

The SEAM, Barnsley - Phase 1
Landscape and Public Realm

Concept Design Strategy
RIBA Stage 2

Fourth Edition

0.0 Report Verification

Rev	Date Purpose	Created	Checked	Approved	Client Authorised	Comments
XX	03.12.2021 Draft Issue	Darrell Wilson Landscape Designer	Darrell Wilson L.A. Associate	Steve Marshall Project Director	10.12.21 - Public Realm Presentation	
A	22.12.2021 Draft Issue	Adam Vickers Landscape Designer	Darrell Wilson L.A. Associate	Steve Marshall Project Director	Client to confirm	Digital technology, vehicle access restriction, SUDs infrastructure added
B	31.01.2022 Draft Issue	Adam Vickers Landscape Designer	James Millington L.A. Director	Steve Marshall Project Director	Client to confirm	New Sections added - Comments Incorporated
B	14.02.2022 Draft Issue	Darrell Wilson Landscape Designer	James Millington L.A. Director	Steve Marshall Project Director	Client to confirm	Update to Decision Tracker/ Concept Stage Front Cover image

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0.1 Introduction

Project Background

The Seam, Barnsley's Digital Campus is home to DMC01, recently refurbished DMC02 and Barnsley College's new Scitech Digital Innovation hub. In April 2021, a 'Blueprint' for the Digital Campus was completed, proposing to bring together digital and tech focused people, businesses, research and skills, enabling collaboration and innovation through a growing digital eco-system that would operate on a regional, National and International level.

The Blueprint aims to transform the physical environment of this growing Digital Campus with opportunities to create a highly sustainable live-work neighbourhood in the heart of the town, connected by smart infrastructure, high-quality public realm and a testbed for technology led innovation in retail, Internet of Things, low/ zero carbon and active travel.

The scope of this report is the development of the landscape and public realm for Phase 1 of the Seam 'Blueprint' to RIBA Stage 2 concept design. This is the new public green space and wider public realm which sits centrally to the DMC01, proposed development Plot 1 and ATH (Access Travel Hub) and links the proposed MSCP and Plot 2 development blocks to the wider Digital Campus and town centre destinations. The development Plots, MSCP and ATH are being developed alongside the public realm through to RIBA Stage 2.

This report is the conclusion of a WS2 design period in doing so defines the key design approaches and strategies for the Public Realm which will go on to be developed and coordinated in subsequent design stages.

Workstage 2 Concept Design

During Stage 2, the initial concept designs are produced in line with the requirements of the Initial Project Brief. Also in parallel with the concept design, a number of stakeholder engagement workshops have been carried out in order to listen and capture important feedback and ideas which have helped define the concept design development.

The concept design development covers a broad range of themes including access and movement, landscape and planting typologies, spatial composition, materiality, SUDs, lighting and so on. Some themes, for example sustainability crosses over with parallel work packages which are being developed during the WS2 design period and inform the emerging concept design.

The themes tested and developed during WS2 are covered in the respective sections of this report. Further outputs such as plans and other drawings are also included in this design report.

SECTION 1.0

SITE STRATEGIES

1.0 Site Strategies

1.1 Site Context

The Digital Campus is located in the heart of Barnsley town centre.

The site sits adjacent to the Interchange, DMC developments and Barnsley College and is a 5–10 minute walk to all parts of the Town Centre.

The Site forms an important link between key areas such as the College Campus and The Retail Core.

It is identified in the Local Plan as an Opportunity site for development and priority site for public realm improvement.

The Site

As described in the plan overleaf, a large proportion of the site is surface car parking, accessed off County Way.

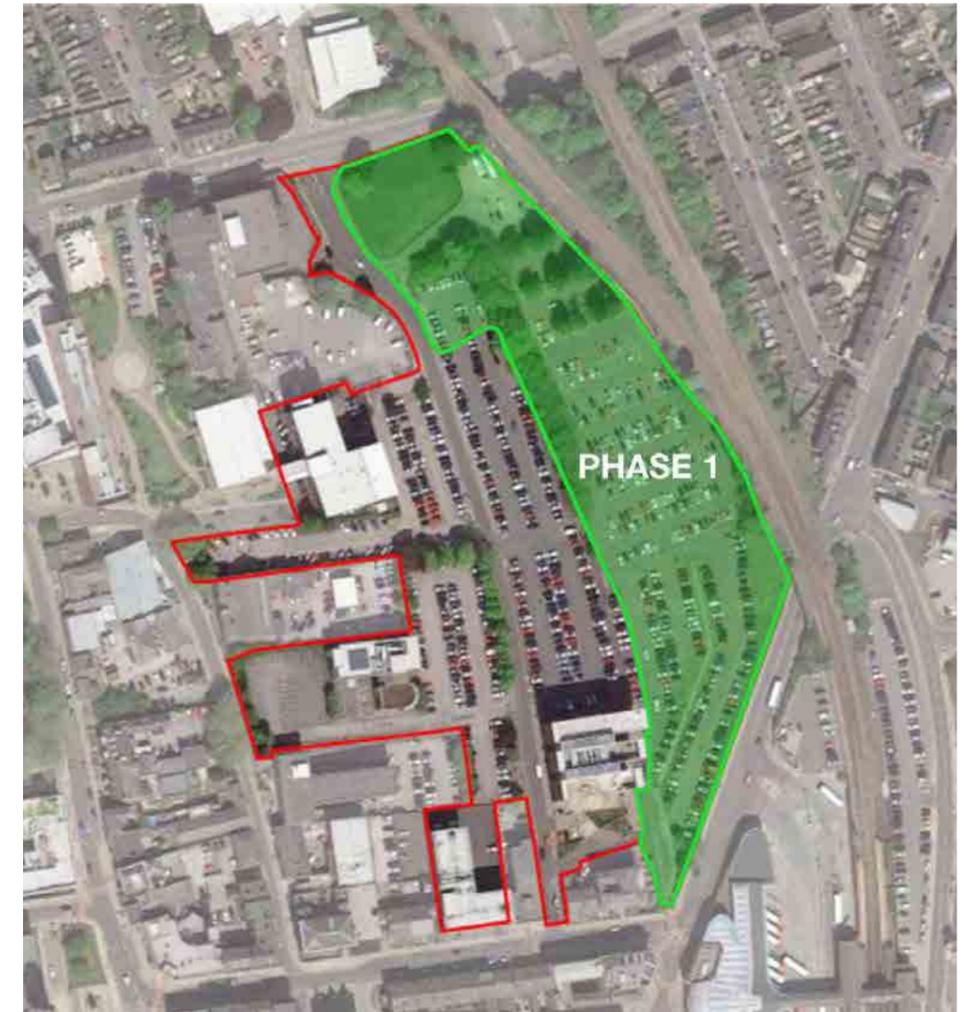
Phase 1 area is currently accessed via vehicle traffic through County Way to access existing car parks.

The mainline railway runs immediately adjacent to site boundary, and therefore has an influence on future development in terms of distance between new development and the railway.

The Phase 1 Boundary excludes key buildings including the DMC developments and College buildings, however these directly influence the Phase 1 project and are included as part of the future 'Blueprint' Masterplan.

The project is also in close proximity to key heritage sites including the Town Hall, Regent Street and Eldon Street.





Aerial view showing Phase 1 Project Area

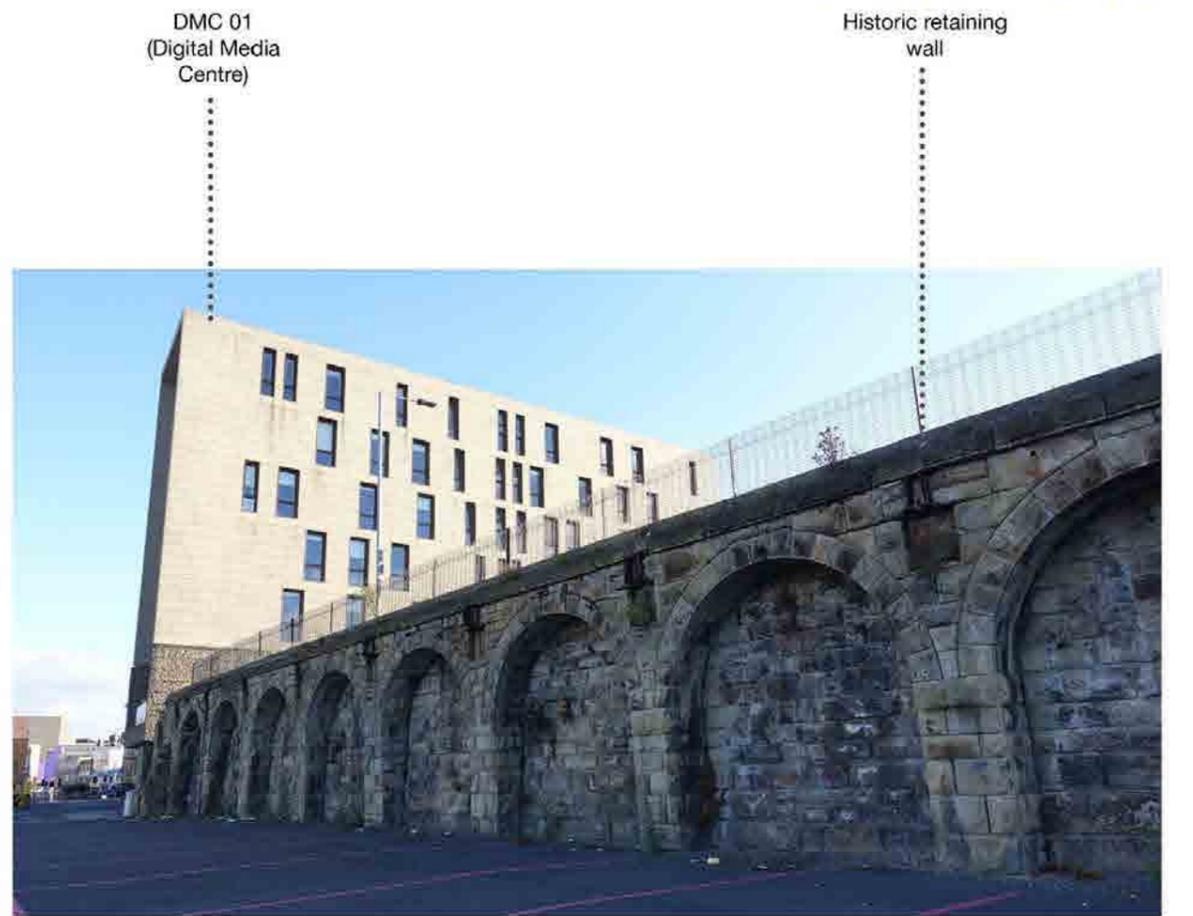
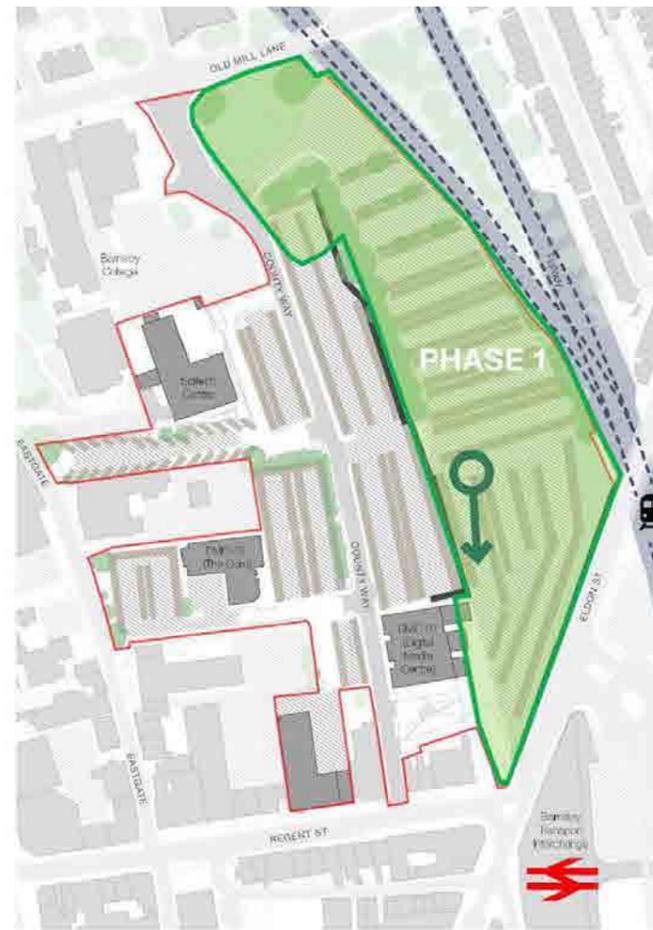
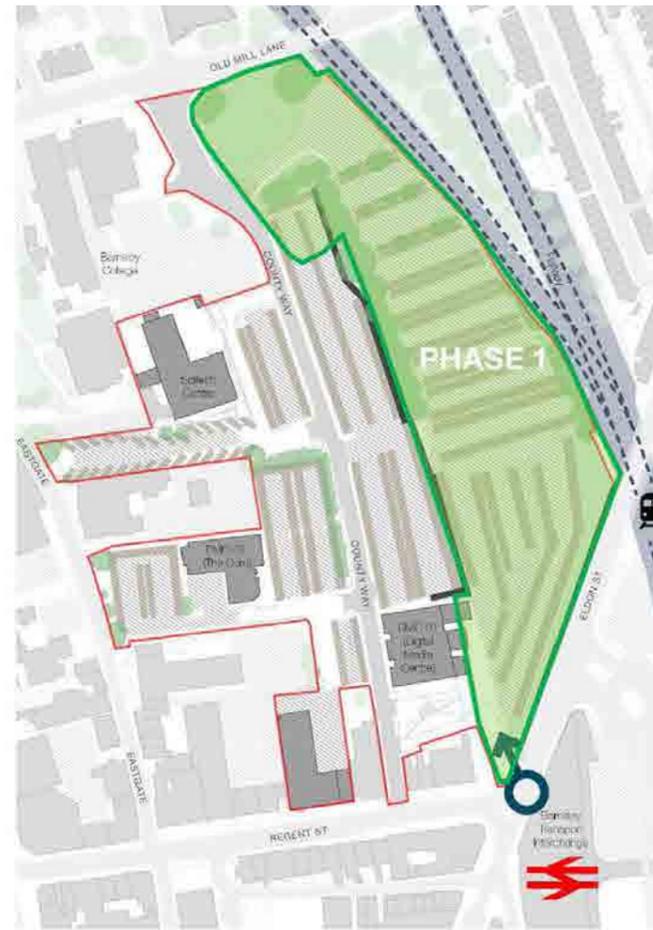
1.0 Site Strategies

1.2 Site Photographs

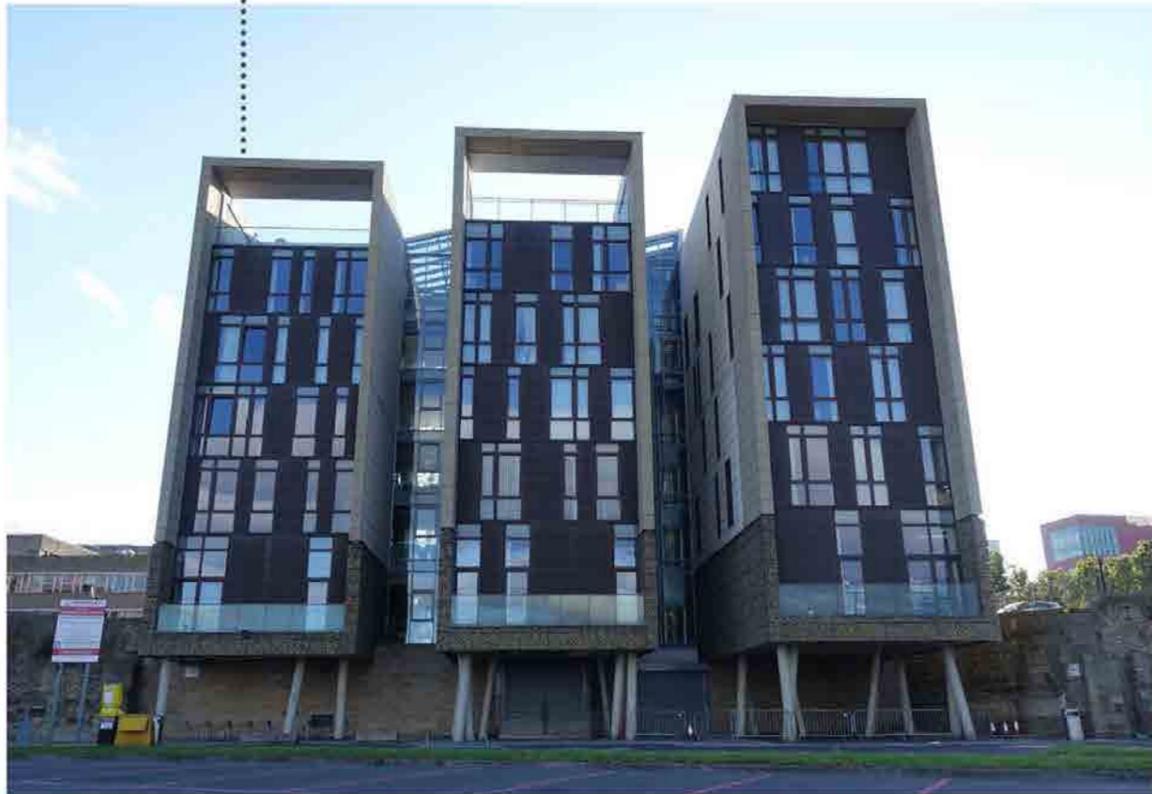
The following existing site photographs describe the current character of the site.

New Buildings such as DMC01 and the existing feature wall with arches have provided context in the development of the Blueprint and even more so with Phase 1.

The topography around the Phase 1 site affords distant views across the valley. A large retaining wall, diminishing as the road climbs towards the station, separates the Phase 1 site from Eldon Street which bounds the southern edge of the site.



DMC 01
(Digital Media
Centre)



Lower Courthouse

Eldon Street



DMC 01
(Digital Media
Centre)



1.0 Site Strategies

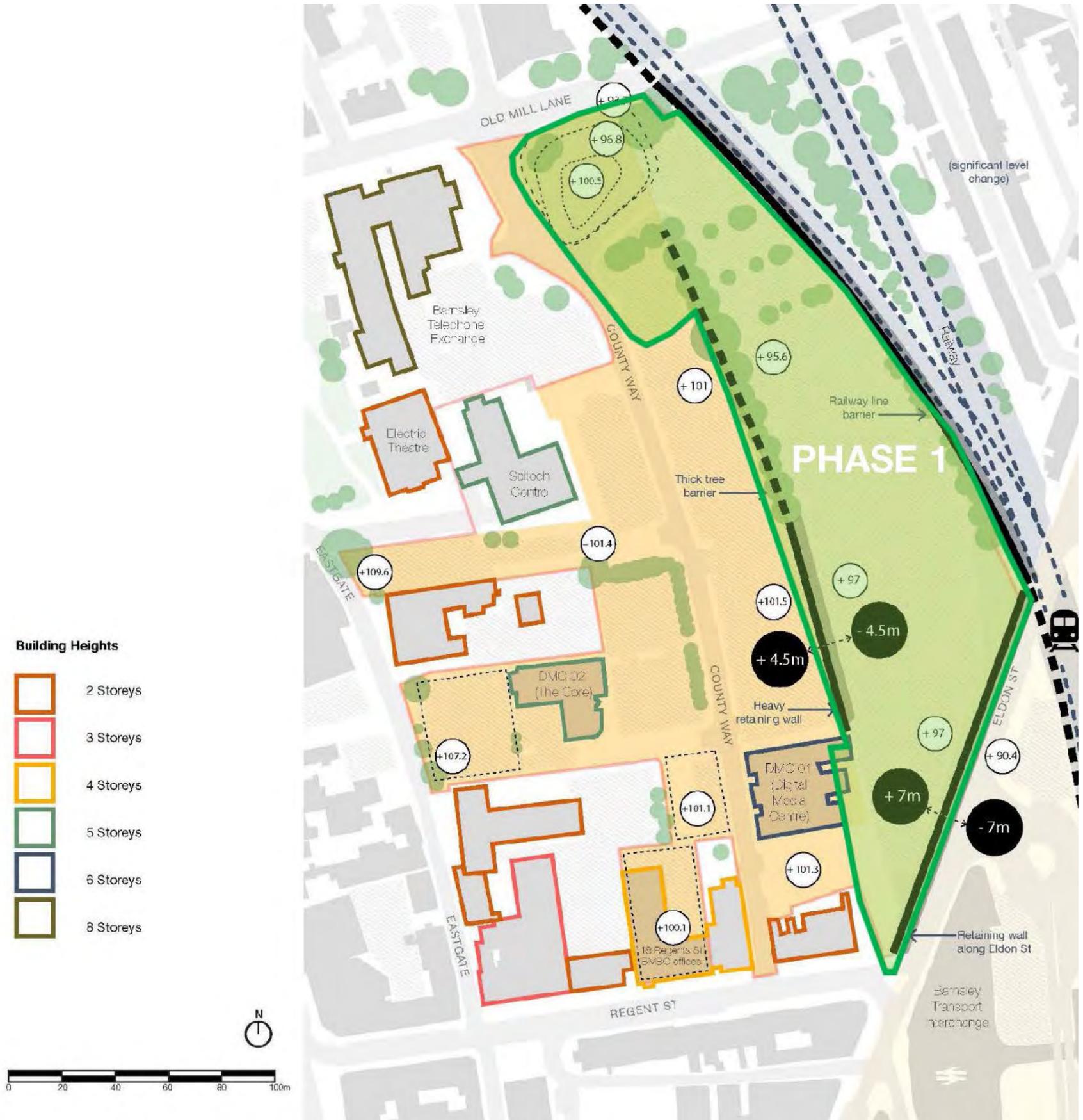
1.3 Hardstanding Boundaries

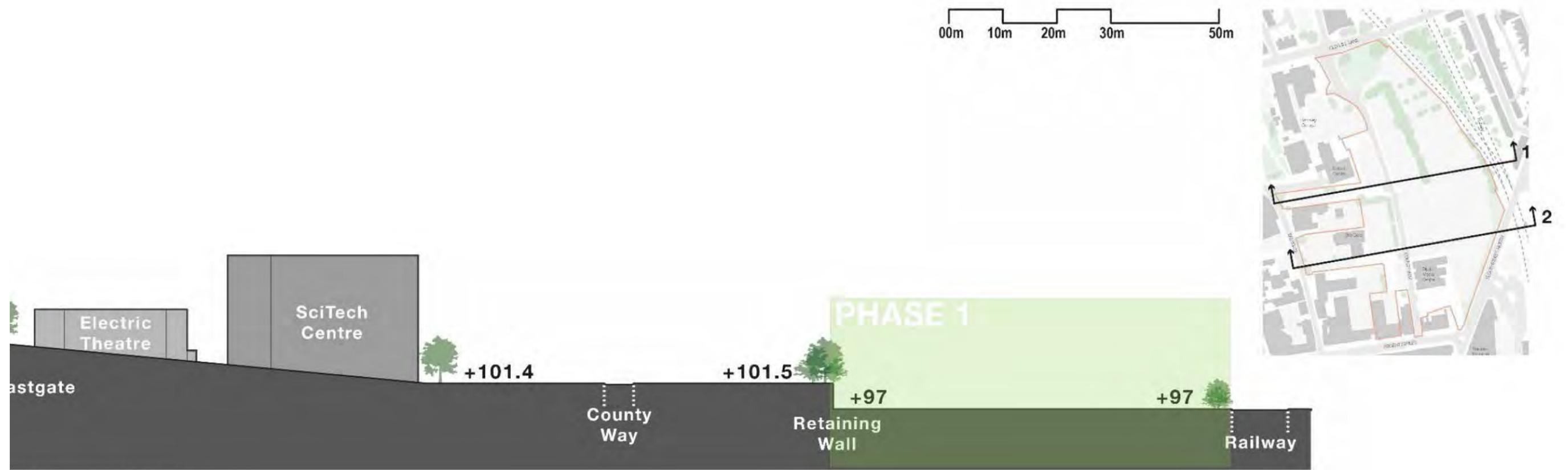
The plan on the right and items below describe the hard boundaries that define the Phase 1 site:

- Historical retaining wall (approx. 4.5m level change)
- Retaining wall along Eldon St (approx. 7m level change)
- Railway adjacency

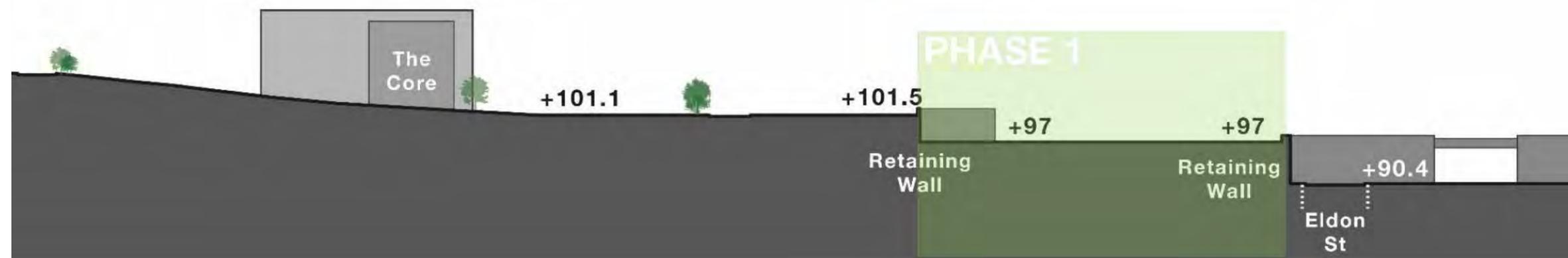
1.4 Site Levels

The site sections overleaf illustrate the changes in level between upper and lower Courthouse.





