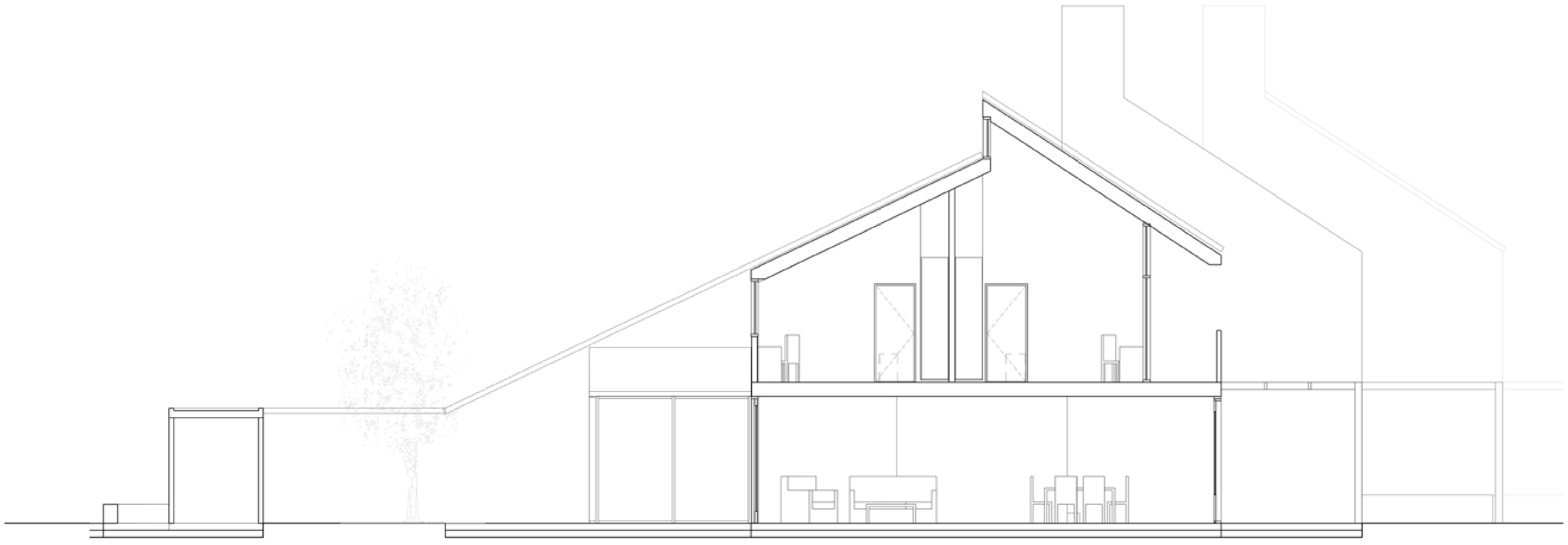

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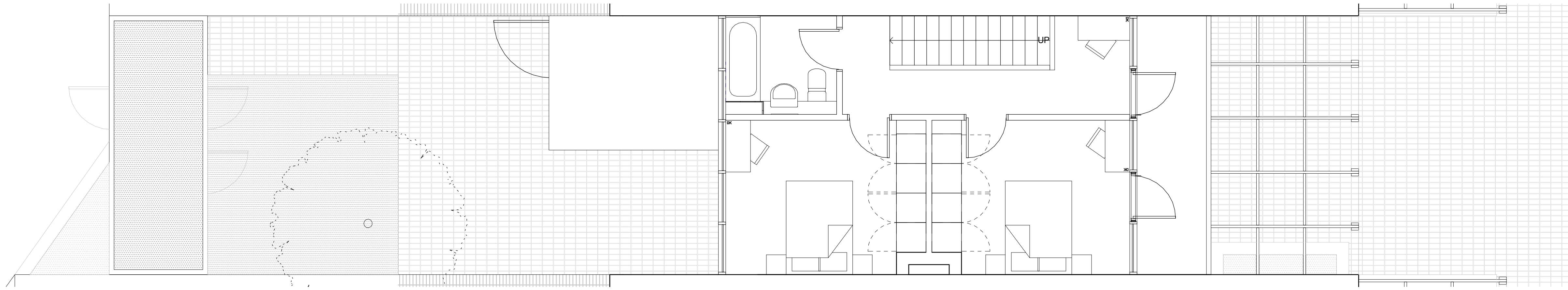

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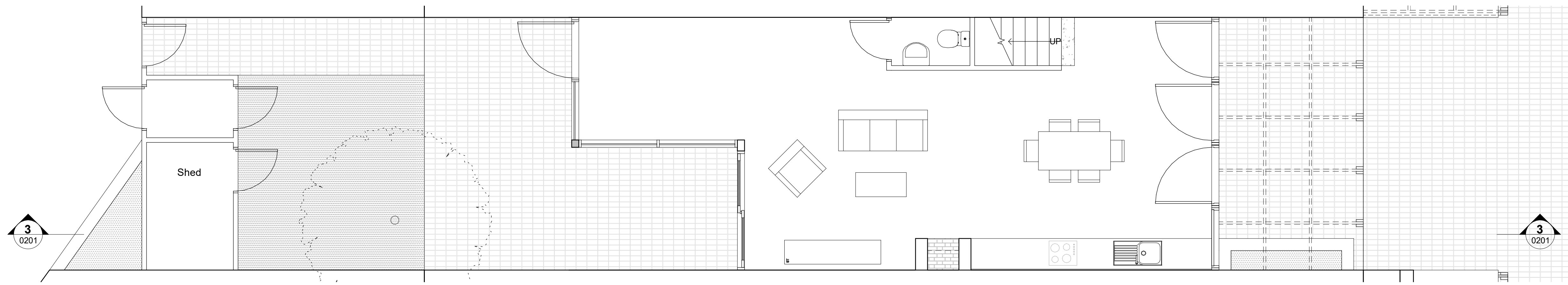