Illustrative section 1



Illustrative section 2

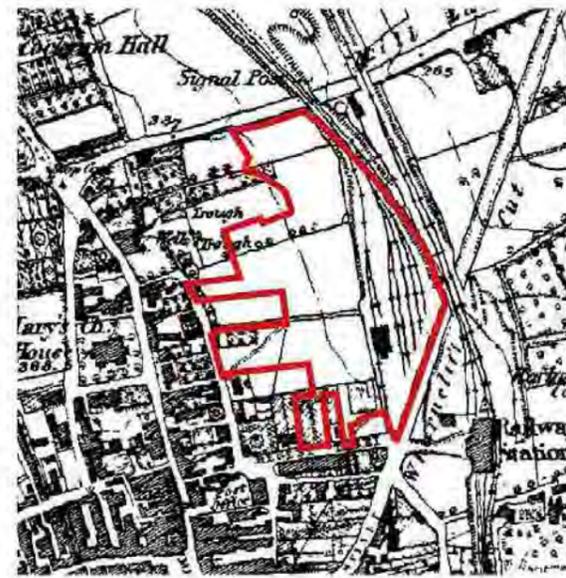
1.0 Site Strategies

1.5 Site History

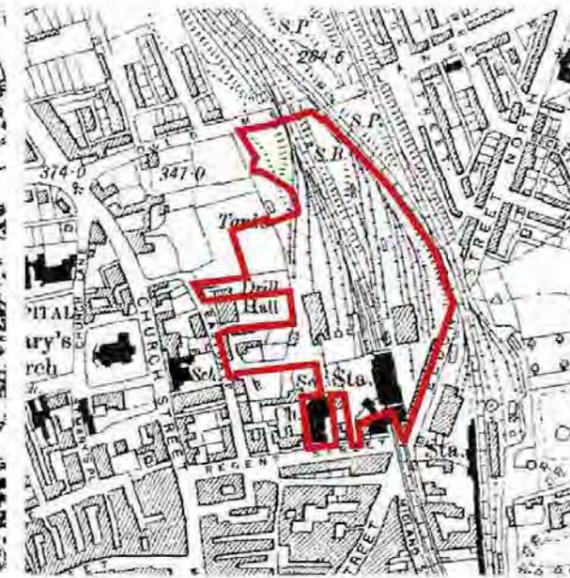
The plans to the right describe the evolution of the site from the mid 1800s through to present day.

The site has evolved throughout time from a predominantly natural greenspace to up until as recent as the 1970s, being in the ownership of the Railway with sidings and several tracks running through the Phase 1 site area, to its current status as a open hardstanding carpark.

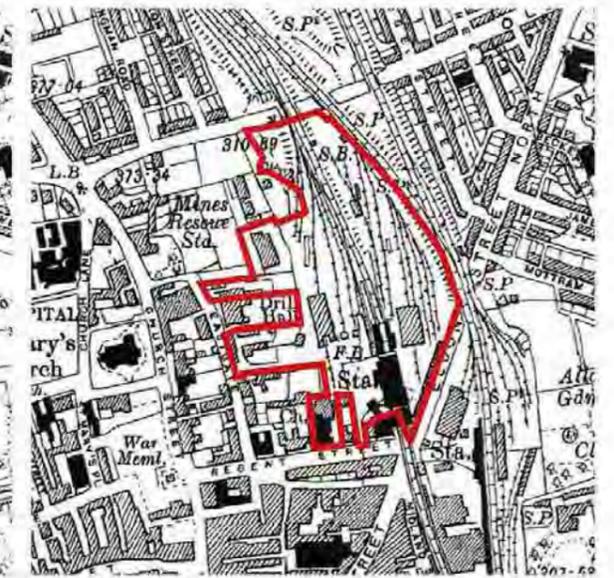
The photograph overleaf, in the bottom lefthand corner shows the retaining wall with arches still in place.



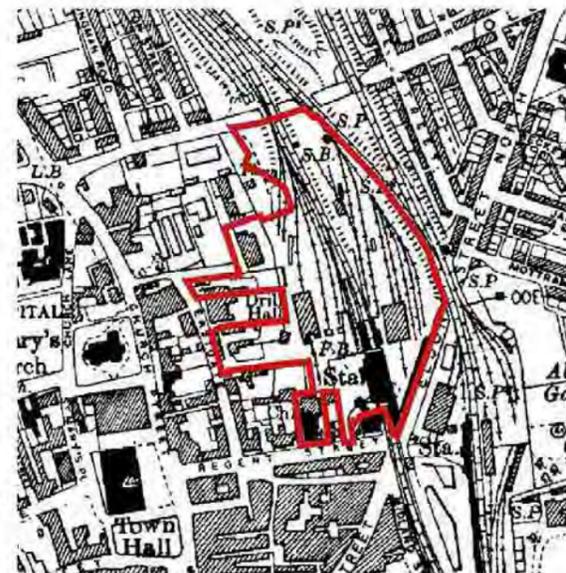
1855



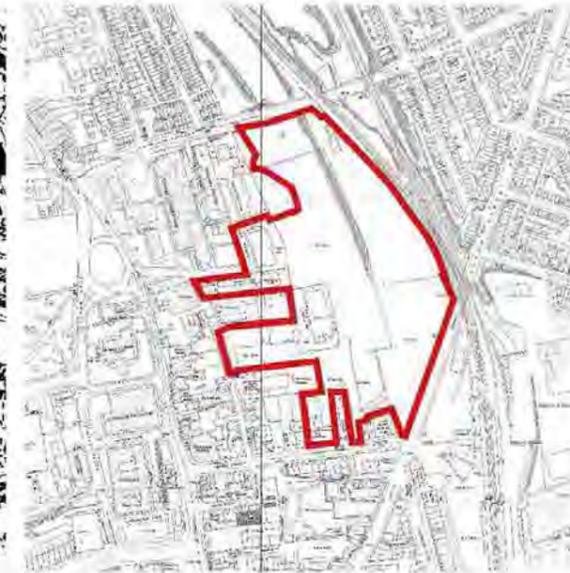
1907



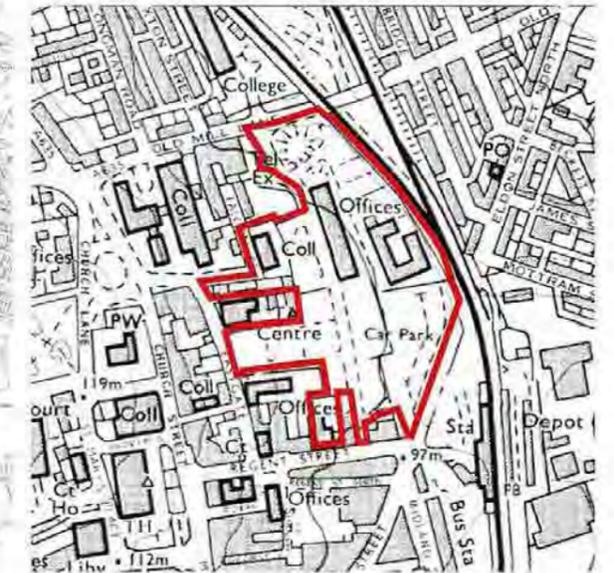
1932



1956



1977-1991



1993



The former Court House Station



Train crossing the former bridge over Regent Street



Former railway alongside retaining arched wall



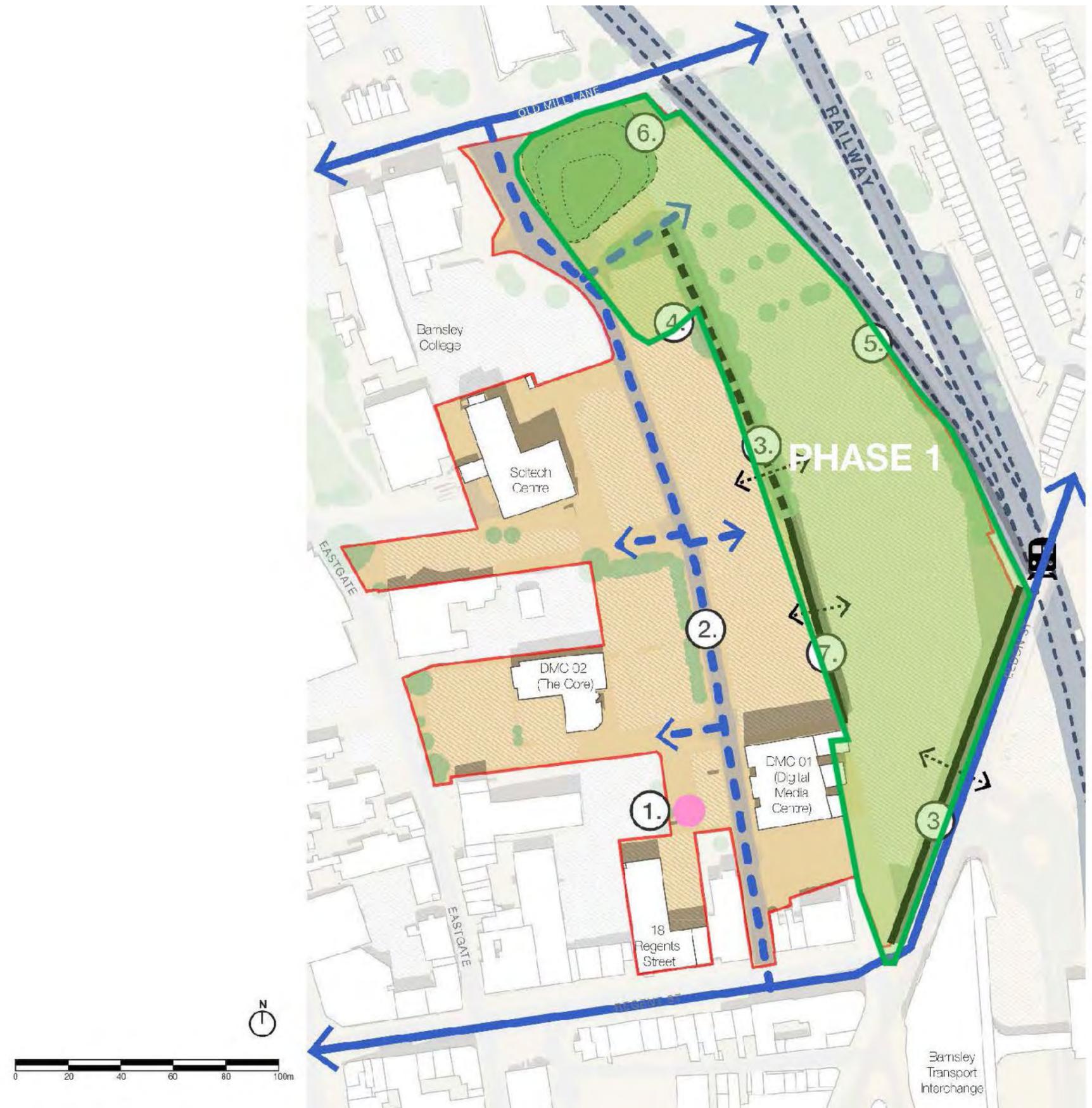
Former bridge crossing over Regents Street

1.0 Site Strategies

1.6 Site Constraints

The plan on the right describes some of the key constraints identified through early analysis of the site. These items are listed below:

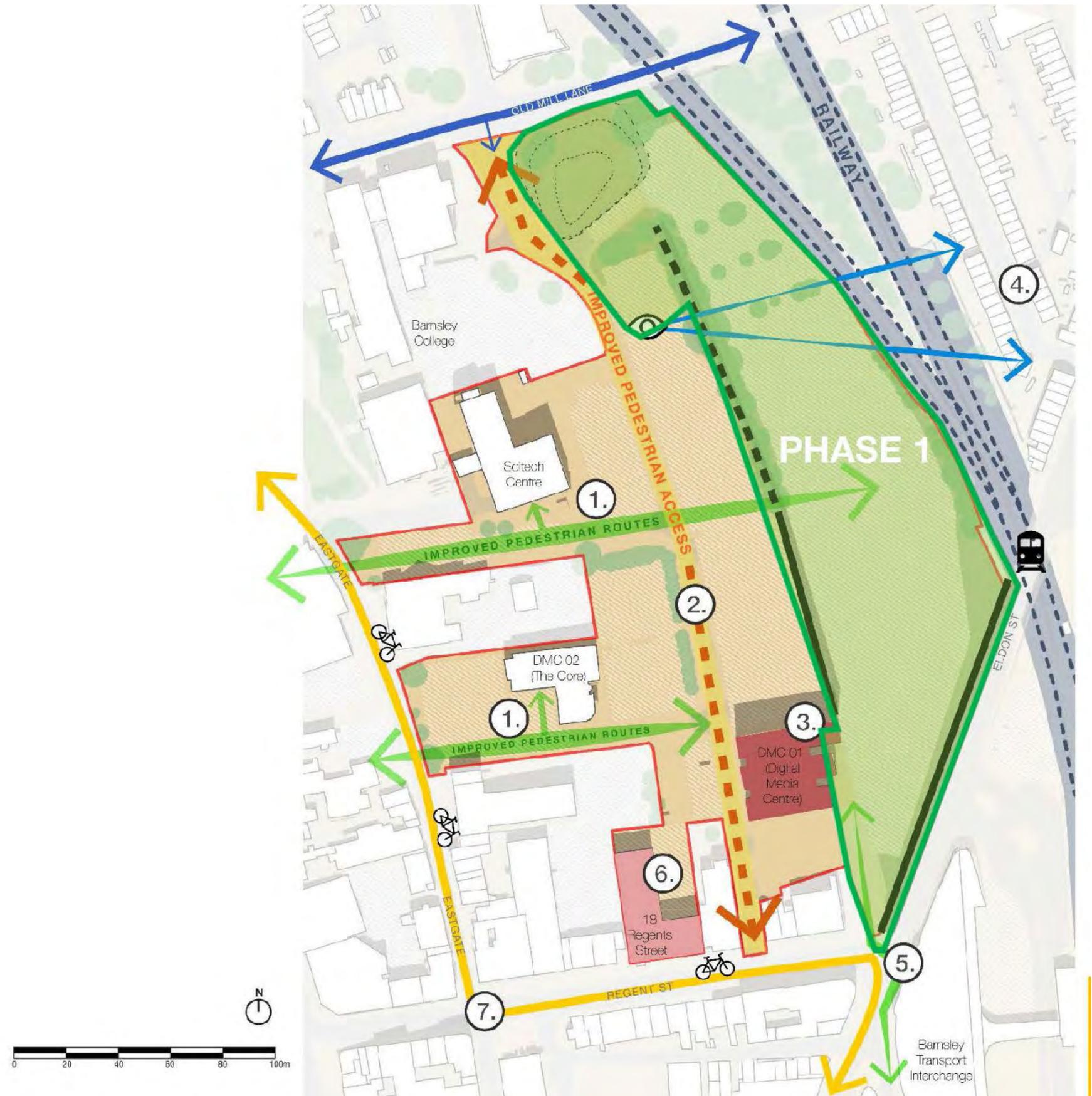
1. Existing substation
2. Vehicular traffic along County Way for car park / service access
3. Significant level changes across site
4. Dense tree barrier
5. Hard barrier to railway
6. Mounding (site investigations required)
7. Historic retaining wall



1.7 Site Opportunities

The plan on the right describes some of the key opportunities identified through early analysis of the site. These items are listed below:

1. Improve east-west connections and link to Barnsley College, Scitechbuilding, and DMC 01.
2. Downgrade County Way to improve access for pedestrians and cyclists
3. Enhance access to and setting of the landmark building DMC 01
4. Exploit long views over the valley from new public realm and new development
5. Improve connections to interchange and town centre
6. Refurbish/ replace 18 Regent Street and enhance the Conservation Area
7. Connect into proposals for the wider cycle network



1.0 Site Strategies

1.8 Summary of the 'Blueprint' Masterplan

During the 'Blueprint' key stakeholder workshops were carried out, this has continued through the early stage of the Phase 1 project. Some key comments and direction that formed from these workshops have guided the Phase 1 Workstage 2 process. A description of these comments is listed below:

- New green space and public realm within the Digital Campus should offer new and complementary typologies to the existing spaces in the town.
- Provide a different user offer to the new Glassworks development, particularly in terms of public realm character and function
- Physical and SMART connectivity—develop good cycling and walking infrastructure and future proof uses
- Sustainable and well managed landscape and public realm

Comments with particular relevance to the Active Travel Hub and its relationship to the public realm were also explored. The plan on the right with comments below have helped to articulate and re-affirm the Phase 1 brief.

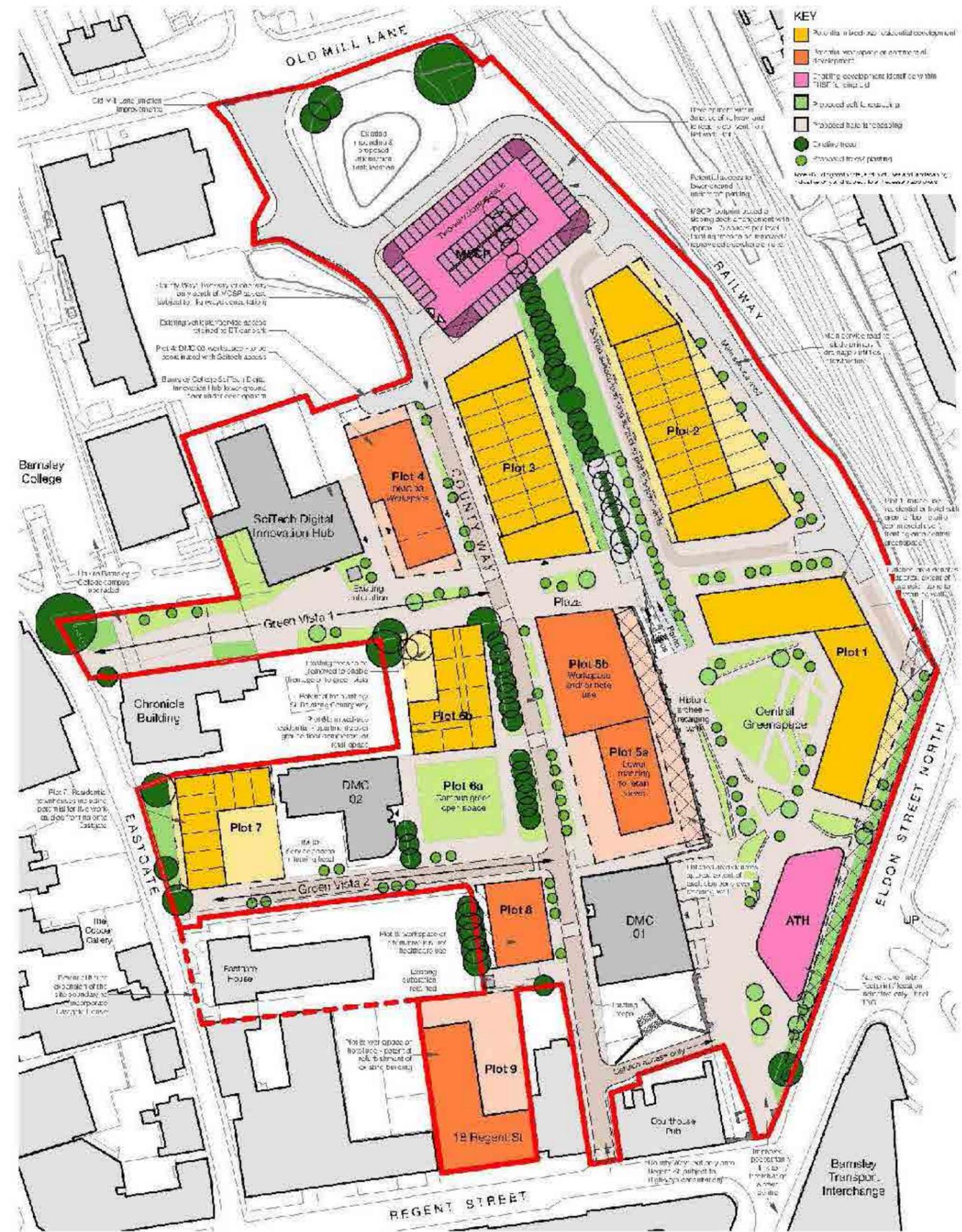
1. Improve pedestrian links to Interchange and Town Centre
2. Improve accessibility across the site with a new ramp and bridge and steps up to County Way level
3. New multi-storey carpark to replace open carparks and unlock a series of distinctive public greenspaces
4. Series of connected greenspace with proposed improvements to the walking and cycle network



Summary of the 'Blueprint' Masterplan

Objectives of the Blueprint influencing the public realm :

- Responds to a changing market -Commercial + Leisure, Living
- Diversify offer to appeal to wider catchment –flexibility for larger events
- Improve and reinforce connectivity for walking and cycling activities
- Vision based around using appropriate materials
- Embed Smart technologies within the public realm where possible
- SEAM character –soft, green, 'natural public realm'
- Sustainable Urban Drainage approaches
- Variety of different scaled spaces within public realm



SECTION 2.0

DESIGN BRIEF

2.0 Design Brief : Validating the Blueprint Principles

2.1 Informing the Brief

The development of the brief and vision has taken into account the feedback from the stakeholder engagement workshops and the following documentation and guidance:

Key documents:

- Barnsley Local Plan 2012 – 2033
- Barnsley Town Centre, Public Spaces Strategy 2010
- The SEAM Barnsley Digital Campus Development Blueprint
- Barnsley Town Centre – Urban Design, Sustainability & Post-COVID Strategy

Supporting information:

- Eldon Street Heritage Action Zone
- Barnsley College Campus Masterplan
- Bright Nights/ Festival of Natural Art
- Youth Zone

2.2 Design Brief - Blueprint Validation

Clarification reviews have been held with the design team and project managers working towards clarity on the issues that have arisen.

The schedule opposite is a result of these sessions. Each Blueprint KPI is cross referenced against comments to help inform the direction of the WS2 public realm design brief. This process ensures that the objectives and original Vision for the Blueprint is maintained and reinforced that the concept design is developed through RIBA Workstage 2.

SEAM Public Realm					Comments for WS2 Briefing	
Blueprint - Vision and Key Objectives		WS1	WS2	WS3		
Putting people first:	To enhance the user experience and create a series of attractive, safe and welcoming public spaces for the benefit of all Barnsley residents and visitors.					Ensure that user experience is catered for - establish a brief for events and activities in the public realm. Play and Playspaces - define a brief for the nature/ look and feel of play inclusion - traditional equipment or integrated? Define the typology/ character of public realm spaces Agreement not have a large single hard space for activity - smaller collection of spaces for activity
Building Pathways: A place of possibilities	Expand and enhance the DMC network to create new employment opportunities, space for business and skills growth, including potential opportunities for digital fabrication and rapid prototyping.					Social Exchange concept for Ground Floors on public buildings to provide an engaging visitor experience. Briefing public realm - unknown at interface with building - present the approach - present design assumptions Building in/ incorporating digital infrastructure within the public realm Creating external space for different scaled activity and social interaction Design of building facades responds to the context of the sites to stitch back into the surrounding area.
Trailblazing:	To create 'windows to the work' that showcase a vibrant and inclusive campus environment that is a hub for the continued growth of the town's digital economy.					Building in Innovation into the scheme - Sponge park technology! Embedding SMART technology into the public realm - lighting/ digital artwork Providing the infrastructure to future proof the site for technology innovation Define the scope of the above innovations in order to clarify costing considerations
For Barnsley - Not only for Business:	Introduce new forms of town centre residential development to create a truly 'live/ work' campus while helping to meet Barnsley's housing needs.					Showcasing Barnsley's Heritage - Narrative of Coal Seams/ Railways New public greenspace that provides something new for Barnsley Welcoming and integrated into Barnsley's Cultural Strategies A place to encourage work/ life balance Integration of Public Art Community of Barnsley - not just for DMC - mixed/ sense of ownership - extension of town centre - Putting people of Barnsley first A new piece of public open space infrastructure for Barnsley A place for new markets - Summer Flower Markets? Pop-up Street/Fleamarkets?
A dynamic Digital Ecosystem:	To create a connected campus integrating the latest SMART technology and digital infrastructure within buildings and public realm to create a 'living laboratory' for digital experimentation and creativity.					Early adoption of digital infrastructure - M&E requirements What does digital look like in the public realm? SMART technology ideas - early concept suggestions/ ideas Power for sources for digital infrastructure
Active Travel Hub:	Support the Council's wider Active Travel agenda by creating an environment that prioritises pedestrians and cyclists and reduces vehicular traffic within the site.					Inclusive public realm Accessibility Cycle infrastructure - integration with wider strategies Dedicated cycle routes vs shared surface schemes Linking gateway to Railway Hub Local walking and active healthy town trails Addressing changes in level DDA Interaction with the ATH external/ internal uses - cycle parking/ loan scheme/ electric bikes/ retail associated with bikes/ cycle maintenance facilities
Civic Presence:	To enhance the visibility, engagement and profile of the Seam in Barnsley and support wider regeneration and development.					A key concept for the scheme as a whole is re-stitching the Barnsley fabric to enhance local character Lighting strategies Programme of events and activities Enhancing views into and out of the site
Wellbeing:	To promote wellbeing and promote equality, diversity and inclusion. Introduce new forms of town centre residential development to create a truly 'live/ work' campus while helping to meet Barnsley's housing needs.					Biophilic elements - green infrastructure Enhanced biodiversity A variety of different scaled spaces and range of uses 'Active Campus' - integration of fitness related activities and features Maximising viewpoints with scenic views over the landscape
Sustainability:	Support the Council's wider sustainability agenda by developing low or zero-carbon homes and workplaces and integrating green infrastructure and sustainable urban drainage systems (SuDs)..					The designs to aim for zero carbon ready. Climate Resilience - Providing for a Sustainable Urban Drainage (SUDs) approach Landscape strategy to support improvements to biodiversity and ecology Provide early ecology surveys and arboricultural surveys in order to protect and enhance the existing natural assets Community engagement - grow areas/ Edible Landscapes

2.3 Public Realm Decision Tracker

Clarification review sessions have also been held with the design team and project managers working towards clarity on the issues that have arisen.

The tracker opposite is a result of these sessions. Items highlight decisions or early reviews which are required in order to support the development of the public realm and protect the integrity of the Vision. As summary of these include:

- The interface between public realm and proposed Plots 1 and 2.
- Vehicle Access, servicing and movement strategy
- Approach to the inclusion of cycling within the scheme
- Sustainable Urban Drainage adoption and ongoing management
- Digital Technology

Landscape and Public Realm Decision Tracker

PROJECT - The Seam, Barnsley
 Stage - Stage 2 Design Tracker
 Last Updated - 19/01/22

Item	Query	Date raised	From	To	Owner	Closed	Comment/Updates	Comment/Updates	Comment/Updates	Comment/Updates	Comment/Updates		
1	Reach agreement on the Landscape Character and Vision Statement narrative - based on proportion of hard and soft and planting style - and public realm narrative. BDP to present proposal for client to sign off.	23/11/2021	BDP	BMC			13/12 - Recommendation to Board to approve - mtg scheduled 13/12 presented at Stakeholder Workshop 2 - no objections to the strategy/ approach. This strategy will be taken forward into the Workshop 2 concept report. Presented at Workshop 1 on 10/12 - meeting formal stakeholder comments following presentation (feedback date TBC)	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	13/12 - No decision on this yet - BMC to advise	*Awaiting feedback	*Awaiting feedback	
2	Public Art - requires agreement in form, type, procurement route - how is the public art created? Does it require the appointment of an artist? Stand alone art where the public realm provides a platform to house the artwork OR Is the artwork integrated into the public realm components (in in the surfaces, raised walls, furniture etc) OR Is artwork overlaid as digital art/ interactive lighting? Each approach will take on a slightly different type of procurement path	23/11/2021	BDP	BMC			13/12 - Recommendation to Board to appoint public art consultant and identify costs at RIBA stage 3 design development. On the basis of using existing structures/ Digital art commission - Rated in Workshop 3 - 13/12 - awaiting decision from BMC in terms of whether an arts consultant will be appointed. BDP to provide additional slide on digital art (16.12.2021) Recommendation for a specific meeting with BMC art/ culture officers to agree way forward (identifying differences in procurement between physical integrated art and digital procured art)	* Meeting on public art and event strategy arranged for this week	* Meeting on public art and event strategy re-arranged for this week	BDP to provide high level strategy for review	*BDP Lighting providing design strategy	*Awaiting feedback	*Awaiting feedback
3	Climate Resilient - flood risk/ drainage strategy - Water Management Plan - incorporation of SuDS, rain gardens, swales and water attenuation - combine with varied permeability to establish a connected network of green infrastructure - requires early internal commitment to adoption/ ownership for the ongoing management and maintenance of these features. Ground investigation/ contamination testing required	23/11/2021	BDP	BMC			13/12 Recommendation to Board on 13/12 to commit to approval of SuDS subject to technical details. BDP awaiting feedback on preference for adoptable and/or non-adoptable SuDS features and what form BMC would like to see these in. Current design includes assumptions for the following: Rain Gardens Below ground Tanks Tree Pit Storage	*Awaiting feedback	BDP awaiting direct feedback from BMC with regard to SuDS. BDP Civil Engineers presented Stage 1, in which a mixture of adoptable and non-adoptable SuDS were proposed for further exploration	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 Townhouses with private ground floor space) could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
4	Biodiversity and green infrastructure - Barnsley Green Space Strategy - ecology survey required Biodiversity net gain - 10% - Planting native species/ wildflower grassland - Native Planting! Condition existing mature trees - arboreal survey	23/11/2021	BDP	BDP/Arcadis			BDP suggest 1% net gain will be difficult to achieve - Need input from BMC on what metrics they would like to see used to calculate this. Current design assumes biodiversity planting will be used extensively as part of the proposals along with native tree species as street trees where possible.	*BDP Ecology/ sustainability to review	*BDP landscape met with Sustainability team to review. BDP Ecologist to undertake the ecological walkover on Monday 24 January in order to report back and constraints / opportunities for the stage 2 report	13/12 Action - Tenders works and BMC approved	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
5	Play and playfulness - requires agreement in form, type Traditional play equipment vs integrated play What does the impact of residential development have on the type of play that can be proposed?	23/11/2021	BDP	BMC			Any provision determined by residential development may impact concept design proposals (concept approach is taking an integrated approach to play - as opposed to fenced off play areas with traditional play equipment) Current assumption is for incidental play as part of the soft landscape scheme as opposed to formal play structures. Need a steer from BMC on whether we need to accommodate formal play and what size scale that may need to be to align with policy on residential development? BDP to circulate a slide showing some options for location and scale/types of play for review as an addendum to current WSP stage 2 report.	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
6	Transport and connectivity - shared space approach with limited access to site for servicing and managed blue badge parking - senior level agreement for minimal access to site for car based travel. Would require access control into the site. Decision required for barrier control into Central Greenpace and A16 area - with restricted vehicle access (controlled access and managed times) for servicing and emergency. Development brief for Plot 2 would restrict access to the south wings to negate vehicle drop off in the Central Greenpace. Understanding the numbers of external cycle stands required in the space - agreement that cycle parking is retained within the A16	23/11/2021	BDP	BMC			13/12 Recommendation to Board on 13/12 to approve the principle of car free development south of Plot 1 - Reduced level of vehicles on plot 1&2. Subject to residential market testing	*Awaiting feedback	BDP to review BMC comments and provide feedback	13/12 HT to discuss further with events team BDP suggest specific meeting on events to finalise a brief/approach with events teams	* Meeting on public art and event strategy arranged for this week	* Meeting on public art and event strategy arranged for this week	
7	Events and Activity - agreement into the type, scale, size of events that would be envisaged for The Seam. Ensure that user experience is catered for - establish a brief for events and activities in the public realm. Scale of power infrastructure/ types/ size of vehicles/ equipment that would be required to future proof the functionality of the public realm spaces	23/11/2021	BDP	BMC			13/12 Feedback from the Client BMC team that too many crossing footpaths in current design - informal area that can facilitate pop up events/ Picnic/ Seating. Ensure power available around the public realm events. Need to ensure the green space is accessible to larger vehicles eg to erect temporary structures if possible (eg tall masts) - need to consider access to the promenade for pop up events/ stalls - vehicular tracking to these spaces BDP to review BMC comments and provide feedback	*Awaiting feedback	BDP to make reference to HVM Bollards in the WSP report	13/12 HT shared - BMC to provide direction in designing for designated cycleway will determine the layout and character of the public realm. Current assumption/steer is to take dedicated cycle route along County Way with a link into the site south of BMC building. BDP Need formal confirmation of this approach ASAP	* Meeting on public art and event strategy arranged for this week	* Meeting on public art and event strategy arranged for this week	
8	Wider influences and planned projects - Should the public realm design factor in the College proposals? Take into consideration nearby Conservation Area projects? Design team would benefit from receiving plans/ proposals.	23/11/2021	BDP	BMC			13/12 Check with the College again to send proposals to BDP have received Conservation Area text. Awaiting information on College proposals BDP Awaiting further detail on these schemes and the conservation area materials palette	* Still awaiting College proposals	* Still awaiting College proposals	13/12 Update to Board 13/12	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
9	Health and Well Being - 'active landscapes' Reams within the landscape and public realm space - should the proposals introduce urban fitness stations, fitness phone charging equipment, running trails, links to wider town centre fitness and well-being strategies	23/11/2021	BDP	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
10	Lighting scheme strategy and approach to be confirmed	23/11/2021	BDP	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
11	Town Centre Palettes - Heritage/ Conservation Area influences - how far can the design deviate from the town centre palettes. Proposed approach to use the base town centre palettes and then uplift or have feature areas of change	23/11/2021	BDP	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
12	Development Plots - requirement for users to be agreed in order to influence the adjacent landscape and public realm design. Unlikely to reach a conclusion in time for completion of draft masterplan - therefore agreement for head design approach to be taken forward if required.	23/11/2021	BDP	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
13	Community engagement - does the site require community growing areas associated with new residential or the inclusion of edible landscapes	23/11/2021	BDP	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
14	Arboreal survey to be procured and carried out	23/11/2021	BDP	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
15	Ecology Survey to be completed	23/11/2021	BDP	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
16	Secure by Design/ Designing Out Crime Officer/ is carried out. BDP/ Arcadis to organise a initial meeting. Contact Barry 'ack' Regan	23/11/2021	BMC	BDP			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
17	BMC to prepare an external stakeholder list	23/11/2021	BMC	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
18	Ensure sewer and water are embedded into the design from the outset	23/11/2021	BMC	Arcadis			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
19	BDP to test feasibility of a kids jump track near to the A16 - size and location to be reviewed	23/11/2021	BMC	BDP			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
20	Requirement for a Transport Assessment raised - BMC to review further	23/11/2021	BMC	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
21	BMC to review how type of events that could be brought to the Seam in order to complement other activities in the town	23/11/2021	BMC	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
22	Cycle Strategies - shared or dedicated routes. Do we need to design the public realm for dedicated cycleways or should the approach be to direct cyclists along County Way. There are H&S risks directing cyclists down the proposed 'ramp' to the lower level.	23/11/2021	BMC	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
23	Further consultation on the internal layouts (in principle) of the A16 to help determine where the safe will be located so that the public realm can adjust to suit the appropriate design approach for this activity	23/11/2021	BMC	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
24	Some comments made in the 10/12 meeting on having additional f and 8 offers, Micro Brewery and additional funding streams. Do we BDP need to consider incorporating a pavilion/pub that sits on the edge of the green space to accommodate this?	23/11/2021	BMC	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
25	HVM Bollards confirmed as a requirement in the final report	23/11/2021	BMC	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	
26	Implementing the infrastructure required, benefit and costs associated with Digital Technology.	23/11/2021	BMC	BMC			13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	BDP to make reference to HVM Bollards in the WSP report	13/12 included in report to Board 13/12 - requirement to make a decision on plot use within next few weeks in order to not impede progress on the design of phase 1 - At this stage develop on the assumption that these plots will be residential with commercial element at lower level	* Review at end of week (direction of development for Plot 1 could impact on the public realm 'Vision' as a whole. Meetings being arranged this week to address and review)	* Likely that Plot 1 will impact on the public realm 'Vision' as a whole if plan is to pursue Townhouses. Project decisions still have to be taken.	

SECTION 3.0

THE SEAM - VISION

3.0 The Seam - a holistic creative narrative

3.1 A creative narrative

The diagram on the right explains how the different components of the landscape and public realm can work together and be interlinked through a holistic design narrative that supports the concept of the Seam.

This will manifest creatively through the design of the public realm and in the approach to art, interpretation, surfacing, furniture, landscape and lighting strategies and in digital technology.

3.2 Heritage, Culture and Industry

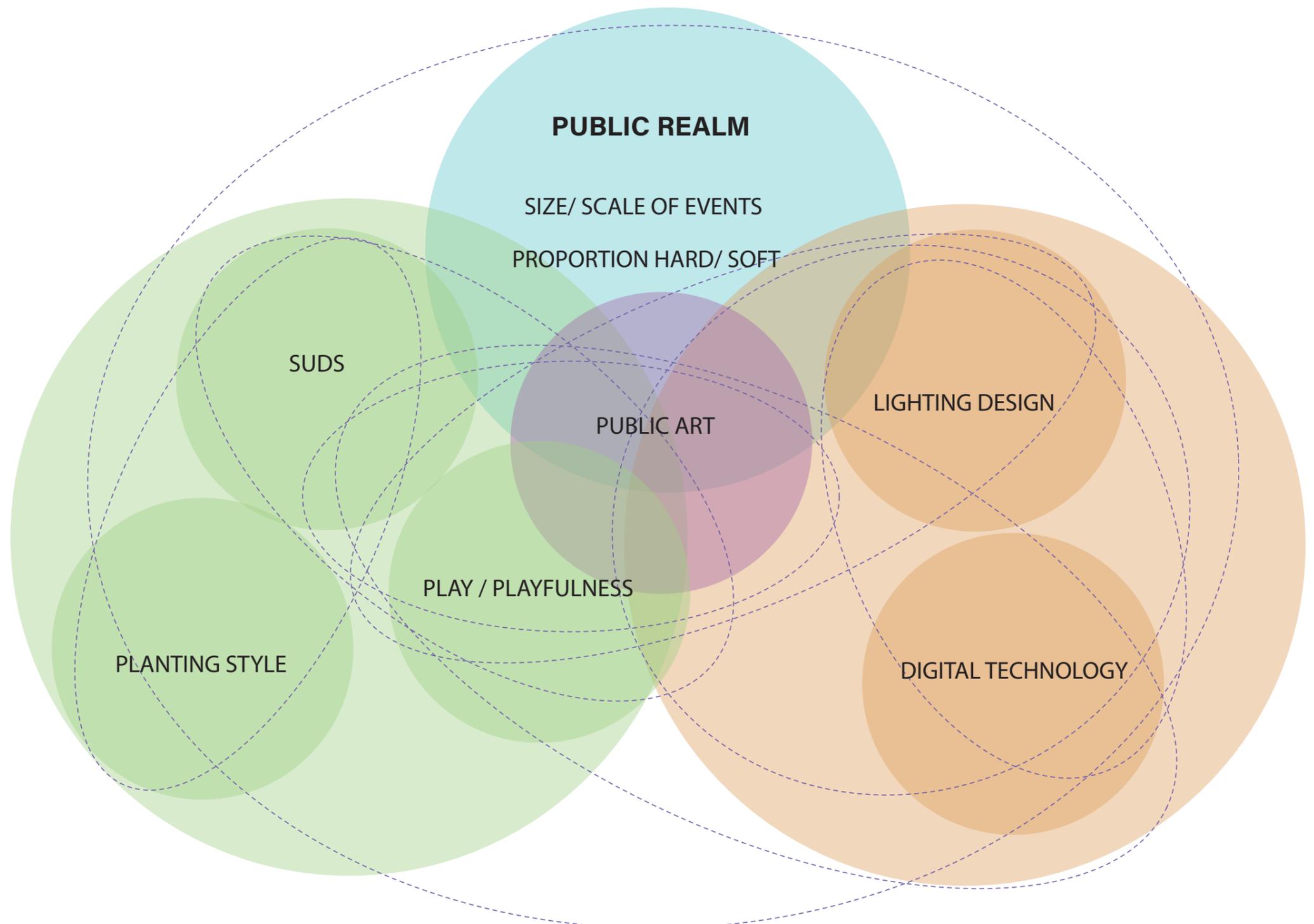
In 1669 Barnsley was described as 'situate on a hill side and near a brook', this is because the land rises from approximately 100 hundred metres above sea level (325 feet) at the bottom of Market Hill to 118 metres (388 feet) at the parish church of St Mary on Church Street, 300 metres to the north. A consequence of this are fine views of Eastern Barnsley and the Dearne Valley beyond.

Geologically, the wider area lies on the Middle Coal Measure Series of the Carboniferous System which dip generally in a north-easterly direction, with the area underlaid by sandstones. Coal, outcropping close to the surface led to the early development of mining. The Seam narrative represents the industry and geology that have come to define the town's cultural heritage. As the industrial revolution progressed, Barnsley became known for the quality of its products in four principal industries, Wire Drawing, Linen, Glass, and Coal.

Up until as recent as the 1970s, the site was in the ownership of the Railway with sidings and several tracks running through the Phase 1 site area. Existing features from this period remain visible on site today.

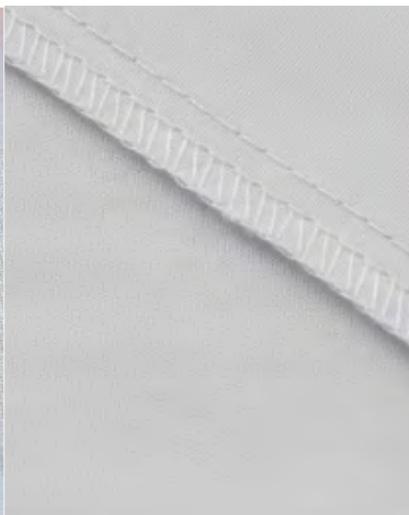
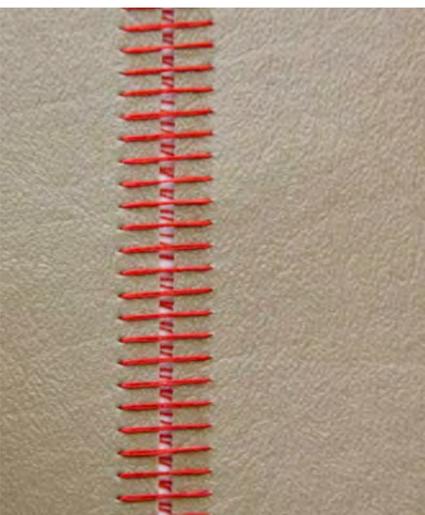
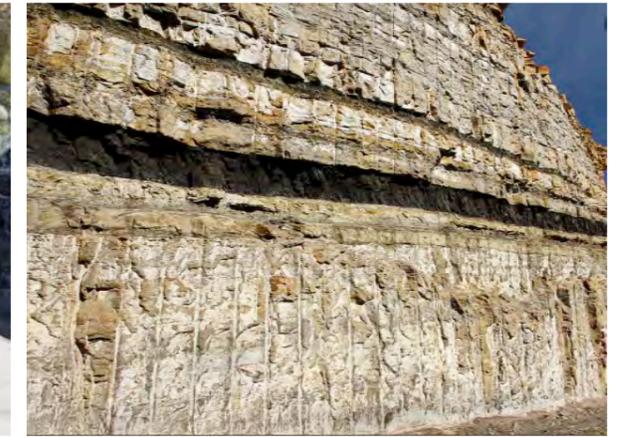
The earliest reference to the name Barnsley appears in the Domesday survey of 1086. The village of Berneslai was a tiny place at the time and recorded as having a very small population with 3 ploughs for 2 plough teams available.

Other land associated with the settlement included 1 acre of meadow and 6 square kilometres (2.3 miles) of woodland. Clearly the town was much more wooded than it is today.



The Seam - Cultural identity

USING CULTURAL REFERENCES AS A STARTING POINT FOR LANDSCAPE/ PUBLIC ART INTERVENTIONS



Robin Wight - Wire Sculpture 'Dandelion'



Shohei Fujimoto 'Intangible Forms'

- COAL SEAM
- SITE LOCATED ABOVE
- GEOLOGY SANDSTONE

- LINEN SEAM
- LINK TO INDUSTRIAL HERITAGE
- RAILWAY TRACKS/ LINES

- WIRE DRAWING
- SCULPTURAL REFERENCING
- DIGITAL ART

- GREEN SEAM
- TOPOGRAPHY AND VIEWS
- DOMESDAY MEADOWS AND WOODLAND

SECTION 4.0

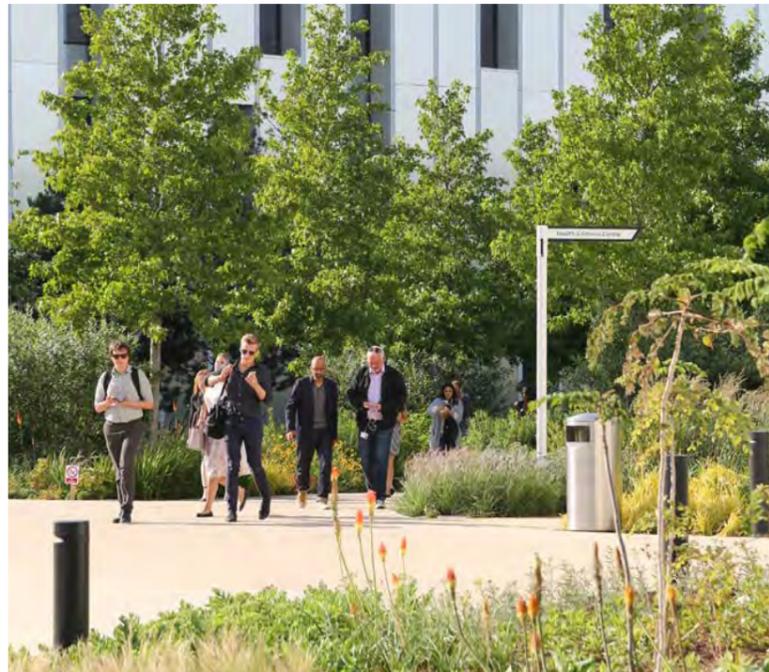
LANDSCAPE STRATEGY

4.0 Landscape Strategy

4.1 Landscape Strategy Principles

1. Sustainable greenspace

A collection of sustainable gardens and public open space that supports biodiversity, nature and people. Layout and discovery, Shading and Colonnade, Culture and heritage. Colour, pattern and texture.



2. Mixed planting interest

A colourful planting arrangement of shrubs, grasses and herbaceous species for all year round interest.