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2B4P House

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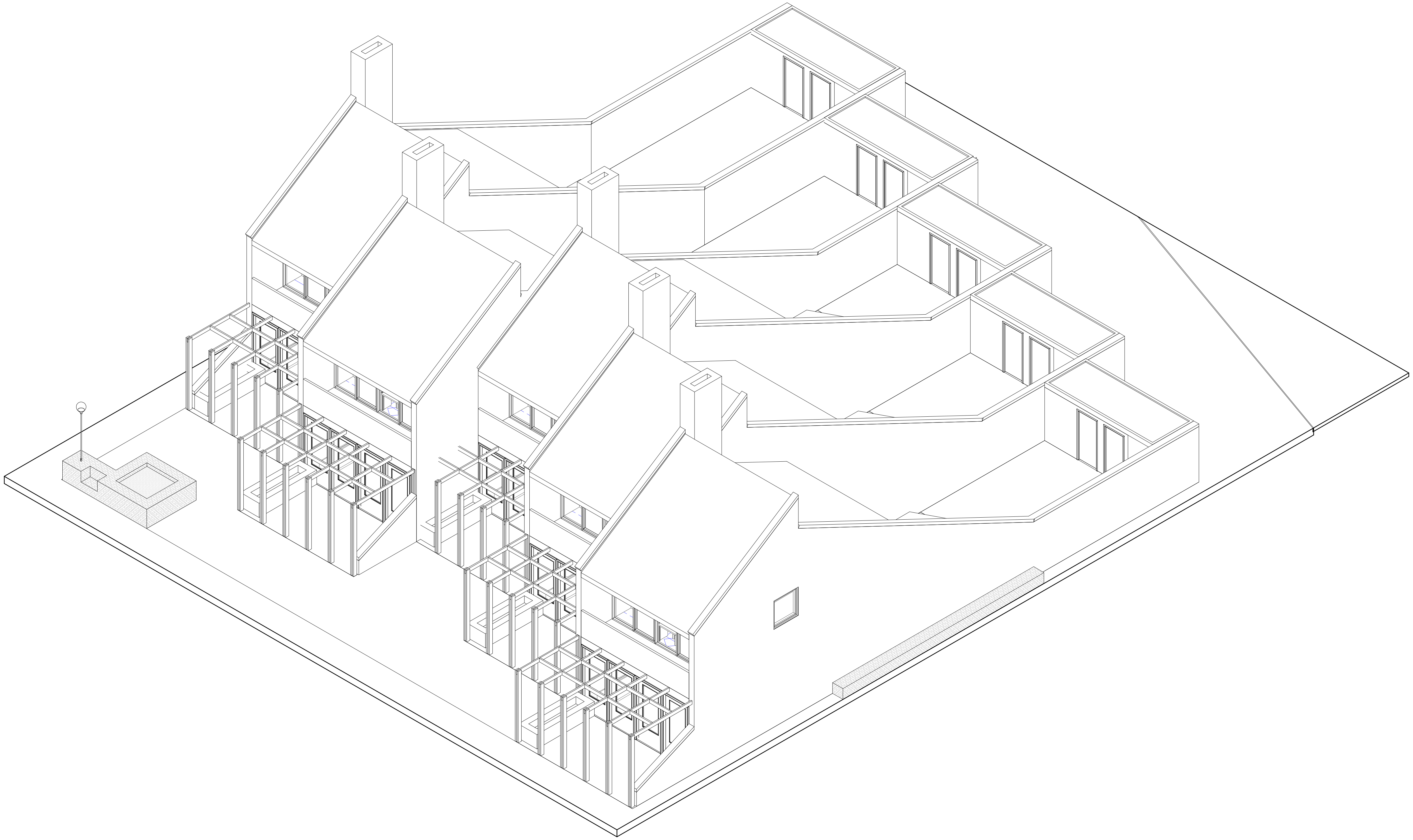

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project title
Soulton Village

drawing title
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scale: @A1
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date of origin: February 2021

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revision: **1**

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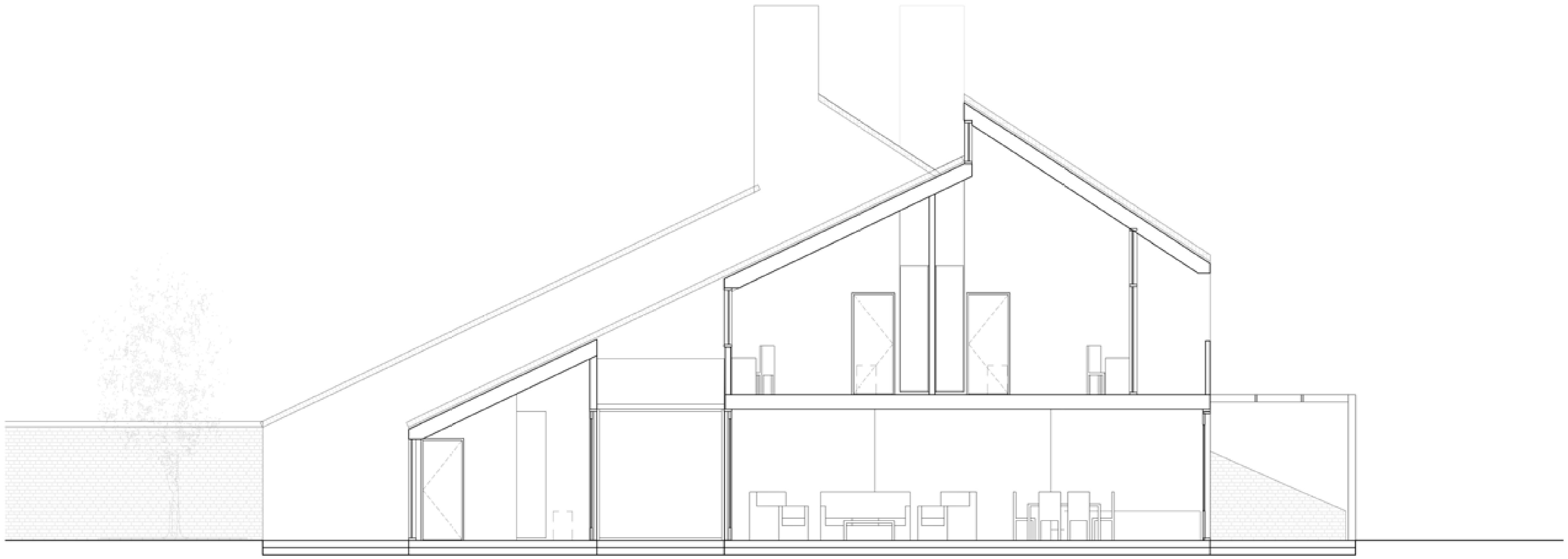

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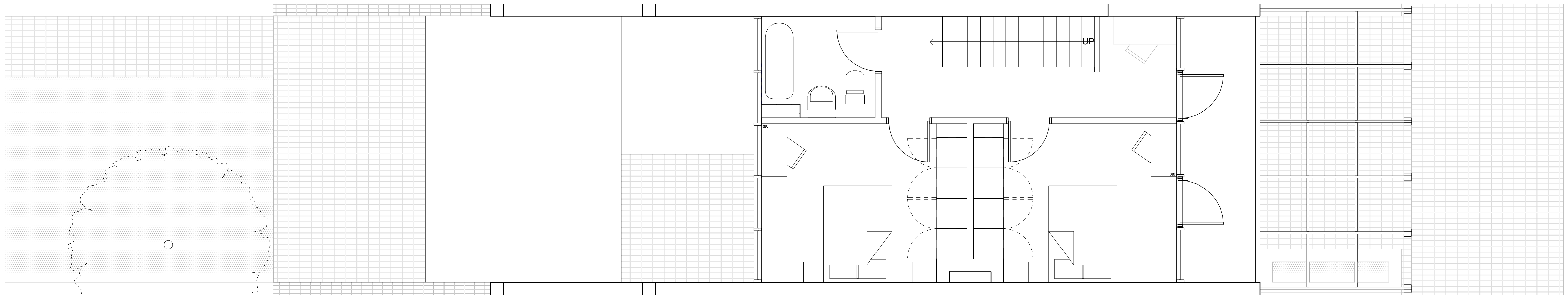

2 **3B6P A - First Floor**
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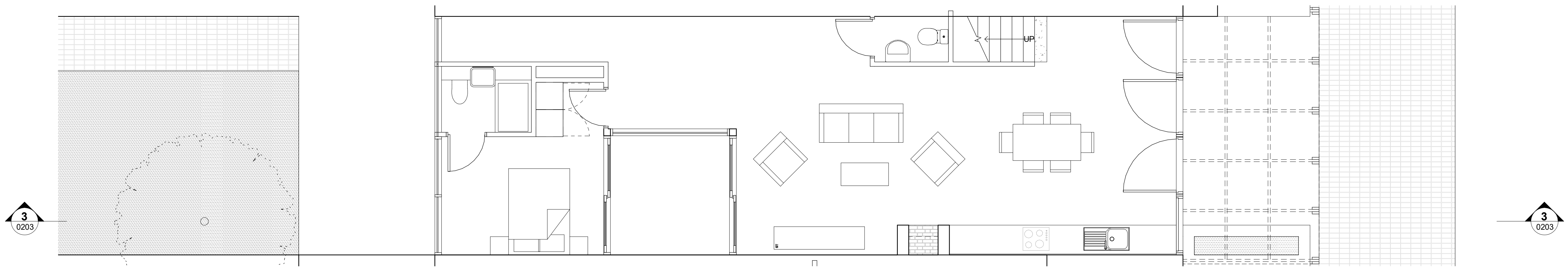

1 **3B6P A - Ground Floor**
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project title
Soulton Village

drawing title
3B6P A House

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status
date of origin: **February 2021**