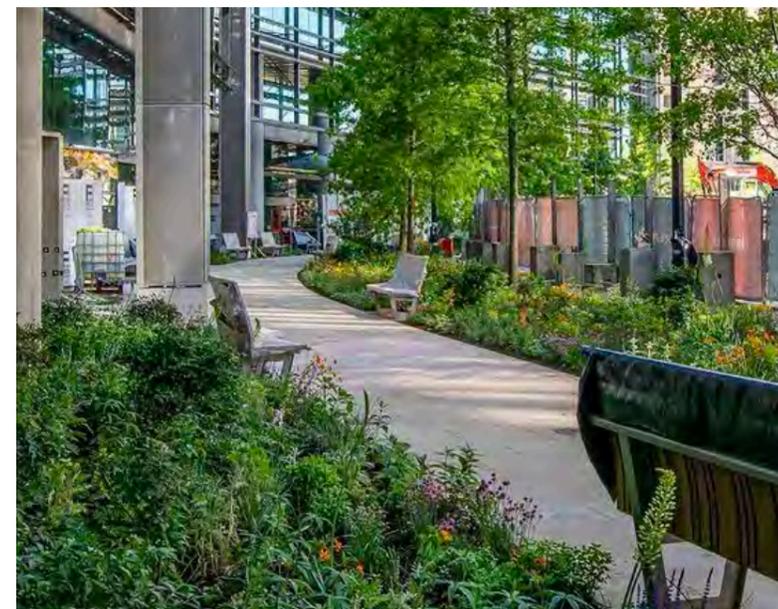
3. A Place with a sense of community

A new and complimentary town centre greenspace destination providing activities and places for people.



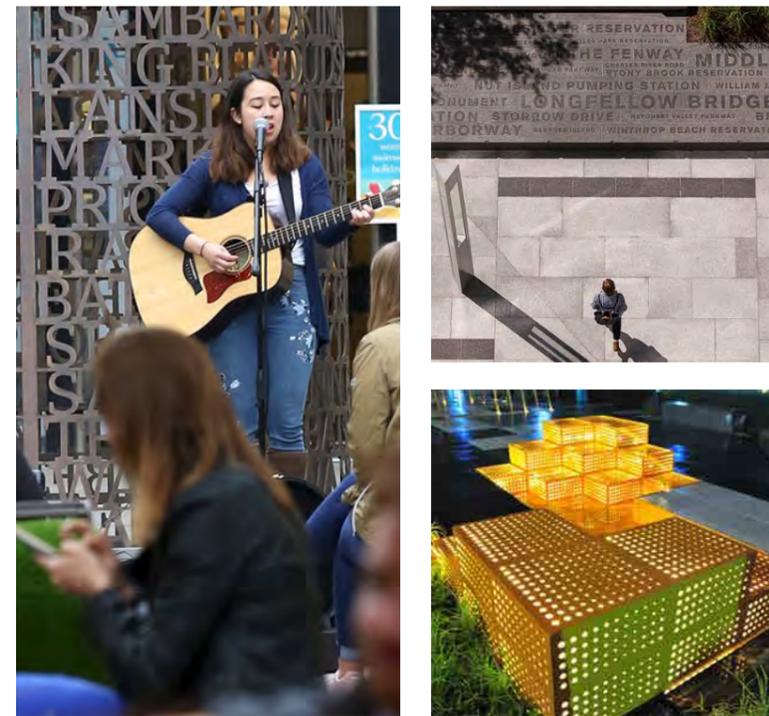
4. Enhance and improve movement

Support walking and cycling and encourage people to detour toward these new attractive green routes, Layout and discovery, Shading and Colonnade, Culture and heritage, Colour, pattern and texture



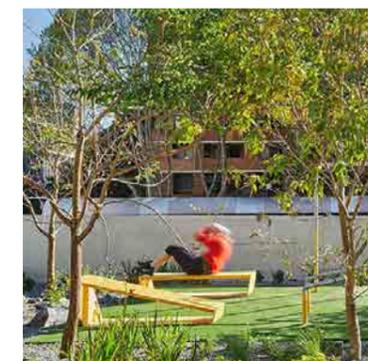
5. SMART Art Technology culture

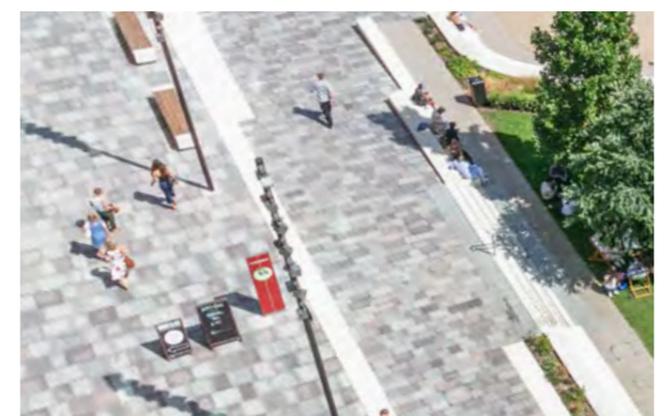
Create a bold visual and welcoming identity, combining integrated art, lighting and digital technology



6. Health and wellbeing

Providing healthy spaces for a range of active, recreational and social interactions





3. The Gardens (Green Seam)

- A natural setting with displays of form, colour and texture of varying plants
- A distinct and clear visual identity linking through the public realm
- Rich in biodiversity
- Structured mixed planting for all year round interest

4. Activity Spine (Building Threshold)

- Highlighting main building entrances with a distinctive surface treatment
- Priority spaces and areas of uplift will be enhanced with warmer, lighter tones using granite trims and finishes.
- Soft landscape edges to be shaped to accommodate established desire lines

5. Public realm around Plot 2 (including Ramp)

- Access to Plot 2 Residential Development
- Residential demarcation defined by landscape treatments
- Route to be developed as a secondary more 'private' scale
- High quality aesthetic and open character
- Opportunity to incorporate informal play along the linear route

6. Southern Gateway Arrival

- The gateway marks the town entrance into the Digital Campus and therefore first impressions of the 'green' nature of the public realm
- The public realm palette, including surfacing will be cohesive with the overall design whilst create a notable entrance point
- The design layout will aim to open and invite people into the public realm area
- Consideration of walking and cycling along the Promenade/ Parade

SECTION 5.0

LANDSCAPE MASTERPLAN

5.0 Landscape Masterplan

5.1 Design and Function

The landscape and public realm proposals are reflective of early discussions with stakeholders, the client and architectural design teams to create a unique and distinct sense of place within the Seam's, Digital Campus.

The Landscape masterplan sets out a layered approach based on a number of interconnected landscape strategies, linking to various landscape features and amenities, such as a central greenspace, active recreational routes and smaller meandering loops, hard surfaced plazas and 'natural' biodiverse rich gardens along a 'green' seam.

At its heart is the central green and which is closely linked to the 'Promenade' route through a network of smaller scale routes and meandering paths within the development.

Architecturally it is relaxed and informal but will be additionally animated by the public use. The open space will play an important role in bringing the natural landscape into the buildings with form, colour and texture of varying plants, and trees enhancing borrowed views and creating a memorable place.

The green space is a new destination for the town centre with anyone moving through the Digital Campus passing through this space on their route to their place of living or work. Designed around comfort and well-being, people will be able to relax, play and work outdoors, maximising opportunity for chance encounters, sparking personal interactions and encouraging people to mingle.

These encounters can help to shape the identity and sense of community in and around the Seam's Digital Campus.



PHASE 1 LANDSCAPE MASTERPLAN

MASTERPLAN KEY:





KEY:

- 1 Promenade - primary route
- 2 DMC01 lower level main entrance
- 3 Central greenspace
- 4 Pocket garden spaces
- 5 Green infrastructure
- 6 Secondary hard surfaced spaces

5.2 Creation of Character Areas

5.2.1 Design and Function

The landscape and public realm for the Seam Phase 1 development has been divided into a series of character areas, each tied to their surrounding uses and each with their own quality of space.

The areas are spread between the MSCP, Plot 2 proposed residential development interface and the public realm around the Central Greenspace, Plot 1 and ATH.

As shown on the adjacent diagram, the site has six key character areas include:

1. Parade/ Promenade
2. Central Green Space
3. The Gardens (Green Seam)
4. Activity Spine (Building Threshold)
5. Public Realm around Plot 2
6. Southern Gateway Arrival



5.3 Public realm spaces

-  Plazas with scope for activity
-  Promenade
-  Access zones (clear)
-  Plazas adjacent to buildings

-  Gateways
-  Station Gateway
-  Northern Gateway



5.4 Movement Strategy

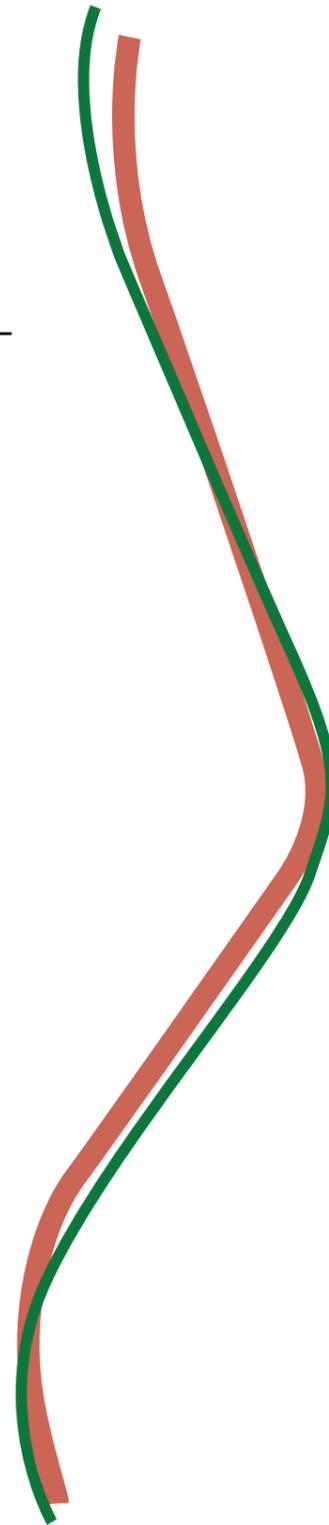
The landscape masterplan creates an opportunity to make the new development more cohesive, legible and loved by everyone who uses it.

The design aims to create a town centre neighbourhood that it is attractive and inviting from the outside, with lots of character when within. Its image will be enhanced through an improved network of routes, interspersed with a series of meeting points and new areas within the masterplan.

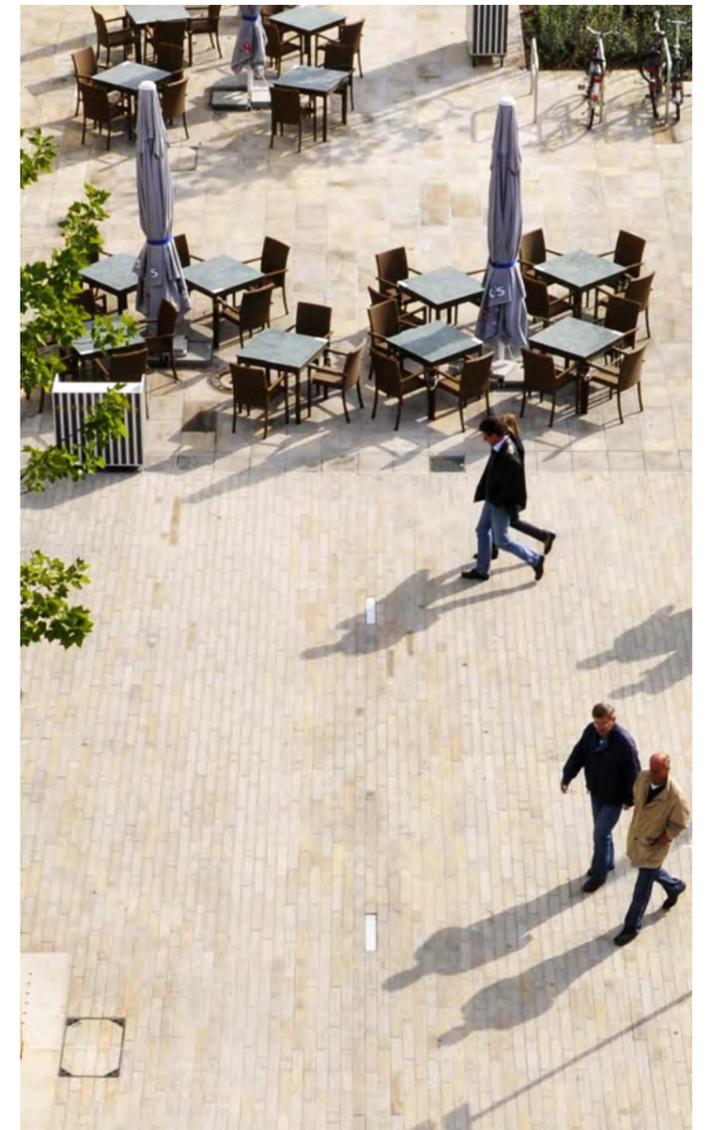
The change of level along the edge, creates a distinct landscape setting with proposed ramp, sloping and terraced landscapes and attractive walkways.

The sloping site provides opportunity to integrate 'green routes' where surface rainwater can be re-directed towards raingardens and swales which can help to provide natural attenuation and reduce the risk of localised flooding.

connected and linked masterplan



Promenade route with a continuous surface palette



A warm surface palette established in the town centre



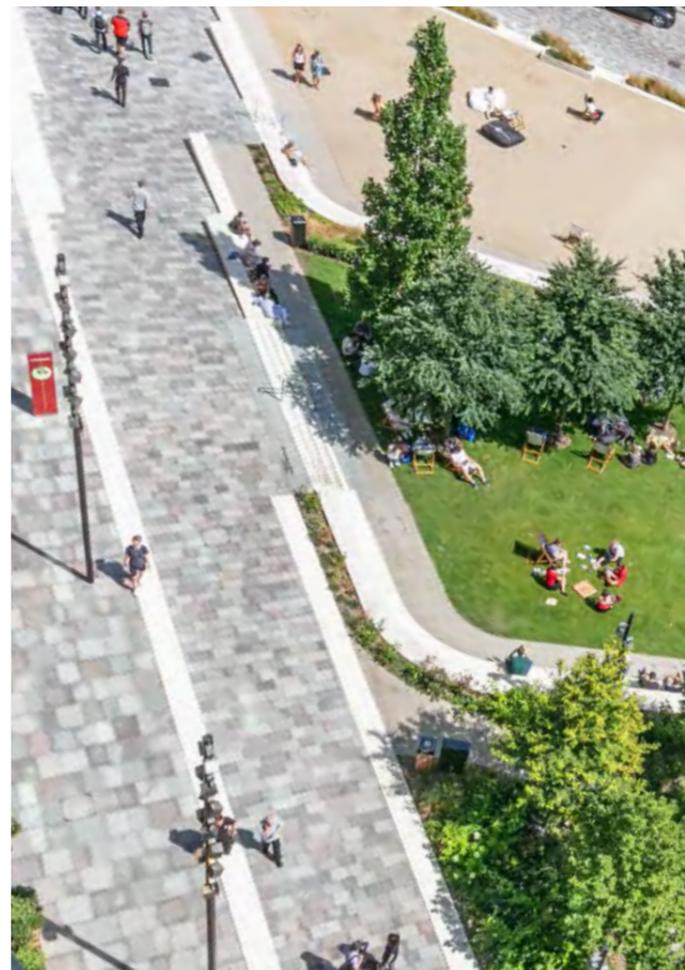
Activity and greenspace along proposed the building edges



Activity along the edge of Promenade and walled arches



Natural SUDs to line the edge of walking routes



Central Spine flanked by natural greenspace



Low key tertiary routes along Plot 2 neighbourhood



Maximise greenspace along community links

5.4 Movement strategy

5.4.1 Design and Function

At the core of the public realm masterplan there is an opportunity to establish an attractive network of routes, spaces and greens based along a main north-south axes that leads towards the town centre.

The image on the right describes connecting 'Promenade' that will generate the greatest footfall and be founded on the creation of a high quality public realm and a diverse and high quality green landscape infrastructure, which will interface with a new greenspace, proposed development and ATH building and other community facing amenities, such as DMC01, a cafe and other leisure uses.

The Promenade route can become a significant connection between the Digital Campus site and Barnsley town centre.

The 'Promenade' is conceived as a route with a unifying image, flowing through the masterplan. This route will incorporate a high quality over-arching 'design language' integrating such elements as special activities, colour, planting, boundary treatments, street furniture, surface materials, lighting and signing etc.

The aim will be to create a welcoming pedestrian route through the masterplan that encourages a healthy flow of people and activity. Increasing footfall through the area will animate the external spaces to create more generous areas of public space for social activities (e.g. kiosks, communal spaces, gardens etc.).

New tree planting and a green infrastructure of bio-diverse rich planting will give rise to a greener neighbourhood with strong sustainable principles.

As shown on the adjacent diagram, the site has three types of route in terms of priority, which are:

1. Primary Route (Promenade)
2. Secondary Routes
3. Tertiary Routes



5.5 Cycle Route Options

Three alternative routes have been considered as part of the cycle strategy.

1. Connecting route via the ramp and Promenade

This link allows cyclists to move through the lower areas of the masterplan and connect back onto County Way via the proposed ramp. Concerns have been raised about the risk of conflict between pedestrians and cyclists moving at speed especially along the ramp.

2. Promenade Route routing behind the MSCP

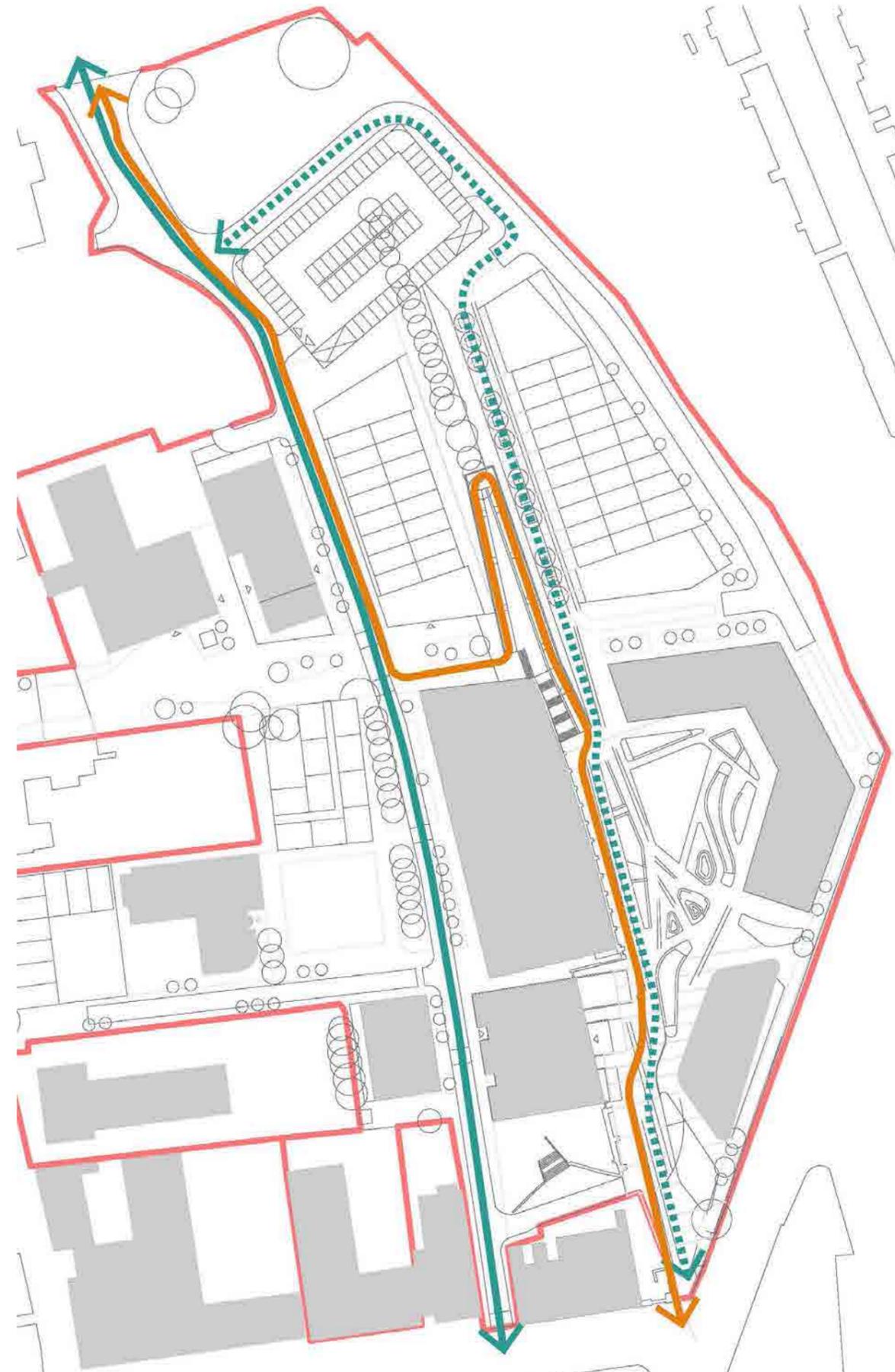
Link directs cyclists through the new space, providing opportunity for dedicated cycle path integrated into the public realm. Routing behind the MSCP appears to be less direct and could put cyclists off taking this route.

3. County Way cycle route

This route follows the line of County Way, avoiding a route through the Phase 1 project area. This route is straight and direct and could re-connect between the pub and DMC01.

LEGEND

-  Cycle routes
Option 1
-  Option 2
-  Option 3



5.6 Vehicle Access Strategy

5.6.1 Design and Function

The strategy for vehicular access is based on a three tier approach as below:

-  1. Traditional Highway access
-  2. Regular access along shared streets
-  3. Pedestrianised estate with restricted access

It is proposed that:

Tier 1 will have full public access to private cars and other vehicles.

Tier 2 will be restricted to Residents and Service Vehicles with an access control system. Emergency Vehicles would gain access with a key/code.

Tier 3 will be restricted to scheduled maintenance vehicles, scheduled access for events vehicles, and deliveries with an intercom system. Emergency vehicles gain access with a key/code. A secure line of access will protect the public realm and stop vehicles entering the site that are not registered to do so. Points of entrance/exit will be protected using either PAS 68 rated bollards or planters that provided a dead weight to stop vehicles.



5.7 Pump Track Options Study

5.7.1 Possible Locations

BMBC have suggested that a bike/scooter Pump track for children would be a benefit to the space with links to the Active Travel Hub.

The diagram opposite indicates a range of possible location for the pump track to illustrate the spacial implications of including this facility in the public realm. The size has been based on a similar facility noted as a precedent in Sheffield.