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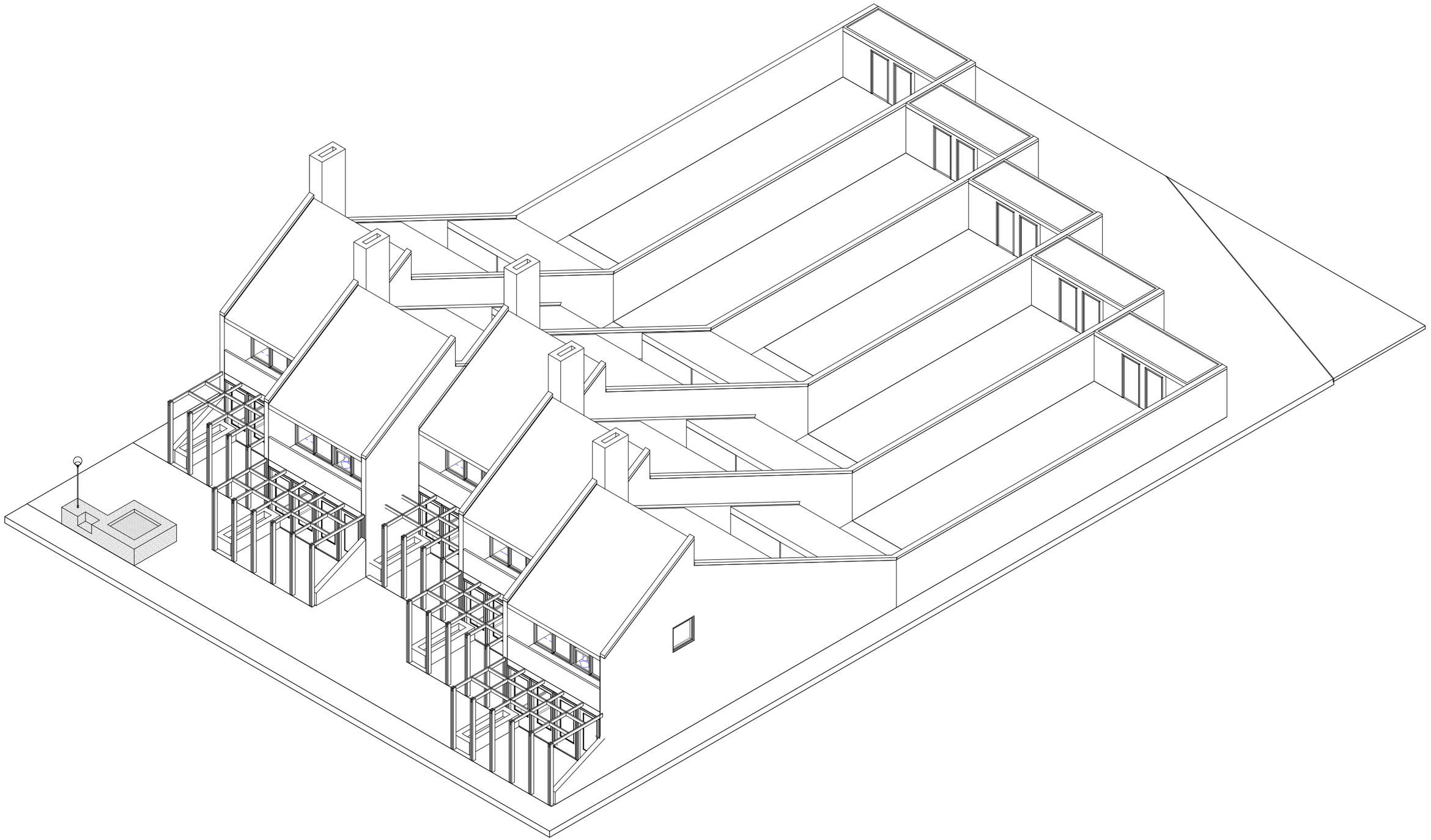

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project title
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drawing title
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status:
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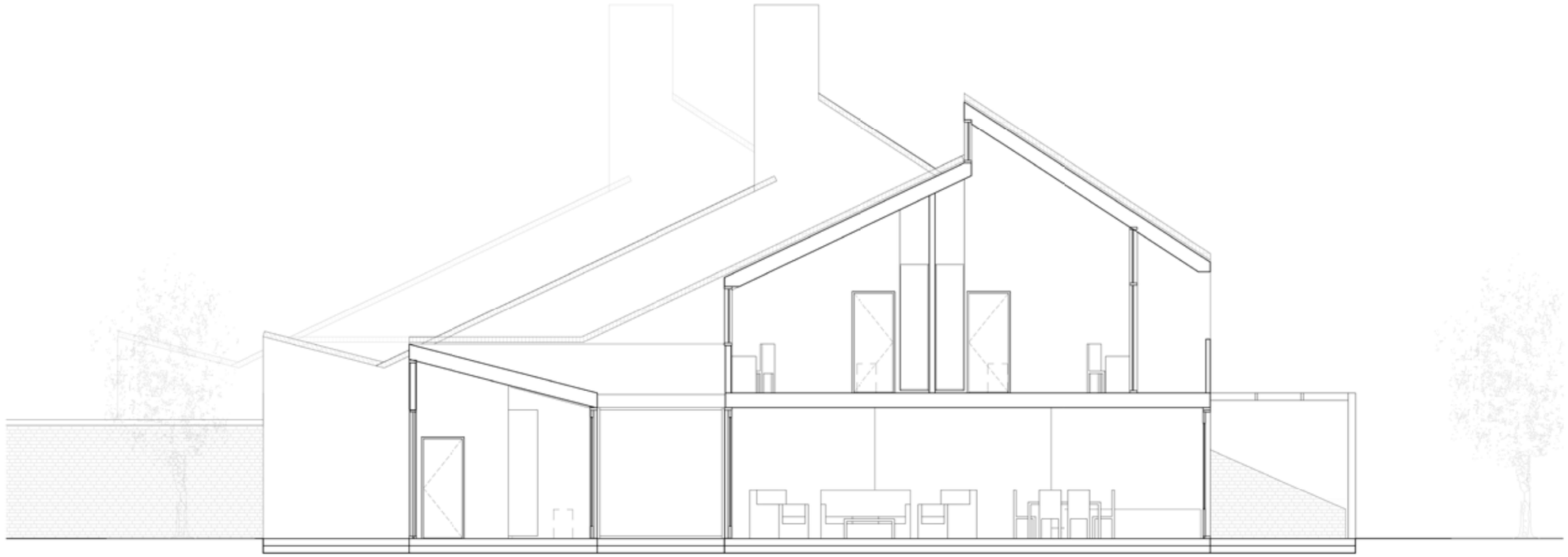