SECTION 6.0

KEY CHARACTER AREAS

6.0 Key Character Areas

6.1 The Promenade/ Parade route

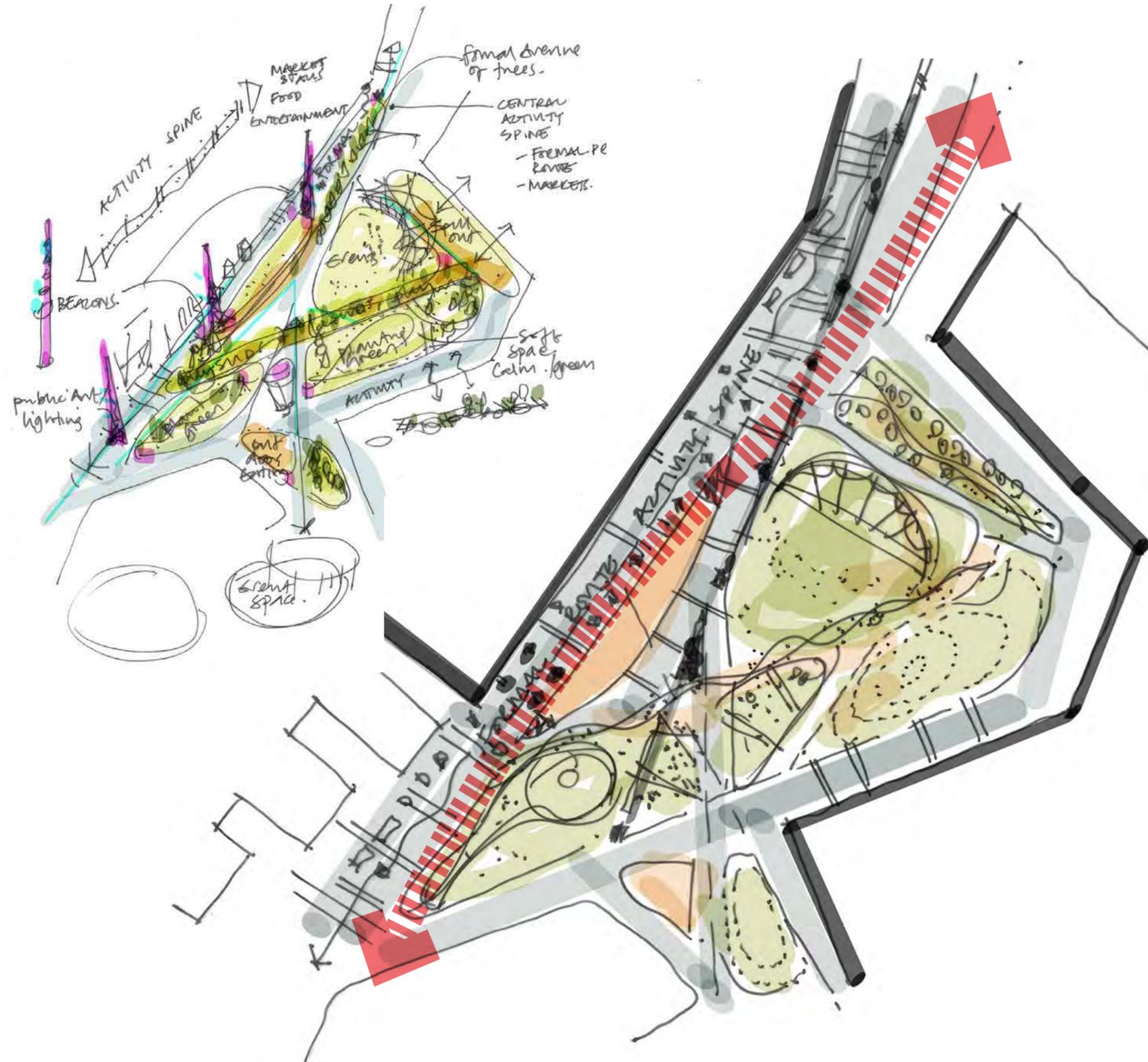
The Promenade route is the linking element along the lower Courthouse for the Seam's Digital Campus. Key aspects in developing the design include:

- Consistent and cohesive surface palette
- Street furniture palette
- Continuity of the palette established in the main 'Gateway Project'
- An accessible and seamless walking route

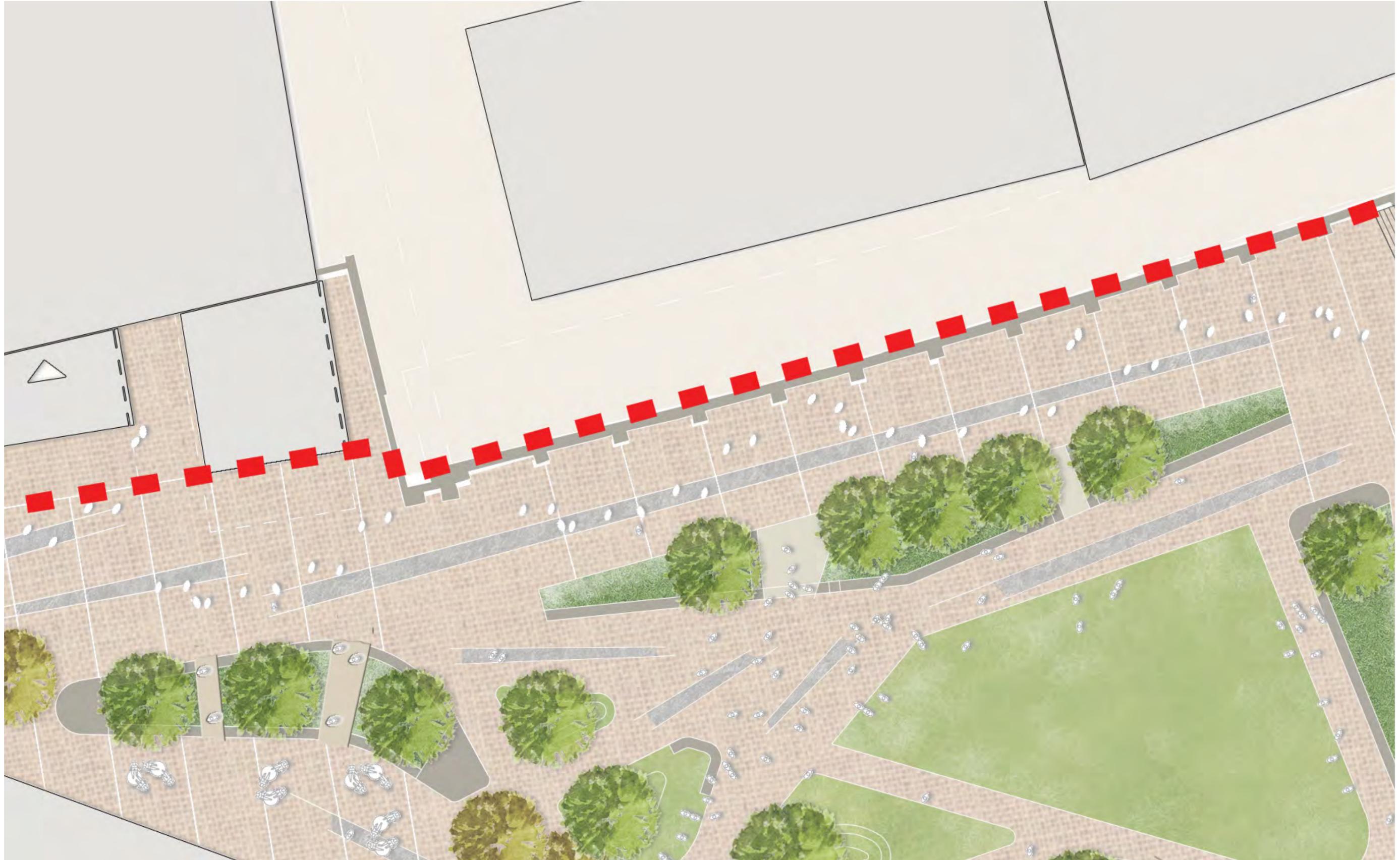
The Promenade will extend the paving palette established in the town centre alongside some distinguishing elements. This includes the use of yorkstone and granite laid out in traditional patterns. Other street furniture and lighting will also add to character and identity of the Promenade.

The existing walled arches will also provide an opportunity to light in a unique and interesting way.

As well as being used as a key linking element of the masterplan the Promenade can also layer up as a location for temporary pop-up markets and linear type events.



Early concept sketches highlighting the Promenade Route



Concept layout of the Promenade in front of arches

Promenade Parade Route Sketch and Precedents



Concept sketch highlighting the Promenade Route whilst in Market event mode



Shared cycle and walking route (Christchurch, NZ)



Sheffield Pollen (Pop-up Flower Markets)



Walking routes lined with Green Infrastructure SUDs



Green edged Promenade

6.0 Key Character Areas

6.2 Central Greenspace

The scale of the open green space (approximately 30m x 35m and the distance from the edge of Plot 1 to the existing wall along Promenade is approx. 50m. - see plan) is comparable to half the size of the nearby Glass Works square (approx. 60m x 70m). As a further scale comparison Sheffield Peace Gardens is approx 40-50m across which both successfully provides a volume of green space, openness and landscape setting to offset the surrounding built form and create a natural respite from the urban city context.

The space is also slightly smaller in scale than Brindley Place, Birmingham (54m x 67m) and Pancras Square, London (ranging between 55m-20m x 80m) which demonstrate a good balance of formal and informal spaces and hard and soft areas. Both are well used open spaces, with active edges and provide welcome green space in an urban context.

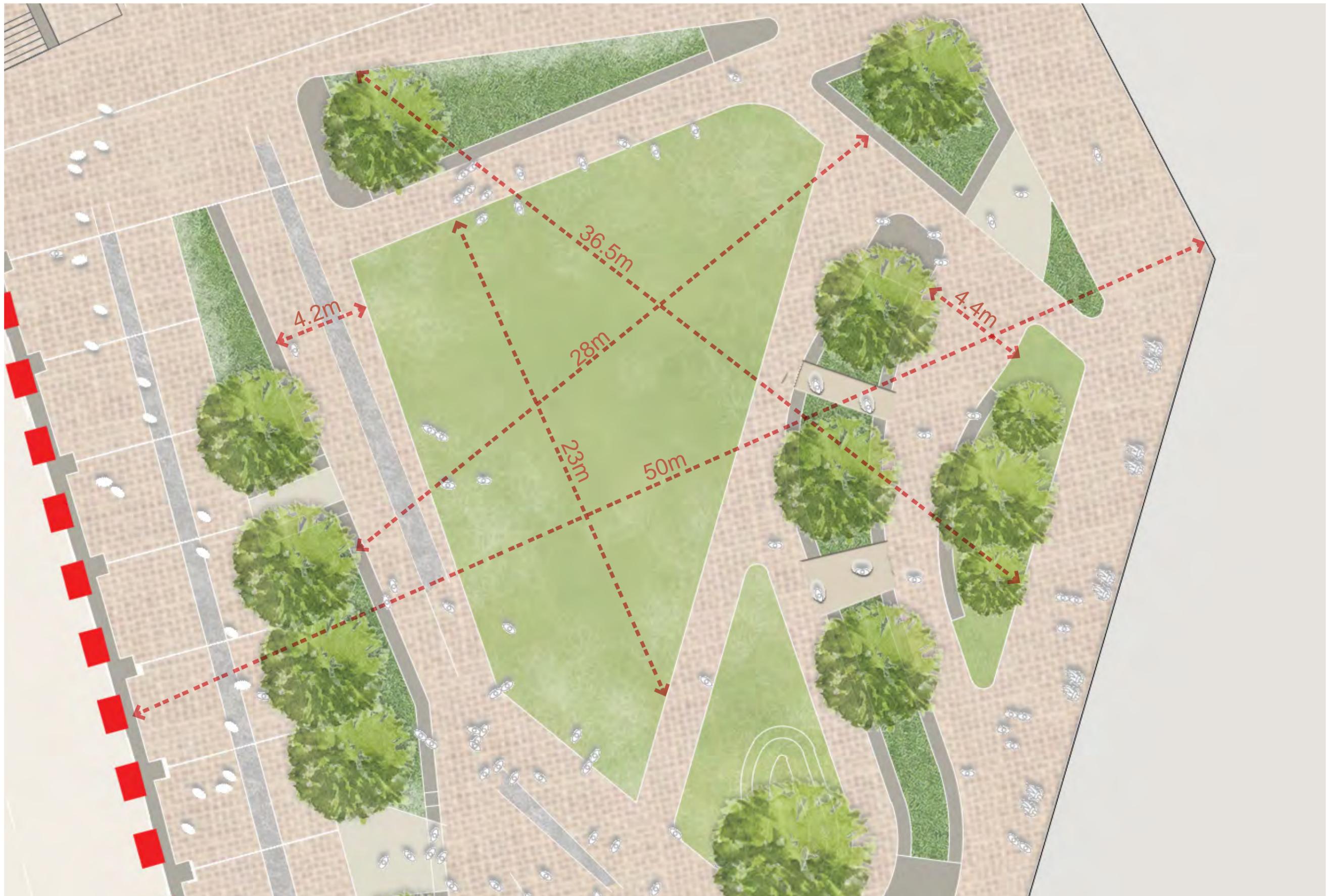
The scale of the new public space is large enough to accommodate a variety of different spaces and uses, ranging from hard surfaced plazas, open lawn comprising sensory meadow-like planting, tree covered canopy space and space for marquees for social gatherings and events, and seating niches to provide areas to meet as well as quiet thinking.

It is equally suited to house informal picnics, and enable workplace customers to work outside as freely as within the buildings.

The intention is to create an open space for various types of events and activities, from public screenings and organised events to informal sun gazing on a sunny day.

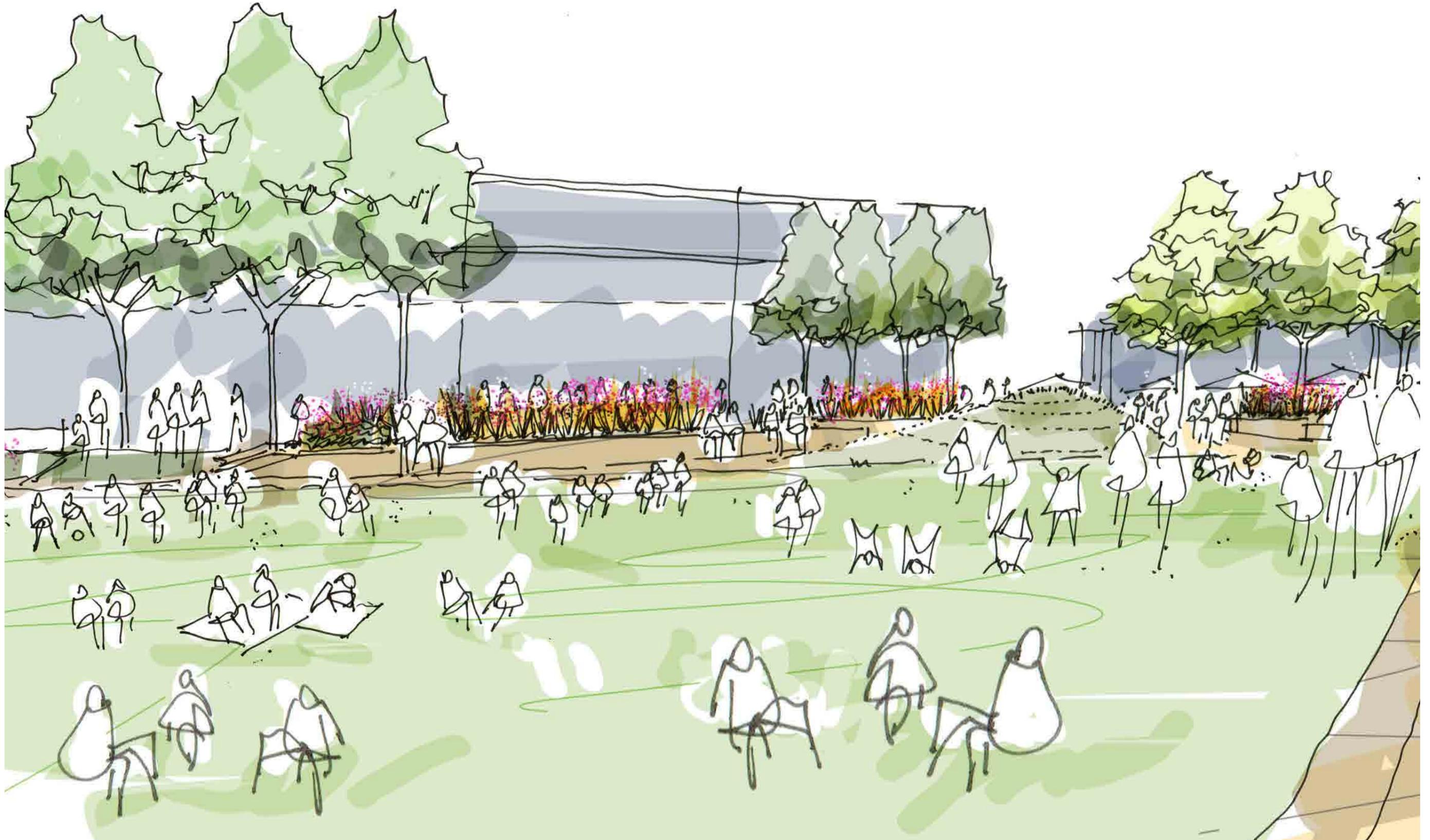


Early concept sketches highlighting the Central greenspace



Concept layout of the Central greenspace

Central Green Sketch and Precedents



Concept sketch highlighting the passive activities, encouraging use of the greenspace as a destination



Peace Gardens, Sheffield City Centre

6.0 Key Character Areas

6.3 The Gardens (Green Seam)

Key landscape components associated with the Gardens include:

- Creating relaxed public green spaces
- Colourful and vibrant natural planting
- Trees, lawn and street furniture
- Safe, well lit and attractive spaces

The 'Green' Seam Gardens comprise of a collection of outdoor rooms as communal spaces that are characterised by sensory meadow-like planting.

New planting will consist of tightly formed shrubs coupled with softly textured grasses and evergreen perennials. Scented plants will be positioned against the seat walls so that scent is released as people sit alongside. The enclosed seat walls rise up, creating sitting edges which encloses the external rooms.

A linear cluster of new trees will create an important habitat corridor of trees and hedges set amongst natural planting, grasses and bulb planting. The trees will also create dappled shade during summer months and flowering interest in spring.

The Gardens will provide a collective of communal green spaces or 'outdoor rooms', comprising of raised planting and seat walls framed by drifts of sensory planting. They will provide a colourful and naturally animated backdrop to the central greenspace.

The natural landscape will also be an extension of the experience developed within the proposed buildings, using borrowed views to create a visually rich experience that benefits mental wellbeing.



The Gardens



Gardens (Green Seam) Sketch and Precedents



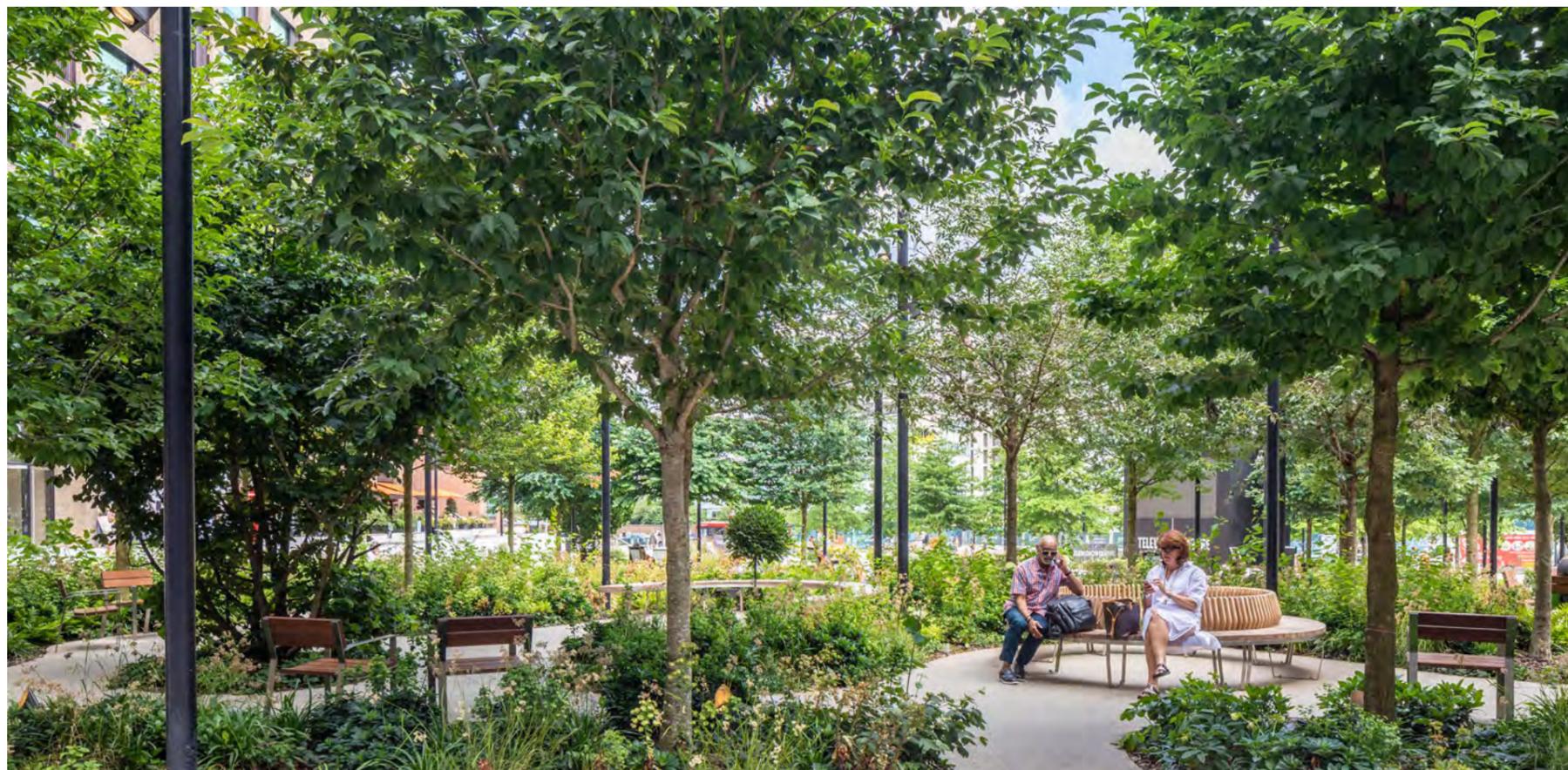
Concept sketch highlighting the colourful and textural planting defining the character of the gardens



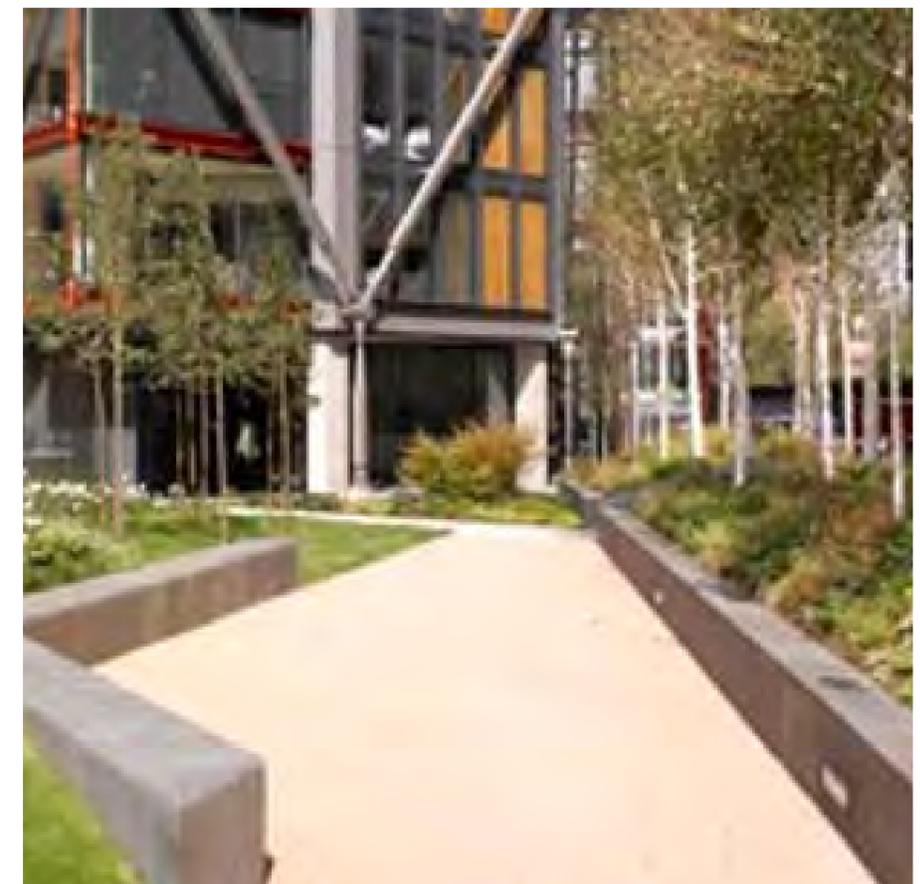
Luma, Kings Cross



NEO Bankside, London



Riverlight Quay, London



December 2021

6.0 Key Character Areas

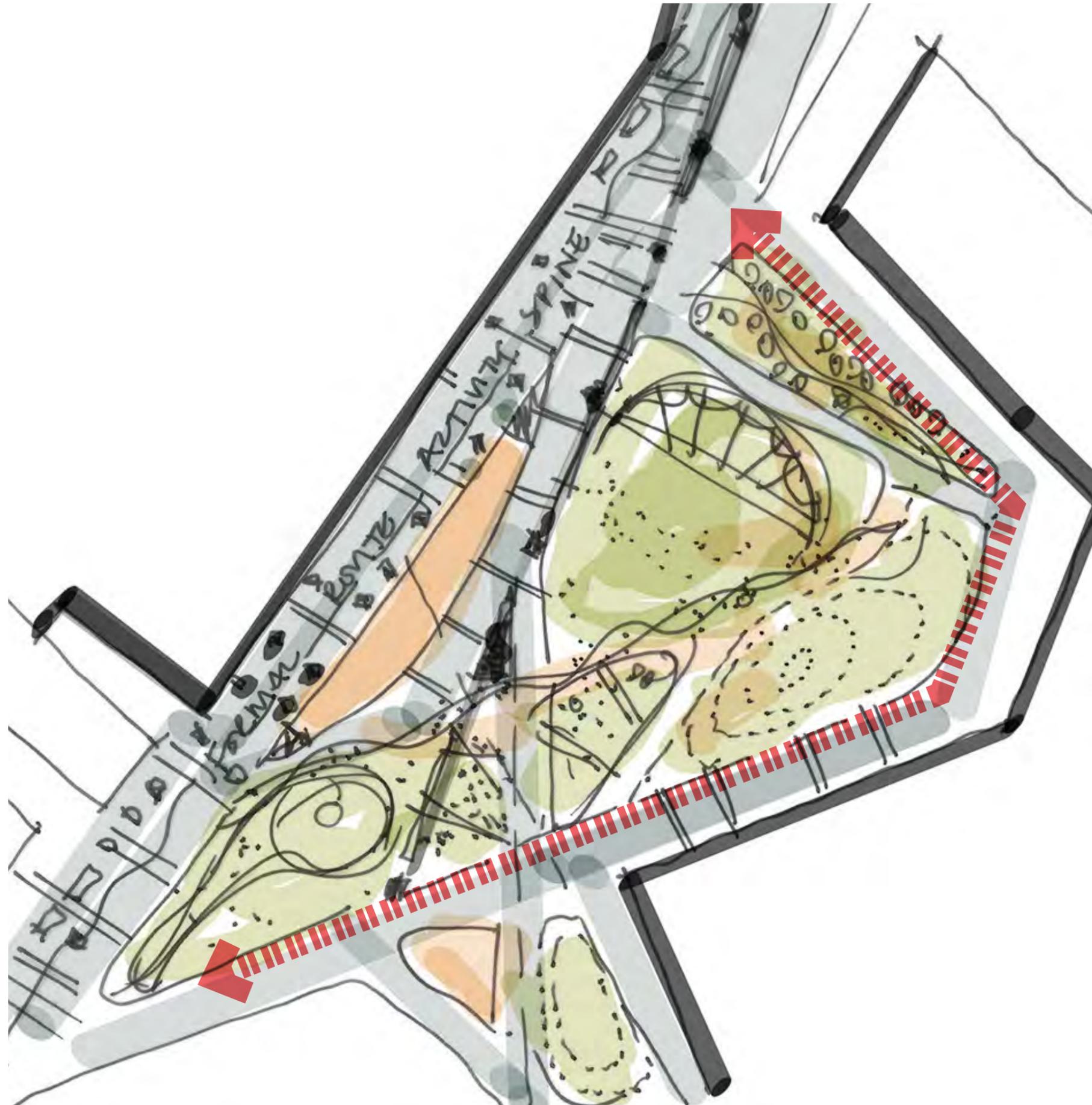
6.4 Activity Spine (Building Threshold)