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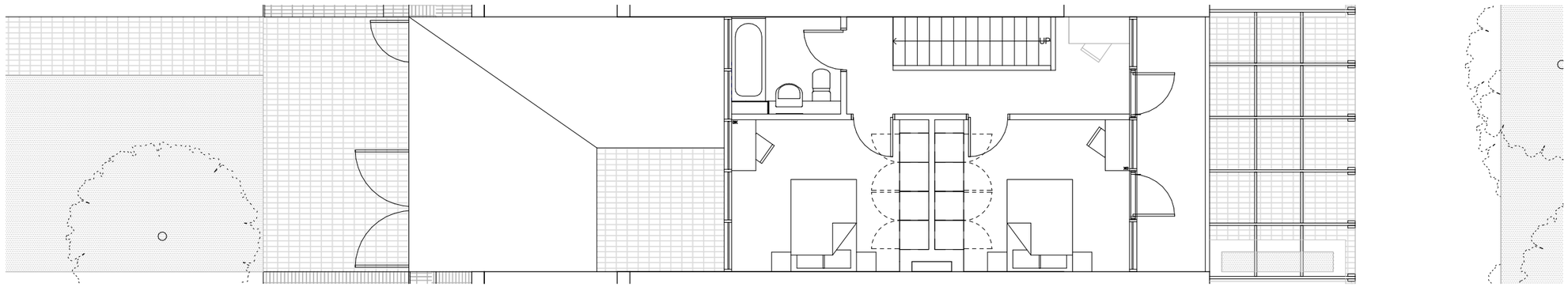

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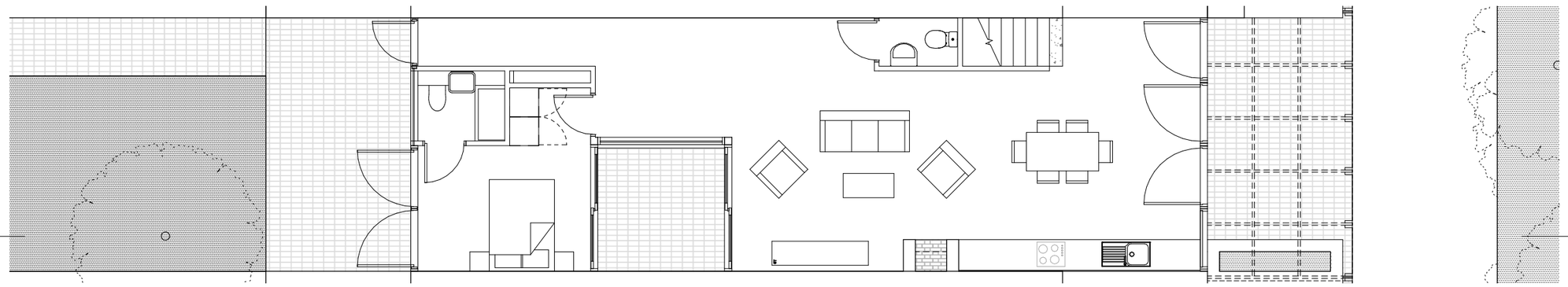

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project title
Soulton Village

drawing title
3B6P B House

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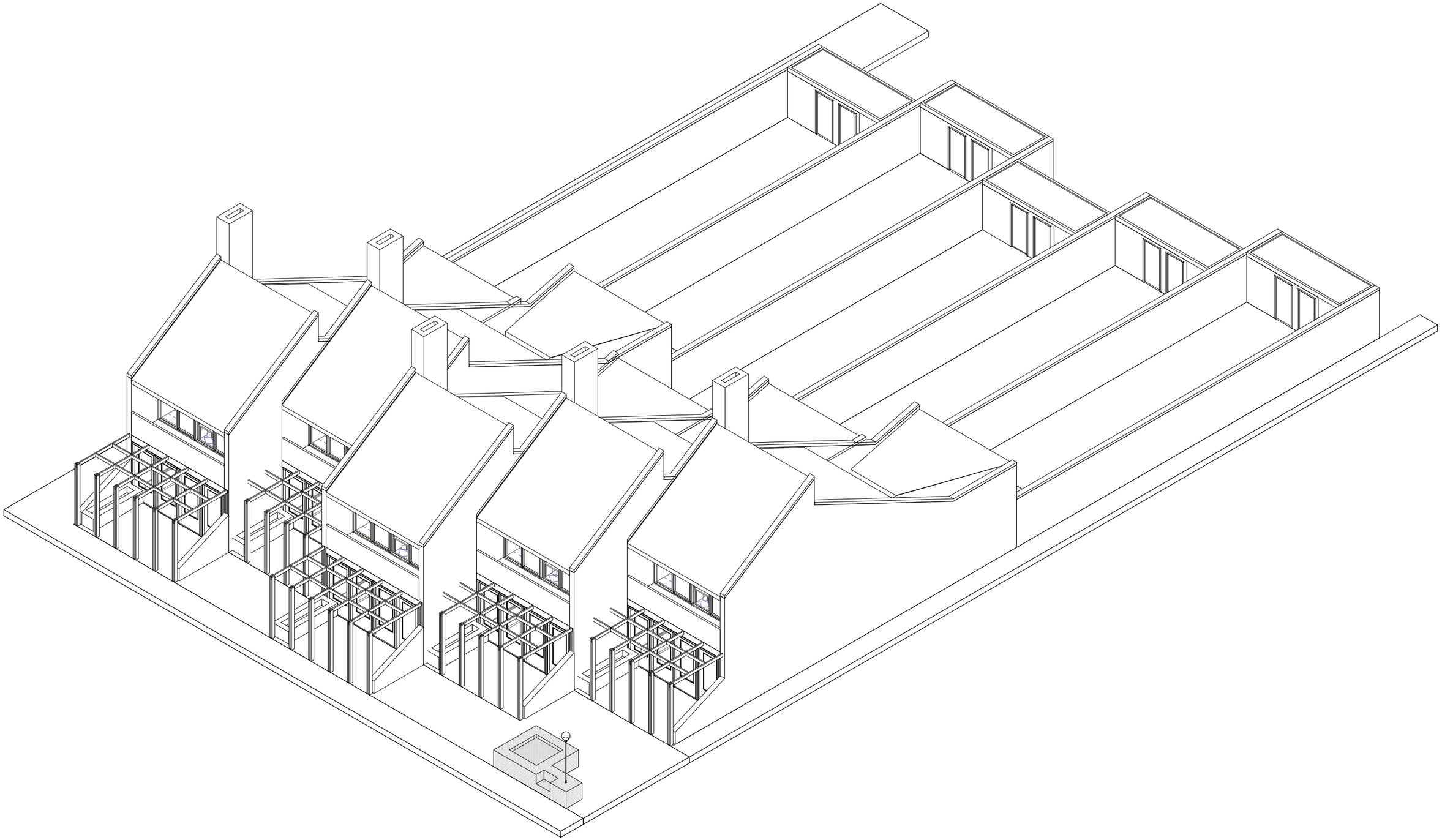