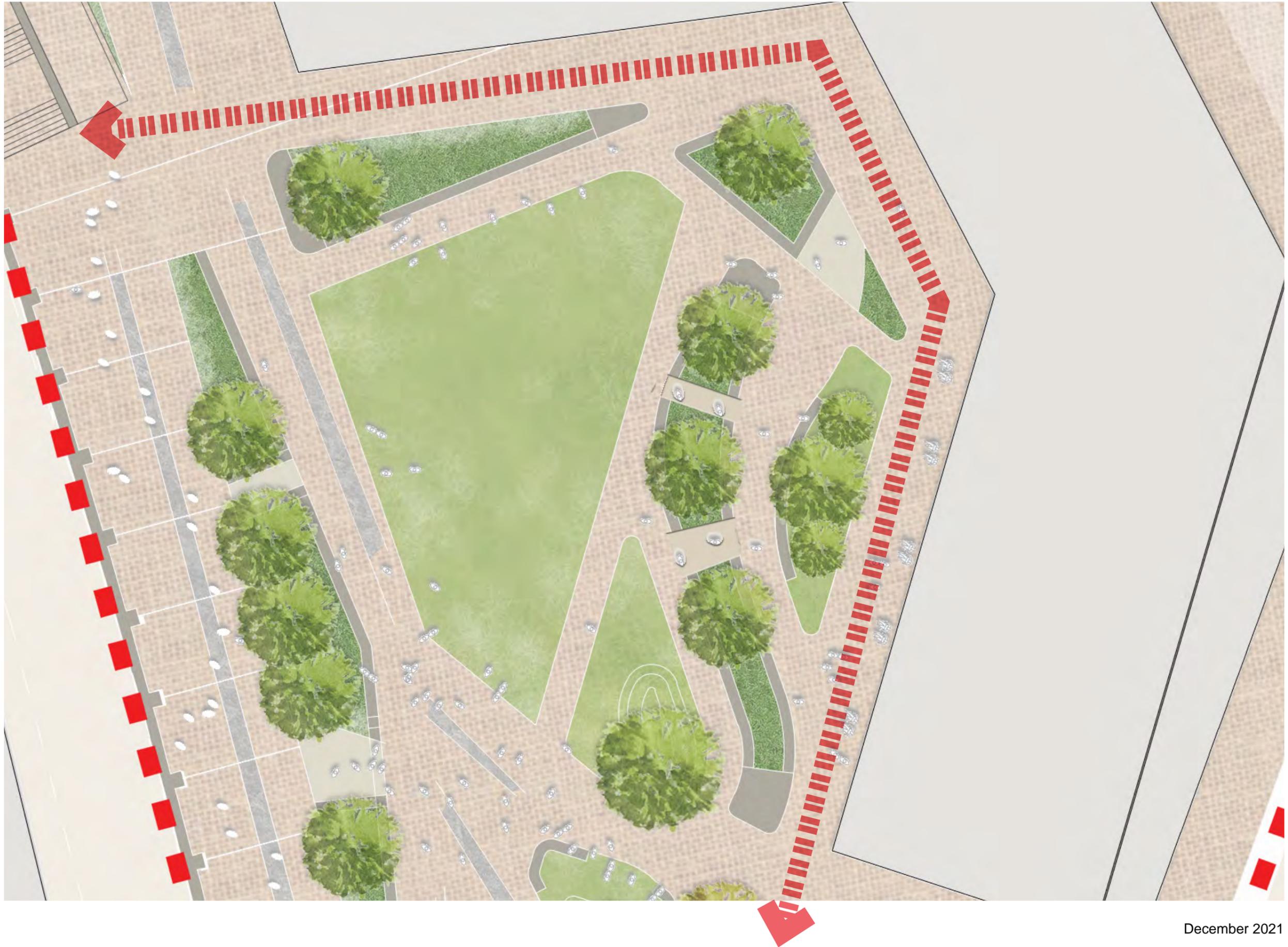
Key landscape components associated with the Plot 1 and ATH area include:

- Creating a neutral setting for future Plot development
- A hard surfaced treatment to encourage FFE
- A platform for spill out activities from building
- A backdrop of green infrastructure from Gardens
- Provide width for maintenance vehicles

The creation of an urban street frontage with the proposed Plot development will provide opportunity for flexible uses and promote a strong interface between internal and external activities.

The concept builds on the idea that the facing architecture opens out into the space allowing the internal and external spaces to come together within the natural surroundings.





Activity Spine Sketch and Precedents



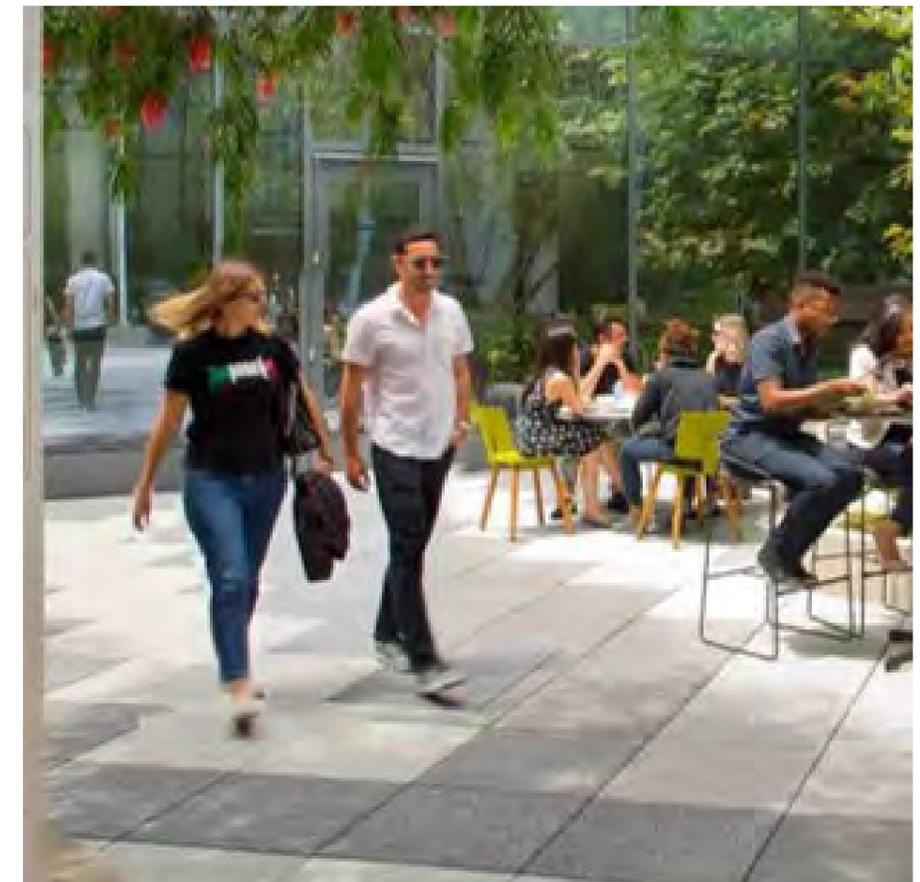
Concept sketch illustrating the activity along the hard surfaced routes interfacing with building plots



Manchester Science Park



NOVA London, BDP



December 2021

6.0 Key Character Areas

6.5 Plot 2 - Public realm

The objective in this area will be to prioritise residents, with vehicles and cycling routes given the second-highest priority.

While the Masterplan needs to provide for cars and other vehicles for servicing and other requirements, these routes have been designed so they are secondary.

Consequently the public realm around Plot 2 will put residents first due to the nature of design and management. Resident access for vehicles is maintained but given access within the design context of a shared surface approach.

The design aims to create a small neighbourhood that it is attractive and inviting from the outside, with lots of character when within.

Its image will be enhanced through its strong visual connection to the central greenspace area with its network of footpaths, interspersed with a series of meeting points and new areas close to the new Central Greenspace and ATH.



Public Realm Neighbourhood (Plot 2)



6.0 Key Character Areas

6.6 Ramp and Terraces

The design intent for the ramp and terraces is to create a seamless transition between the upper and lower Courthouse of the Seam masterplan whilst continuing to support the concept of connecting green routes established in the wider Blueprint.

The location and orientation of the terraces provide the opportunity to direct the 'flows' of movement whilst creating a interesting point of reference that captures elevated views across the valley.

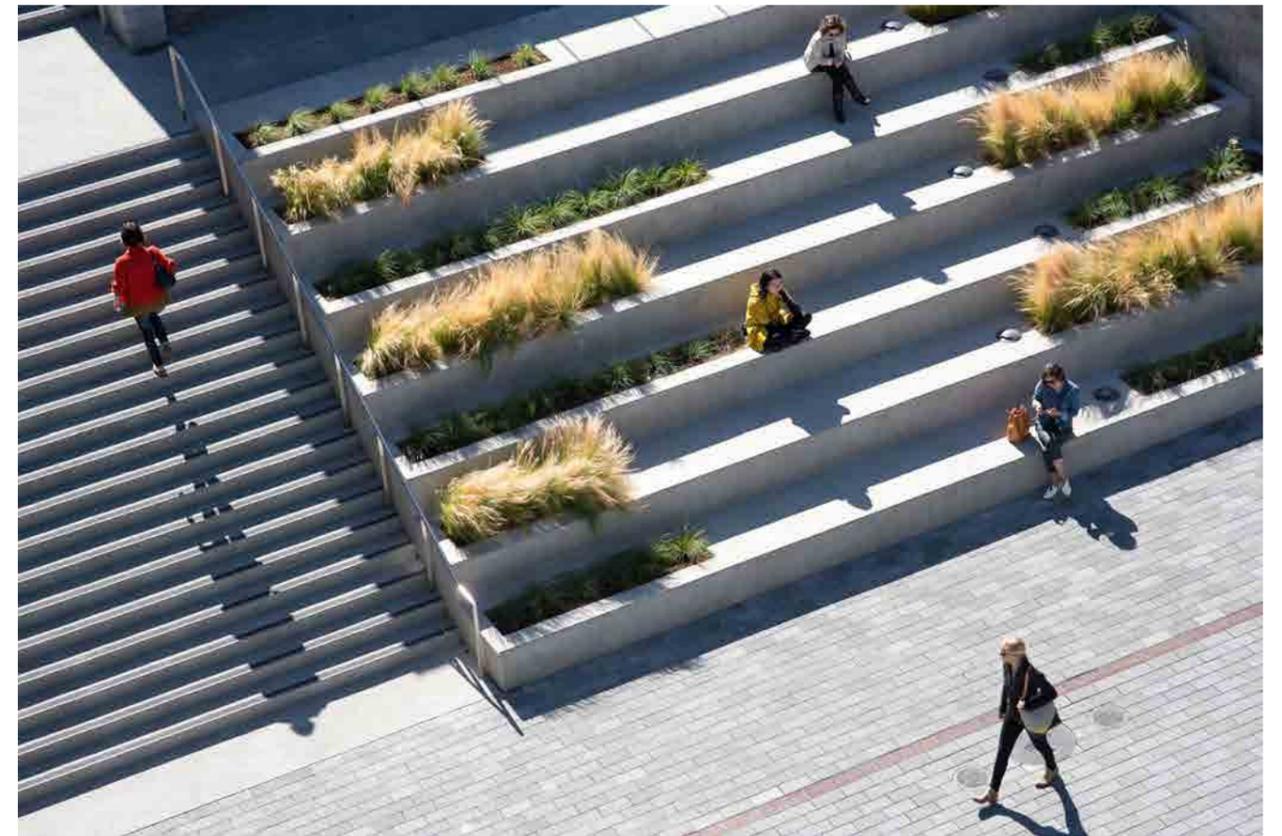
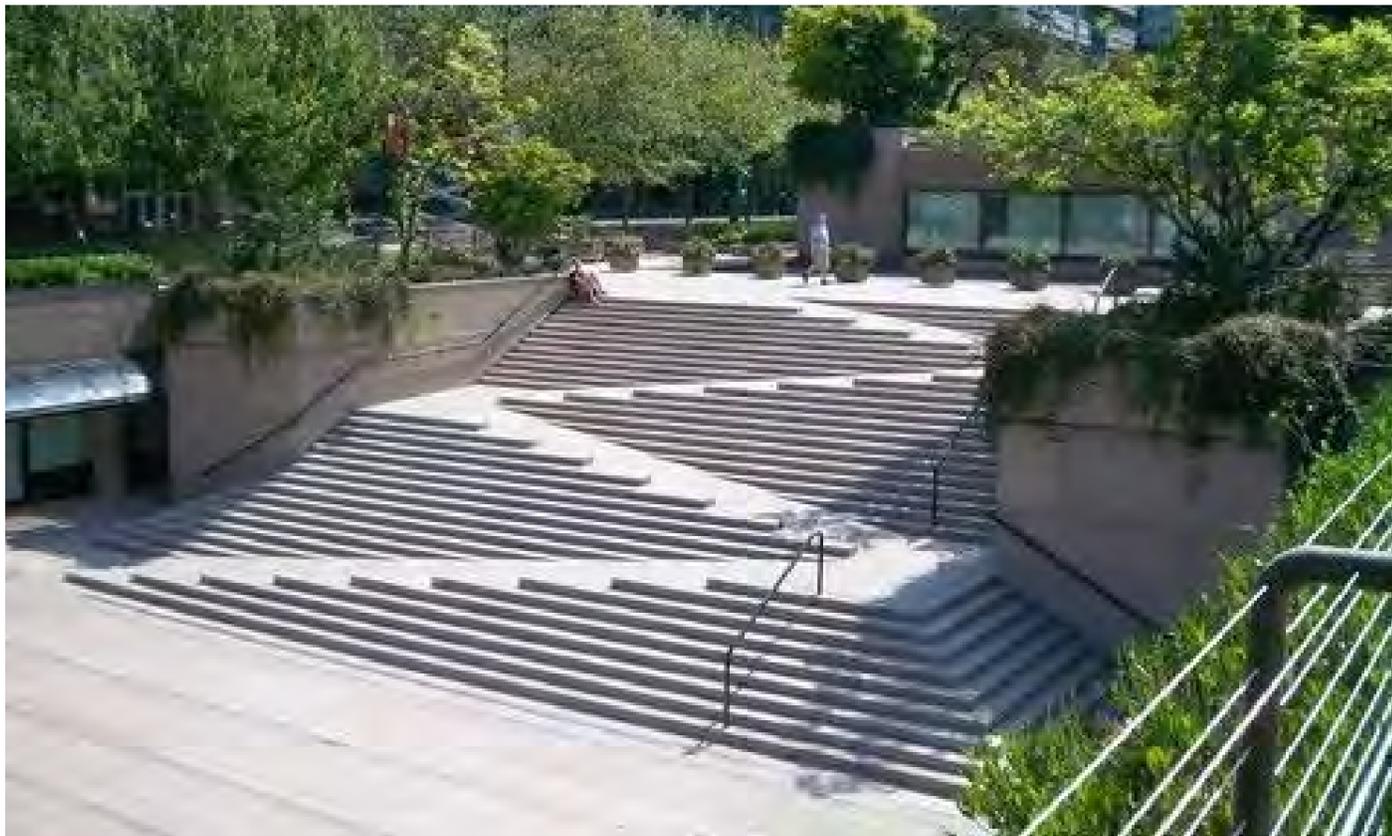
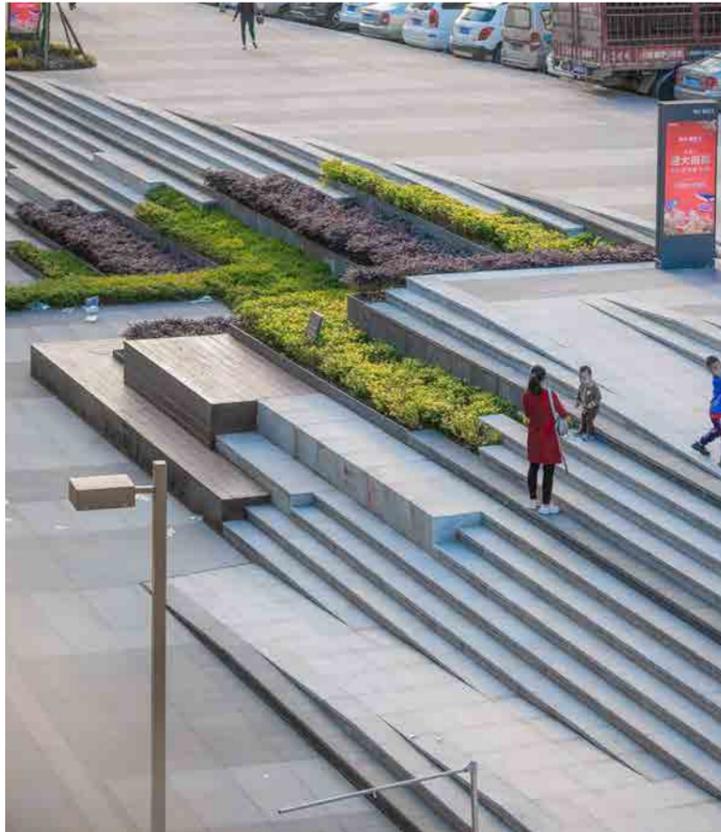
The sculptural stone clad terraces incorporate bleachers, sculptural and accessible stairs and a ramp which follows the topography of the embankment and integrates with proposed planting.

The concept for the planting is based on a 'prairie style', with a rich mixture of ornamental grasses and perennials creating a meadow-like tapestry of colour and soft textures. Seating enables people to sit, enjoy the views within this green and natural setting.

The design will:

- Provide an accessible route from lower to upper Courthouse.
- Provide a continuous (shared use) extension to the Promenade linking the new greenspace to County Way.
- Provide a public realm edge that incorporates opportunities for outdoor seating and public occupation.
- Enhance the immediate setting of the proposed Plot 2 development.
- Provide more flexible and robust spaces that support a wide variety of activities and occupation and enhance the 'park like' setting





6.0 Key Character Areas

6.7 Southern Arrival Gateway

The Gateway and Arrival from Regent Street is a key feature of the external environment. As such the concept is to frame the vista along the pedestrian approach (Promenade) with a planting arrangement and style that helps to direct movement towards the main greenspace.

The planting concept is to create an informal mix of textured plants in a tiered arrangement, from lawn and low ground cover against the path, rising up to taller shrubs planting at the outer edges. Climbing plants can also be used to create a 'green wall' along the site boundary.

Multi-stemmed native and ornamental trees such as *Amelanchier lamarkii* help to create a human scale to the approach, whilst also giving bursts of seasonal floral colour to create interest throughout the year.

To add rhythm and structure to the planting composition, low formal clipped hedges will break up the planting and reinforce the linear 'Seam' arrangement of the paving bands and seat walls in this space.

The concept aims to create that first impression of the Digital Campus that is welcoming and of high quality. The sequence of arrival, whether walking in from the Station, an extension of the town centre experience, or transitioning from the vehicle to foot should be comfortable and enjoyable.





SECTION 7.0

PUBLIC REALM THEMES

7.0 Public Realm Themes

7.1 Materials and Street Furniture

Surface materials are to be good quality, robust, functional and give a sense of place that ties into the contextual landscape.

Areas of feature paving can be combined with the wider surface treatment to highlight key elements within the landscape. This can be done in a focussed, cost effective way.

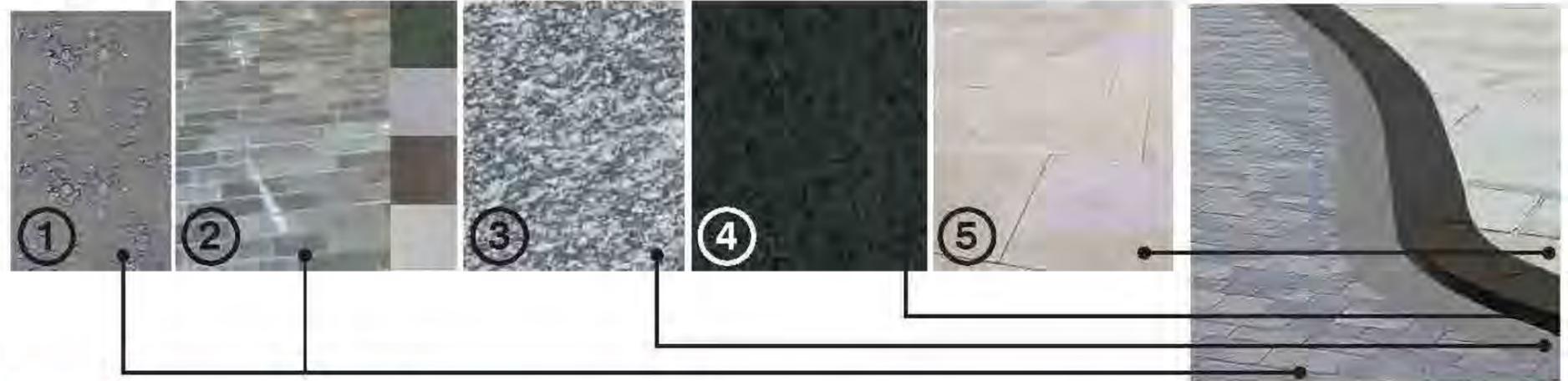
Importance should be given to Barnsley Town Centre 'Public Spaces Strategy 2010': which identifies Purple/ Blue Streets as the guiding approach. See extract on the right;

The guide calls for the use of natural warm, toned paving with a choice of yorkstone or granite edging.

Inner core - blue streets

Yorkstone Pavement & granite kerb

Traditional yorkstone pavements with wide granite kerbs for wide streets that accommodate vehicular use. The kerb can be raised or flush to allow for various uses. Likely to receive heavy traffic in the short to medium term.



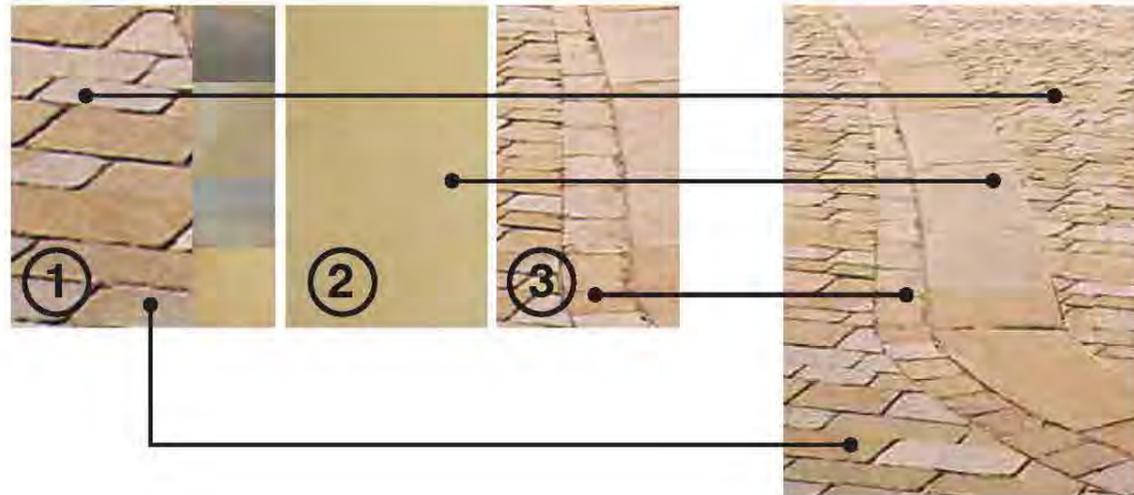
No.	Item	Use	Typical Material	Colour / Finish*
①	Carriageway (Typical)	To be used as typical approach on carriageways (due to heavy traffic in short to medium term)	Bituminous macadam (surface course to receive granite chipping aggregate)	Colour: Grey aggregate.
②	Carriageway (Accent)	To highlight key civic locations (where traffic levels are low) or to mark key pedestrian crossings.	Natural stone setts (To be demonstrated to be appropriate for use in carriageway) Laid in 100mm course. Random lengths to be no greater than 250mm and no less than 150mm	Colour: Mid/Light Grey Mix (to create contrast with black kerb) Finish: Bush Hammered
③	Vehicular channel		Natural stone channel 150mm wide	Colour: Mid Grey (to create contrast with black kerb) Finish: Bush Hammered
④	Kerb		Granite kerb To be no narrower than 300mm wide Riser typically 125mm (but should be lowered to 50mm where possible).	Colour: Hardscape's stardust (PT black) or similar Finish: Bush Hammered, bullnose.
⑤	Pavements		Yorkstone paving slabs laid normally in 300mm course (coursing width to be reduced in high loading areas due to construction depth). Random lengths to be no greater than 500mm and no less than 200mm	Colour: Predominantly buff with some colour variation (larger grain) eg. Woodkirk Buff/Crossland Hill or similar Finish: Sawn / Shot Blasted
	Tactile paving (general use and uncontrolled crossings)	See DDA guidelines regarding use of hazard paving	Blister / corduroy paving to meet DDA guidelines	Natural stone (To create a colour contrast with adjacent paving material).
	Tactile paving (controlled crossings)	Contrasting blister paving to be used at controlled crossings, refer to DDA guidelines	Blister paving to meet DDA guidelines	Natural stone - subtle red tone (to create a colour contrast with adjacent paving material).

Inner core - purple streets A



Yorkstone carpet

Wall to wall yorkstone is a traditional palette already used very successfully in Barnsley's tight lanes and arcades. Wide flush kerb lines add structure and definition.



The images above show the existing use of yorkstone in Barnsley Town Centre.

Yorkstone is used from wall to wall, with a combination of both raised and flush wide yorkstone kerbs.

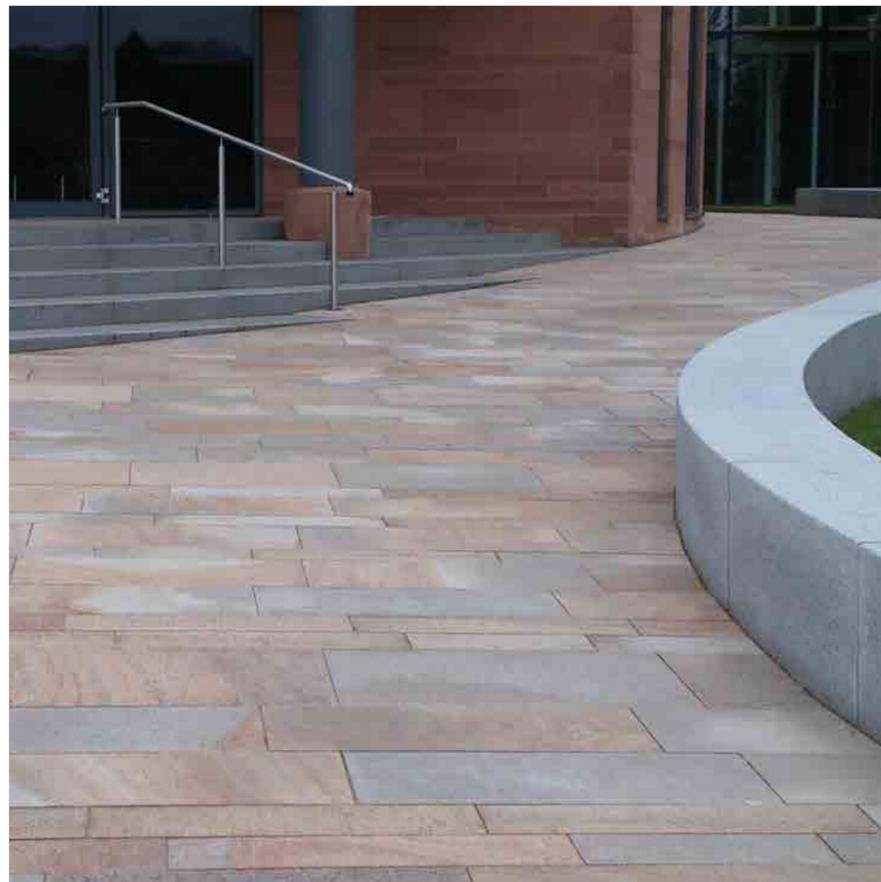
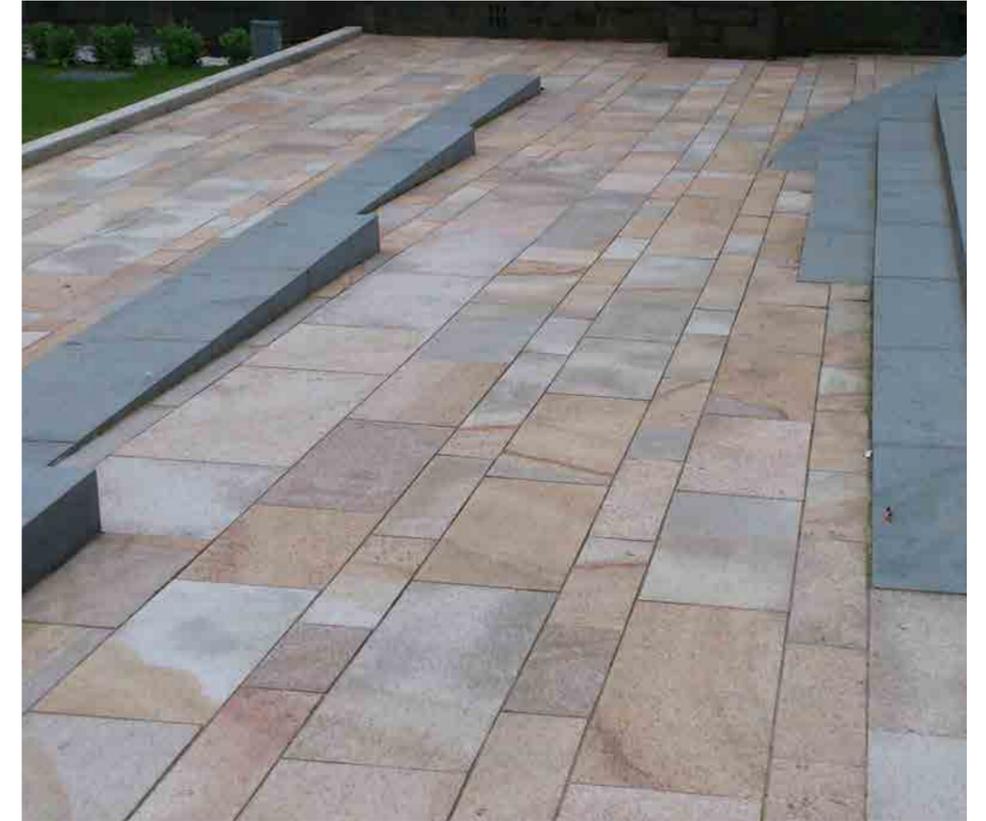
No.	Item	Use	Typical Material	Colour / Finish*
①	Carriageway / Pavements	Sawn setts to be used by default, sawn tumbled to be used to accentuate historic character where appropriate	Yorkstone setts Laid in 100mm course. Random lengths to be no greater than 250mm and no less than 150mm	Colour: Predominantly buff with some colour variation (larger grain) eg. Woodkirk Buff/Crossland Hill or similar Finish: Sawn or sawn tumbled
②	Kerb		Yorkstone kerb To be no narrower than 300mm wide Predominantly Flush, where riser is needed it should not exceed 50mm.	Colour: Predominantly buff with some colour variation (larger grain) eg. Woodkirk Buff/Crossland Hill (or similar) Finish: Sawn / Shot Blasted
③	Channel		Yorkstone setts Laid in 100mm soldier course. Random lengths to be no greater than 250mm and no less than 150mm	Colour: Predominantly buff with some colour variation (larger grain) eg. Woodkirk Buff/Crossland Hill or similar Finish: Sawn or sawn tumbled
	Tactile paving (general use and uncontrolled crossings)	See DDA guidelines regarding use of hazard paving	Blister / corduroy paving to meet DDA guidelines	Natural stone (To create a colour contrast with adjacent paving material).
	Tactile paving (controlled crossings)	Contrasting blister paving to be used at controlled crossings, refer to DDA guidelines	Blister paving to meet DDA guidelines	Natural stone - subtle red tone (to create a colour contrast with adjacent paving material).

7.0 Public Realm Themes

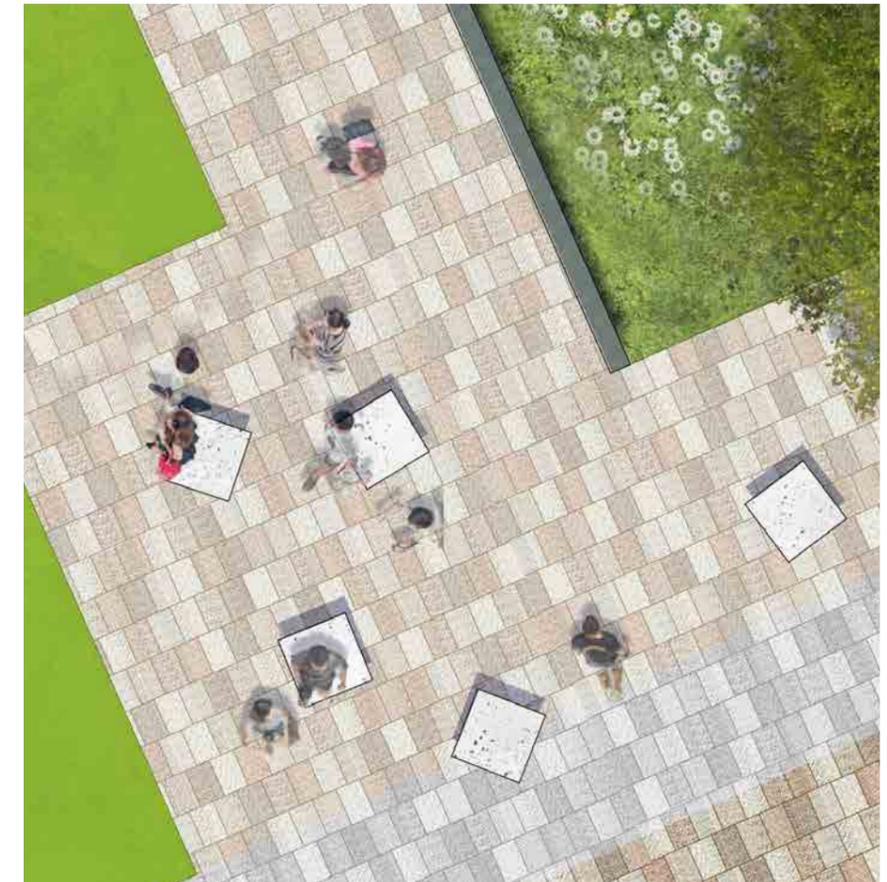
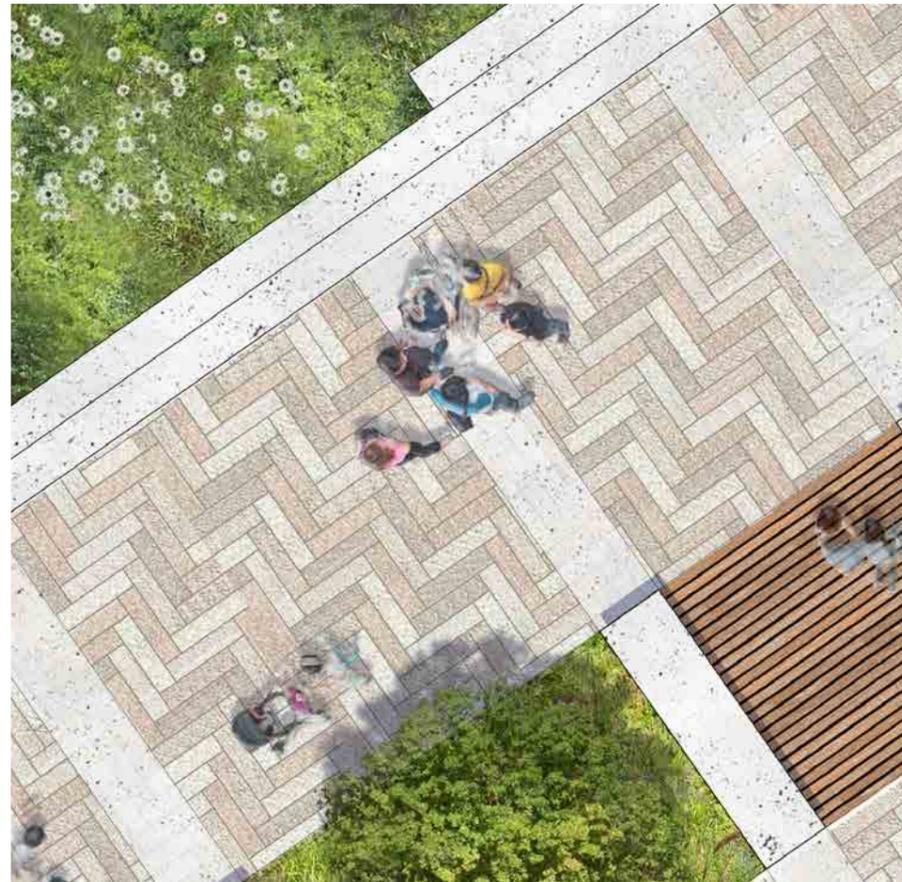
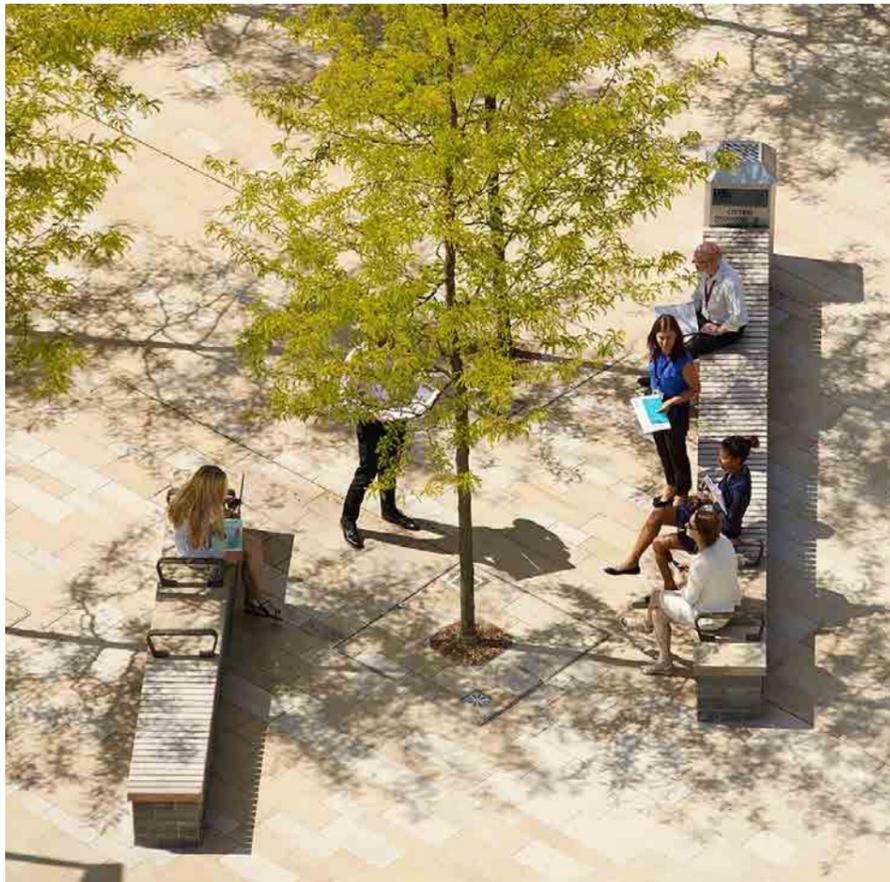
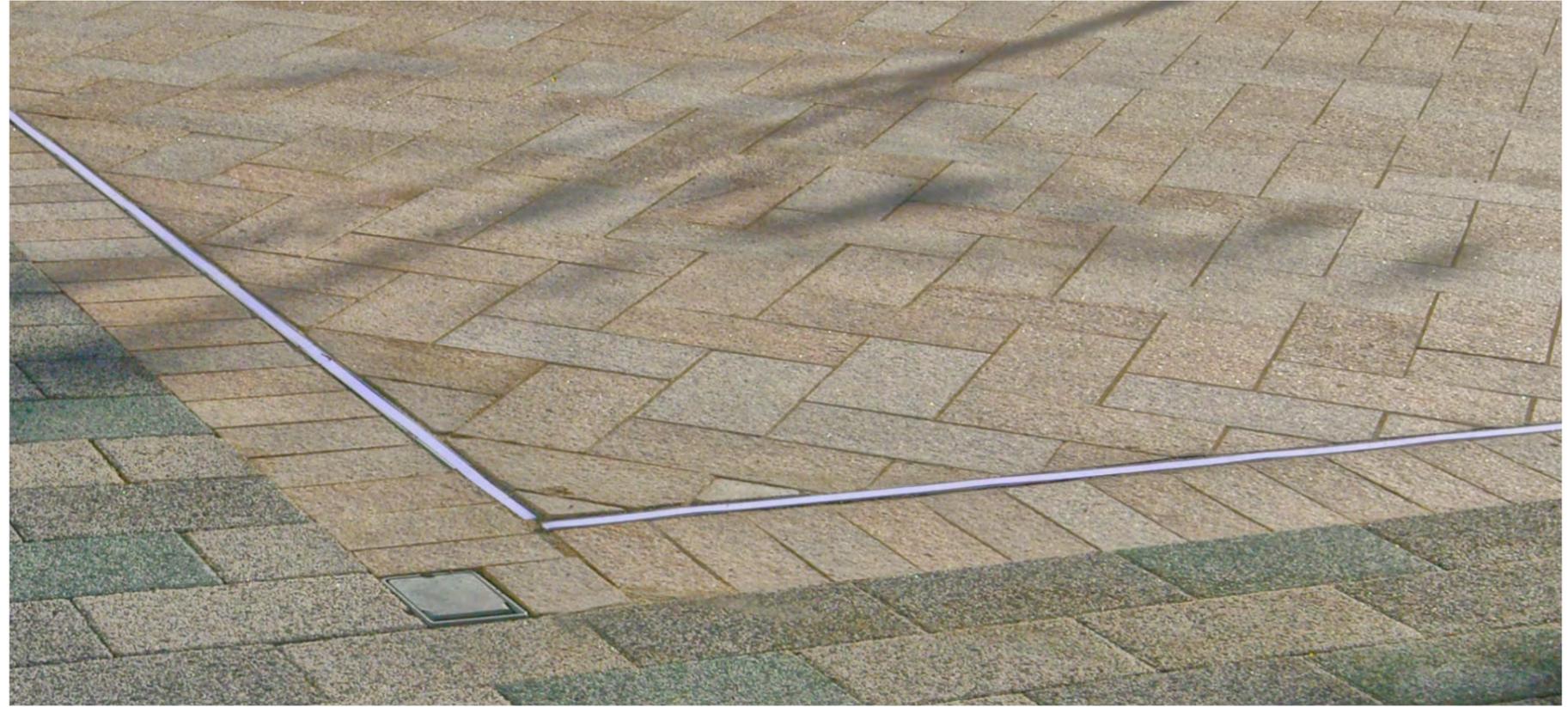
7.1 Materials and Street Furniture

The images on the right characterise the warmer colour tones of the paved surfacing proposed for the Digital Campus.

As described in the page above this approach aligns with the ambitions for Barnsley Town Centre and allows the project to interface seamlessly with the wider public realm palette.



Bolton School, Bolton



7.0 Public Realm Themes

7.2 Trees and Planting

Planting will serve several purposes. It will help to generally soften the space, forming a lush foreground to the surrounding buildings, create intimate seating areas, add colour and vibrancy in contrast to the earthy materials of the hard landscape and building and create a focal point to the design.

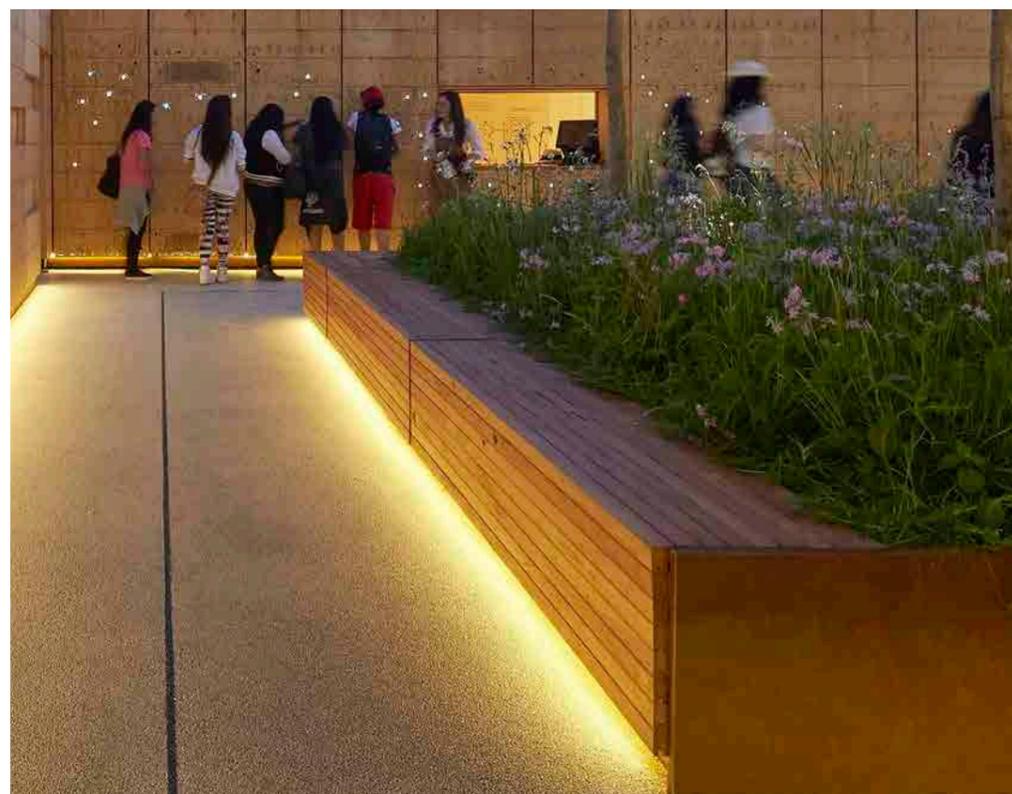
The planting will help to define the different areas and uses of the spaces, helping to channel people through the space to the various external uses or creating seating opportunities for rest and relaxation.