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project title
Soulton Village

drawing title
3B6P B Axonometric

scale: **@A1**
status:
date of origin: **February 2021**

project origCode zone level type role dwg no: **120-LA-XX-XX- DR-A-0206**
revision: **1**

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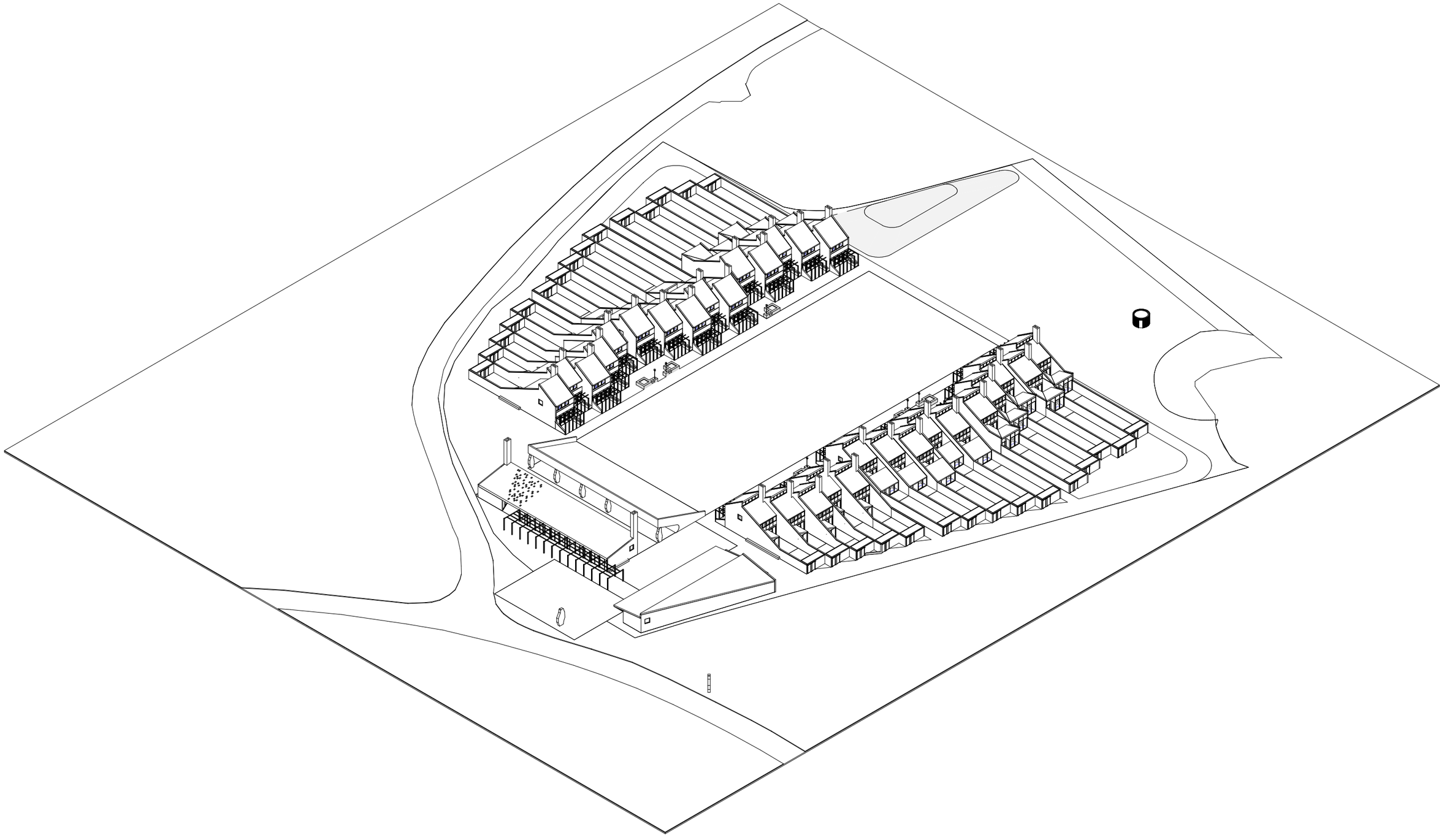

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project title
Soulton Village

drawing title
Sitewide Axonometric

scale
@A1

status

date of origin
February 2021

project origCode zone level type role dwg no
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revision
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Appendix B
Max Fordham Outline Energy Strategy

SOULTON VILLAGE – INITIAL ENERGY STRATEGY DESIGN NOTE

This design note is intended to provide high-level strategic advice on the energy strategy options that would be available for the proposed new build housing development Soulton Village, Shropshire.

1 Background and general approach

Energy Hierarchy
In light of the global climate emergency, the overarching aim for all new housing developments should be to provide good quality homes whilst minimising carbon emissions and general impact on the environment. To achieve this, our recommended approach to minimise operational carbon emissions (in line with planning policy for many local authorities) is to follow a design hierarchy:

1) Apply passive measures to reduce the demand for energy. These would typically include optimising building form and orientation and maximising fabric performance.
2) Design energy efficient mechanical and electrical systems that minimise the energy consumption required to meet demand.
3) Incorporate renewable technologies into the design, to further reduce the carbon emissions of the development.

This energy hierarchy is then combined with a strategy for reducing the embodied carbon associated with constructing the houses, to minimise the overall carbon emissions of the development.

Net Zero Carbon
For projects that intend to be exemplar from an environmental perspective, there is the option to aim for Net Zero Carbon accreditation. The majority of this process involves following the energy hierarchy described above, with the additional steps being to have the remaining operational and embodied carbon emissions of the development officially calculated, audited and offset using a Gold Standard carbon offsetting scheme. Embodied carbon is offset with a single payment at completion, whilst operational carbon is offset on an annual basis according to metered energy consumption.

Passivhaus
At Max Fordham, we believe that the best way to successfully follow the energy hierarchy for minimising operational carbon emissions on a project is to achieve compliance with the Passivhaus Standard. Passivhaus is a voluntary standard for designing and constructing buildings that have high levels of occupant comfort whilst using very little energy for heating and cooling. As well a design standard, Passivhaus also involves a rigorous quality assurance process from the start of the project to completion, which ensures that the energy performance of a building as predicted at design matches up with the actual energy usage once built and occupied.

Both Net Zero Carbon accreditation and Passivhaus compliance are options that can be considered as the project progresses further.

2 Energy strategy for Soulton Village

This section provides a high-level overview of our recommended energy strategy for the development.

Form and orientation
The form factor of a house, best measured by the ratio of envelope area to useable floor area, is crucial to minimising its heating demand. It is best to arrange a low-rise housing development in rows of terraces, as this minimises the area through which each house loses heat. The thermal envelope of each house should be kept as simple as possible to reduce the amount of complex junctions and details that are necessary.

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The proposals for Soulton Village will follow this best practice approach, with the houses arranged in compact terraces. The houses are proposed to be orientated East-West, due to the nature of the site. This will minimise the risk of solar gain through south-facing windows contributing to overheating during summer. The terraces will also be protected by a mound from prevailing northerly winds, which will reduce their exposure and result in lower annual heating demand.

Fabric performance
The design should aim to achieve façade U-values and air-tightness standards that significantly improve upon the minimum level required for Building Regulations compliance. Triple glazing and walls and roofs provided with 200-300mm of insulation would be recommended (depending on construction/insulation type and other factors). The impact of thermal bridging should be minimised, through simplifying the envelope design as much as possible and carefully detailing all junctions between elements.

Ventilation
Mechanical ventilation with heat recovery (MVHR) would be recommended for the houses. This guarantees a minimum level of background ventilation to maintain good air quality, whilst drastically reducing the amount of heat loss associated with bringing fresh air into the houses. Stale air would be extracted from the kitchen and bathrooms, with fresh air supplied to bedrooms and living spaces. The two air streams pass through a heat exchanger within the MVHR unit, with heat extracted from the warm extract air being used to pre-heat the incoming cold external air.

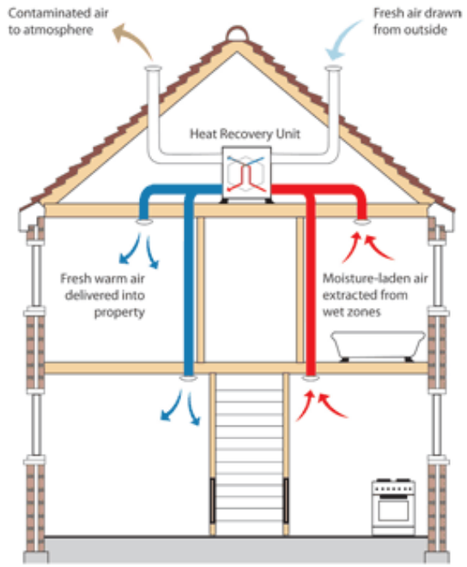

Figure 1 - Mechanical ventilation with heat recovery

It is important to note that MVHR is not a replacement for opening windows, it simply guarantees that indoor air quality can be maintained all year round without windows needing to be opened. On nice, summer days, residents can still throw all the windows open and enjoy the higher amount of air circulation that this will achieve.

Heating
An all-electric heating strategy is recommended for three reasons:

- The operational carbon emissions associated with heating will decrease every year as the national grid continues to decarbonise. This is in contrast to the operational carbon emissions of a gas-based heating system, which would remain constant year on year.
- Avoiding the combustion of fossil-fuels on site means that there will be no detrimental impact on local air quality.
- Electricity-based heating systems can benefit from on-site renewable energy generation.

There are a number of electricity-based heating systems that could be used on a housing development such as Soulton Village

Direct Electric

This is the simplest means of using electricity for heating. Electric panel heaters or underfloor heating is provided to each space with thermostatic and timer control. A very simple installation but the most expensive means of heating a house and the least effective means of reducing carbon emissions using an electrical system.

Ground Source Heat Pump (GSHP) – Closed Loop

The least risky ground-source heat-pump option is a closed loop ground source heat pump. Instead of abstracting ground water, closed loops of pipework are sunk into an array of c100m deep boreholes to couple with a large volume of the ground below the site and water circulated through the pipework. As the ground is at a stable temperature all year round, the efficiency of such a system remains consistent. As heat is extracted from the ground rather than generated through resistance it is possible to be more than 100% efficient. Close loop systems can operate at efficiencies of 300-400%.

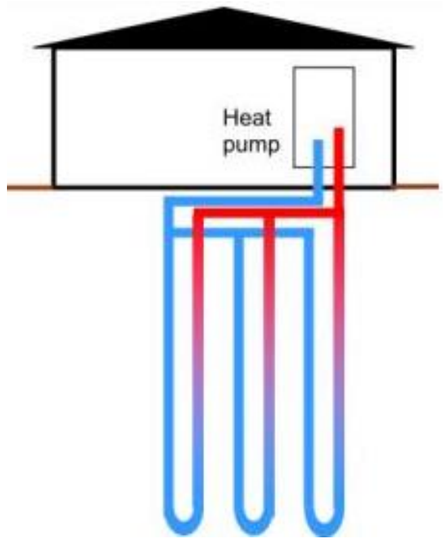

Figure 2 - Closed loop ground source heat pump arrangement

In order to provide heating, each house would require one or two boreholes to be drilled in the garden to extract heat from the ground. Within the house, the only plant is a heat pump and hot water cylinder.

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The heat pump requires an electrical supply and the entire system runs off the electrical supply to each individual house so there is no requirement for submetering and landlord billing of tenants for energy consumption.

Ground Source Heat Pump (GSHP) – Open loop

An open-loop ground source heat pump system works in a similar fashion to the closed loop system. Within the house the same heat pump equipment can be used.

Open loop heat pumps require a borehole to be drilled into the ground until a below ground water course (an aquifer) is struck. Water from this aquifer is extracted from the ground at typically 12°C, and reinjected via a separate borehole at, say 6°C. The ground water that is abstracted will be at a stable temperature all year round so the efficiency of the system will be stable.

By doing this, system efficiencies of 450% are not uncommon., that is to say for every 1kWh of electricity consumed, 4.5kWh of heat can be provided.

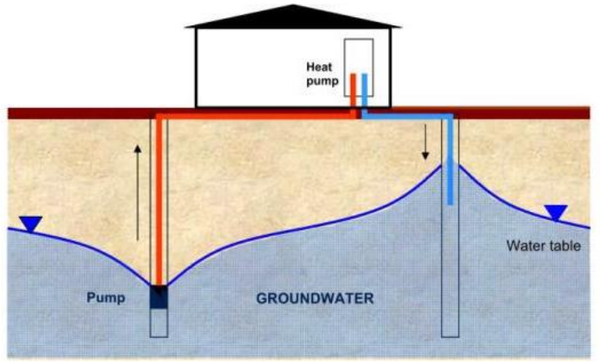

Figure 3 - Open loop ground source heat pump arrangement

The two boreholes need to be a minimum of 100m apart, and so for this reason it would be sensible to provide the borehole system as a communal system serving all the houses together communally. The heat generation still takes place within the house and on the tenants electrical supply but maintaining and running the borehole pump would be by the landlord so, while not selling heat to the tenants, there would be a requirement to cover the borehole pump running costs as part of a service charge.

Air Source Heat Pump (ASHP)

Air source heat pumps work in a similar manner to ground source heat pumps but take heat from the air rather than the ground. They are less efficient as the source (external air) is variable in temperature and is coldest when heat is most needed. The benefit of air source heat pumps is that they are the cheapest to install and come as packaged units delivered to site. They are housed outside and need careful consideration with regard to acoustics and also usually require a cylinder to be located within the house to both act as a buffer vessel and generate hot water, similar to the ground source systems.

Figure 4 - An air source heat pump mounted outside

Heat Emitters

For the direct electric option, heating could be by standard electrical panel type radiators. Oil filled radiators are the safest and give the option of a high temperature emitter if that is desired for rapid warm up and human comfort. A low surface temperature option would be underfloor electric heating.

Heat pumps of all types generate heating water at 50°C to maintain high efficiencies. This water can be used with slightly oversized radiators, or with underfloor heating. The benefit of running low temperatures is that the surface temperature of the emitter is at a temperature that does not cause harm if a tenant were to fall on it or collapse against it.

Summary table

	Pros	Cons
Direct Electric Heating	- Very low maintenance costs. - Very cheap to install.	- Very high running costs. - Higher rate of carbon emissions.
Air-Source Heat Pump	- Easiest/cheapest heat pump option to install. - Running costs significantly less than direct electric. - Reduced carbon emissions vs direct electric.	- Noisy units in garden need careful consideration. - Not as efficient as a ground source heat pump.
Closed-Loop Ground-Source Heat Pump	- Easiest ground-source option to install and maintain. - Low energy costs for tenant. - Low maintenance costs for landlord. - Low carbon emissions. - Can be centralised, or delivered on a house-by-house basis	- Expensive to install.
Open-Loop Ground-Source Heat Pump	- Lowest carbon emissions of any option. - Lowest tenant energy costs. - Potentially cheaper than the open-loop option.	- Higher maintenance costs for landlord due to filtration and ongoing distribution. - Requires a big investment upfront. - Single point of failure – if the borehole pump fails, no houses have heating. - Riskiest in terms of finding groundwater

On the basis of the above, the recommended heating strategy for a development such as Soulton Village would either be an air source heat pump per dwelling or a ground source heat pump per dwelling that draws heat from a closed loop borehole (which could potentially be shared between two houses).

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Renewables
Early in the design stage of the project, the overall energy consumption can be calculated taking into account the proposed passive and active means of reducing overall energy consumption and associated carbon emissions. Renewable technologies can then be incorporated into the design to further reduce the carbon emissions of the development, either by direct use of the electricity generated or offsetting grid emissions via export.

A feasibility can be carried out to determine the type of renewable technology that is most suited to the site, but PV arrays mounted to the roof of each house are likely to be the simplest option.

3 Conclusion

To summarise, our recommended high-level energy strategy for Soulton Village would be as follows:

- Optimised building form and orientation, to minimise heat demand and maximise useful solar gains;
- Very high-levels of façade performance, with triple glazing, a thick continuous insulation layer and minimal thermal bridging;
- Mechanical ventilation with heat recovery to all houses, guaranteeing good air quality all year round whilst minimising heat lost via ventilation;
- An all-electric heating strategy, to futureproof operational carbon emissions. Individual air source or ground source heat pumps for each house are likely to be the most favourable options;
- Renewable on-site electricity generation maximised to further reduce the operational carbon emissions of the development.