The use of semi-mature specimen trees within the scheme is essential to create the immediate feeling of an established Park. These trees, along with established shrubs, flowering plants, grasses and bamboos will create this engaging and inviting environment.

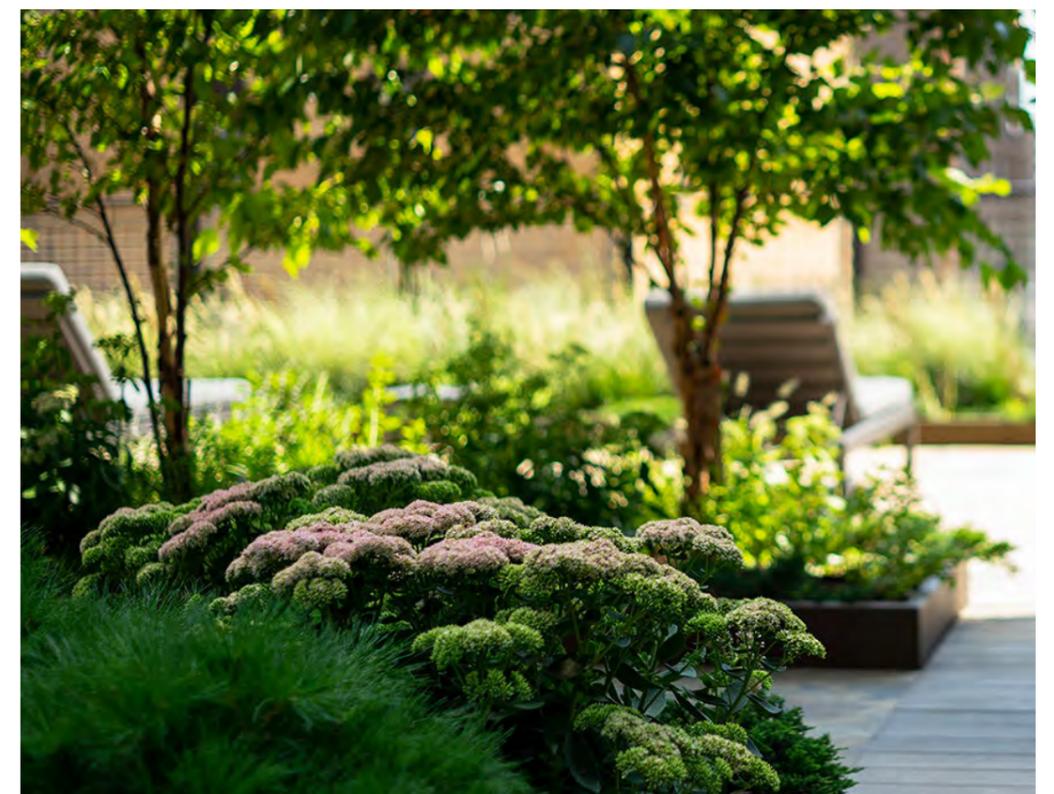
Planting styles range from controlled natural drifts/swathes of ornamental grasses and shrubs with areas of more naturalistic perennial style planting to larger open areas of species rich lawn.



Create focus area with lighting structures above lush planting



Identification of seating and gathering areas through lighting

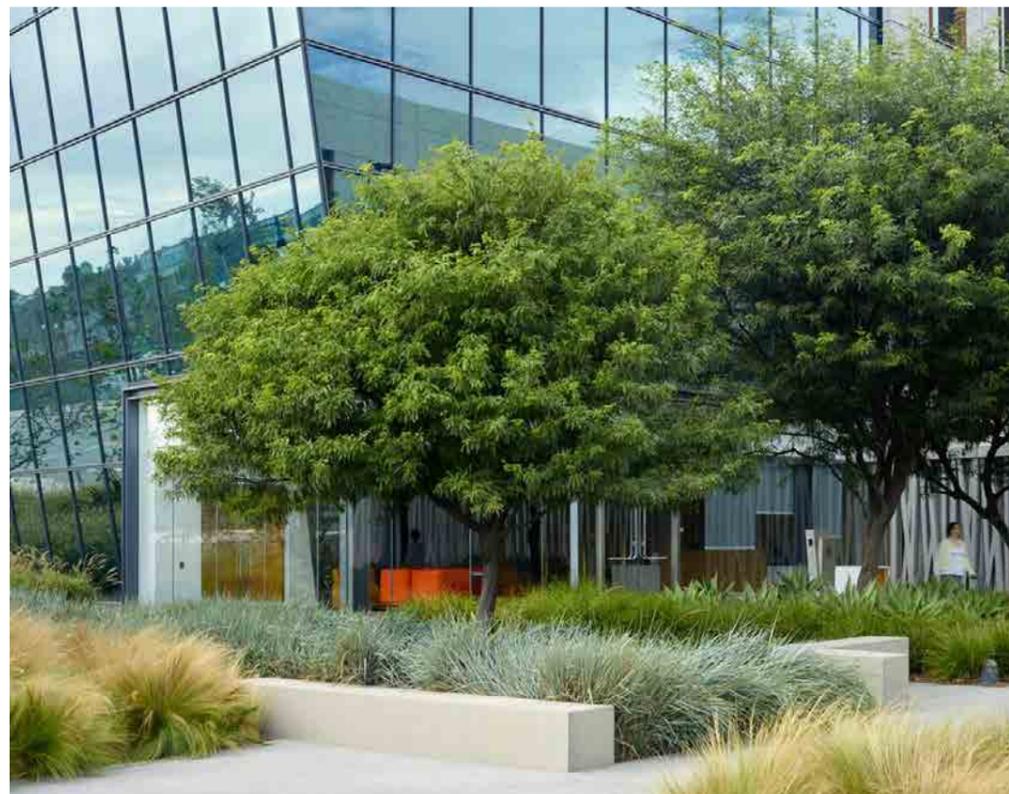


7.2 Trees and planting

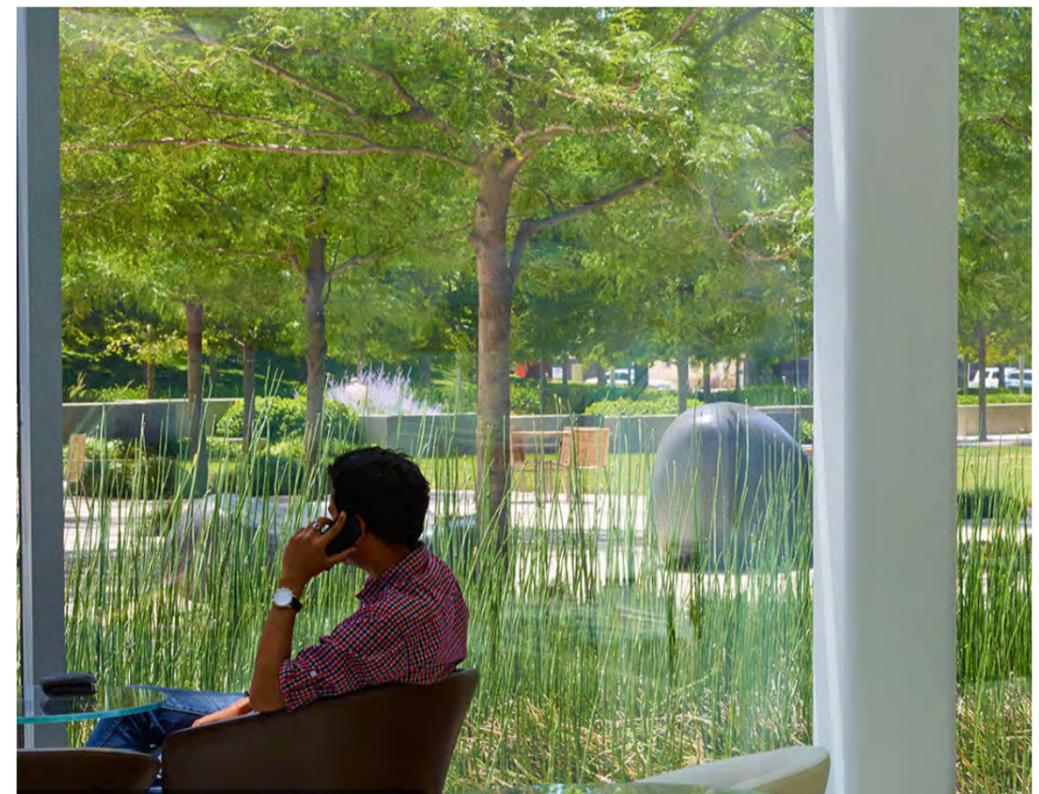
The brief requires a response that is sustainable and rich in biodiversity, therefore no single species or mono-municipal block planting will be proposed.

Instead, swathes of species rich ornamental planting will be proposed, generally within raised planters to provide a seat edge. This will give year round interest and an enhanced degree of biodiversity for the Digital Campus.

Views from within the buildings is a crucial part of the design, as the space is intended to link through to the internal areas of the adjacent buildings.



Low seat walls and planting create outdoor rooms



Linking external green space with the internal building

7.0 Public Realm Themes

7.3 Sustainable Urban Drainage

The ambition is for green infrastructure to be a key part of the open space strategy.

The project works to alleviate storm-water runoff as part of a sustainable drainage system strategy (SUDs), by allowing the surface water to be directed into soft planted areas for natural absorption and slow percolation in the soil layers.

Opportunities to create green space are created through the setting out of a pattern of green routes which are treated as linear public spaces.

The landscape strategy can showcase a larger ambition to shape a sustainable, naturally diverse masterplan through its considered choice of landscape typologies, enriched with plant palettes that mix native and naturalised species and enliven the Digital Campus with colour, form, and texture.

The integration of the natural landscape setting, can support the character of the masterplan with the creation of the 'green' Seam, landscape routes and a green Promenade.





7.0 Public Realm Themes

7.4 Activity and Play

The Northern Plot 2 public realm is conceived as a flexible, community focused outdoor space with the capacity to be used for a range of activities including play, community garden and greenspace.

The topography in the space is relatively even, up to the retaining wall and sloped planted bank with existing mature trees, which define the upper and lower Courthouse.

Open space around Plot 2 is limited, so the concept aims to utilise activity within the confines of pocket spaces and linear design responses.

The concept ideas also propose opening up the steps and ramp between the upper and lower tier in order to maximise viewpoints across the valley and create further opportunity for community to meet and socialise.

This is explained in more detail in the coming pages.

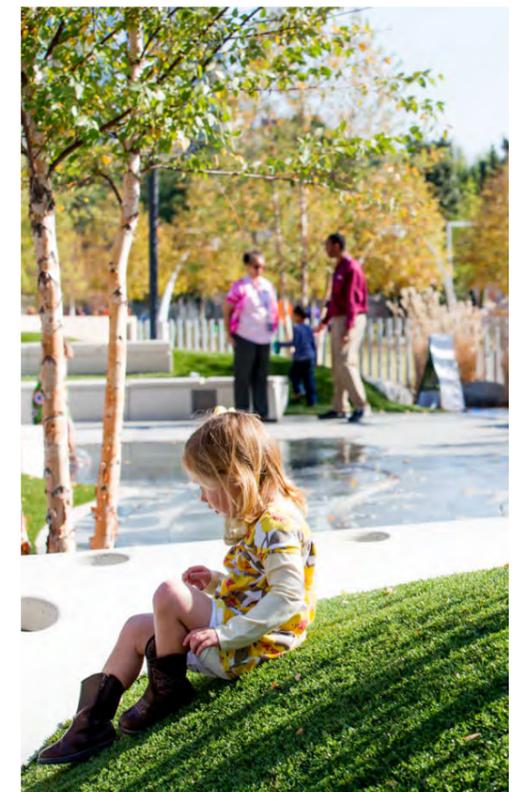
Another key consideration with regard to facilitating activity is the inclusion of power sources and wifi to enable the use of technology for events and temporary pop-up facilities. This will need to be integrated seamlessly into the design and considered early in the design process so that these features are fully integrated into the design.



Power and data for temporary pop-ups and pop-up play



Power connections integrated into surface



USB / Wireless charging in street furniture

As well as being a relaxing space, the Central Green will incorporate an element of activity. This use will tie in to the wider philosophy of the green, allowing for small scale activity within the defined social spaces of the design.

Yoga, pilates, stretching and body weight exercises would all be suitable for the Central Green space and would compliment the lush, green, calm feel.

By not defining specific areas for exercise and activity, we allow the layout to be more flexible for users to make decisions about where to undertake exercise, based on the time of day, sunlight direction, other events etc.

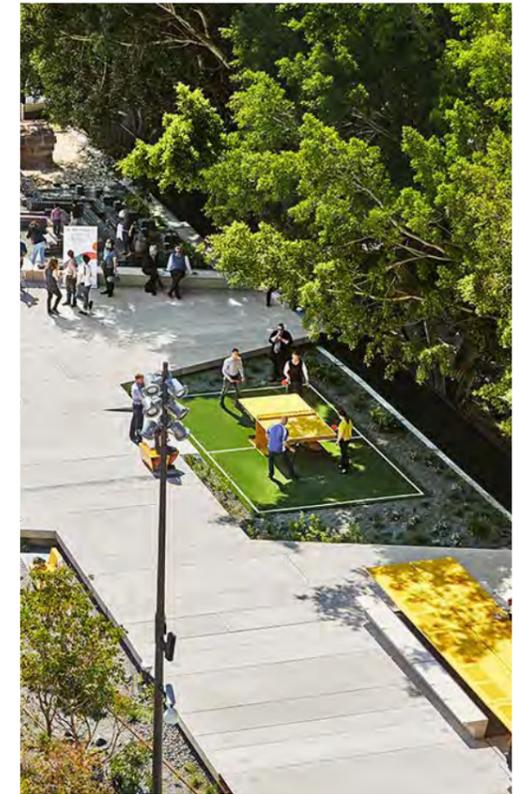
The Central Green will be designed to allow integration of temporary active uses, such as table tennis. Tables could be set up in a similar way to other events tying into wider Campus activities.



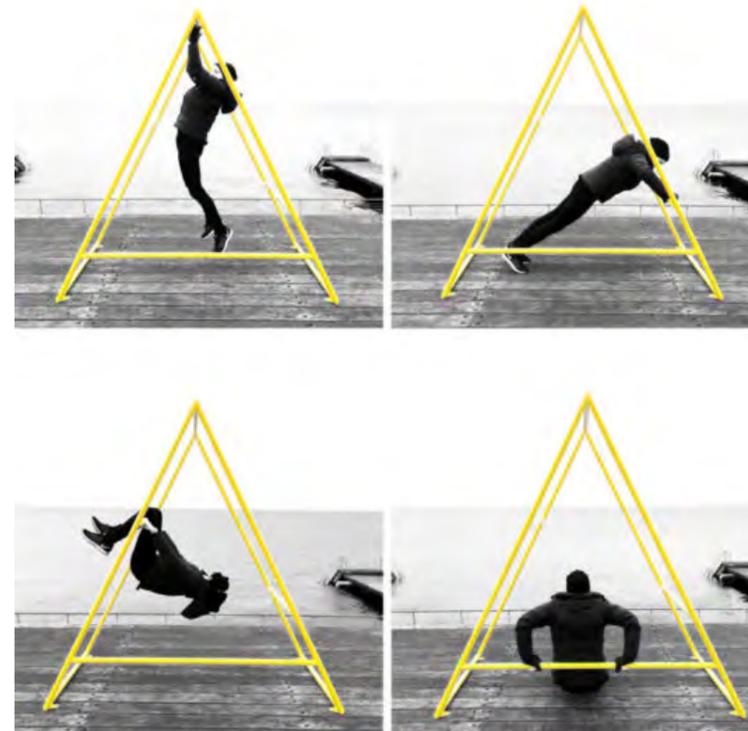
Provision of areas of soft open space



Temporary or permanent activity elements



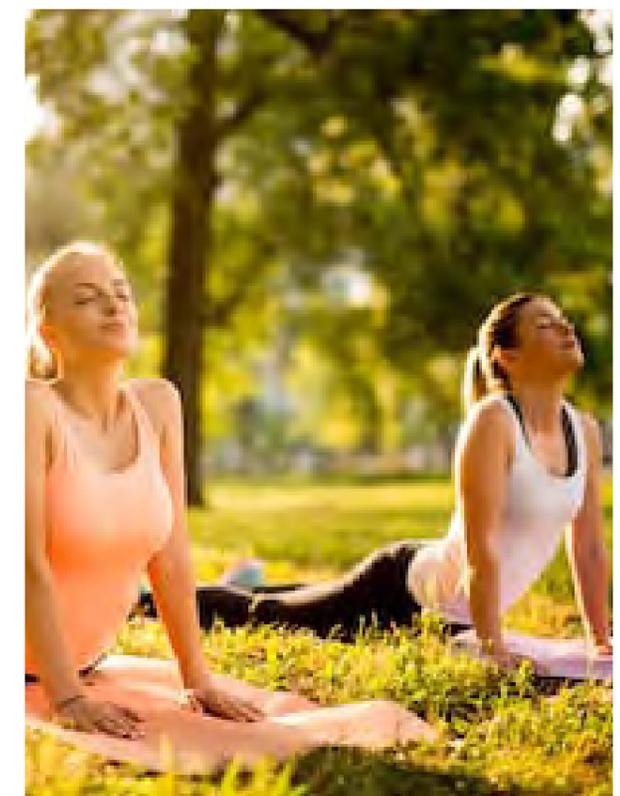
Integrated activity



Modern, abstract fitness furniture



External gym / stretching equipment



Space within the green

7.0 Public Realm Themes

7.5 SMART Technology and Digital Art

Digital Technology can enhance placemaking by creating meaningful experiences for people in the Digital Campus by fusing fixed components such as connected street furniture, digital wayfinding features, with mobile and personal devices, including smartphones and wearable products.

By introducing the concept of the public realm as a mix of the physical space and digital space, the point at which both interconnect can be explored further to expand the range of ways people can experience the physical spaces in the Digital Campus.

This kind of Digital placemaking can help to enhance the public realm and attract visitors to deepen their connection with the public realm and interact socially with each other. Below are examples of where the physical and digital realm can overlap successfully:

- Digital artists augmenting building facades with either projection or through the interface of screens. Also using walls (eg. existing arches) and facades as canvases for artists to interact digitally with the public.

- Screens displaying data - for example Andrea Polli's Particle Falls (2008–2018), an installation showing the quality of the air with streams of blue pixels when it is pure and red spots when it is saturated with PM2.5 particles.

- Light Installations using LED technology software, lenses, to create of dazzling virtual spaces

- Immersive technology such as Augmented Realities to invite visitors to interact with public space.

- Sculptures – for example artists like Ken Kelleher reimagine the digital sculpture with the use of computers to render what place sculpture could occupy in urban spaces.





SECTION 8.0

LIGHTING DESIGN

8.1 Introduction

The following report section describes a high level lighting concept strategy for the public realm at the Seam phase 1, Barnsley. The proposals contained within are to be viewed as a lighting concept design strategy rather than a detailed design solution.

Within the area-by-area section of this report, sample areas have been identified to present a lighting concept for client review and for high level costing purposes.

We propose a clean and simple high quality approach to complement and enhance the landscape design, exterior architecture and public realm areas with due consideration to the historic significance of the location.

Lighting to the public realm areas will provide a warm, safe and welcoming night time environment, suitable for both socialising and safe navigation. The lighting strategy will promote the space via use of high quality functional and feature lighting elements that will illuminate the routes, selected landscape details and vertical surfaces.

Design Objectives

- Identify and illuminate the pedestrian routes within the site to secure health and safety of the public throughout the hours of darkness.
- Provide an adequate level of illuminance for the proposed areas, in accordance with the CIBSE guidance, British Standards and client requirements.
- Selectively employ feature lighting to enhance the visual appearance of specific feature elements within the site. Elements will be selected and lit according to their inherent form, material and their relationship to the scheme as a whole.
- To limit obtrusive light, spill light / trespass light and glare to neighbouring land and properties.
- To limit light pollution and sky glow.
- To provide a suitable lighting control strategy to minimise energy consumption.
- To provide a cost effective, sustainable and energy efficient system, in terms of initial capital costs and continuing operational use.
- To select light sources for their efficiency, colour rendition and longevity to provide an efficient lighting solution with a predictable maintenance regime.

Scope of Works

The lighting strategy scope of works shall cover all public realm areas detailed within the red line boundary opposite.



8.2 Performance Objectives & Design Parameters

Performance Objectives

The design objectives of the lighting scheme may be summarised as:

- Provide general exterior lighting to the areas defined within the area of scope agreed with the client.
- Identify and illuminate pedestrian and cyclist routes within the site, to secure the health and safety of both its users and visitors throughout the hours of darkness. Sufficient lighting will be provided for a safe environment whilst limiting light pollution and ingress to neighbours to a minimum.
- Provide effective lighting control to ensure illuminance levels are suitable for the activities taking place while also maximising light source life, and minimising energy consumption and maintenance.
- Provide a cost effective, sustainable and energy efficient system, in terms of initial capital costs and continuing operational use. Select light source types for their efficacy, colour rendition and longevity to provide an efficient lighting solution with a predictable maintenance regime.
- Utilise light source types appropriate for the character and function of each space while retaining a coherent, rationalised illumination system in terms of lit effect and equipment installed.

Design Parameters

The following mandatory, legislative and regulatory requirements, British Standards, Codes of Practice and Best Practice professional guidance publications will form the parameters of the lighting installation:

- BS 5489-1-2020 Design of Road Lighting, Part 1_ Lighting of Roads and Public Amenity Areas
- BS EN 12464-2:2014 - Part 2 Outdoor work places, BSI, 2014
- Guidance Notes for the Reduction of Obtrusive Light GN01/20, Institution of Lighting Professionals, 2021
- Guide to Limiting Obtrusive Light, SLL, 2013
- Lighting Handbook, SLL 2018
- DDA BS 8300-1:2018 - Design of an accessible and inclusive built environment; Part 1: External environment - Code of practice, 2018

8.3 Illumination Criteria

The proposed light levels and classifications which follow are presented for client approval.

It is important to select light levels appropriate for the task taking place. British Standards and CIBSE guidance all stipulate appropriate light levels, however, where there an option to select a level from more than one document, the lower light level should typically be sought.

Due recognition must be paid to adjacent roads and public realm areas to ensure illuminance step differences are visually acceptable and require no time dependency for visual adaptation.

Considered selection of light sources and luminaire locations will be required in areas adjacent to the railway line to avoid being in the field of view of trains drivers and light spill onto tracks.

Exterior illuminance criteria as set out in BS EN 5489-1:2020 is dependent upon the district brightness where the lighting is to be deployed. The district brightness is determined according to criteria set out in ILP publication Guidance Notes for the Reduction of Obtrusive Light and requires knowledge of the local area.

Institute of Lighting Professional (ILP) recommendations:

With reference to the Guidance Notes for the Reduction of Obtrusive Light GN01:2020, Institution of Lighting Professionals, this area has been classified as Environmental Zone E4.

E4 represents areas of high district brightness: Town and city centres with high levels of night-time activity. Refer to the following table for obtrusive light limitations.

External lighting illumination levels will be based on CIBSE, BS and CIE guidance to maximise safety whilst maintaining a minimal impact on the site surroundings, environment and neighbouring properties.

This scheme also takes into consideration the need to reduce energy consumption, whilst maintaining a high quality of illumination for the site.

CCTV & Security

Light levels and colour rendering requirements vary according to the CCTV specification. It is recommended that a CCTV specialist be consulted to inform the minimum required lighting levels and quality of light. During detailed design stage risk assessments must be undertaken in line with the latest guidance to ensure the appropriate light level is selected.

Table 1: Environmental zone descriptions in ILP guidance

Category	Lighting environment	Examples
E0	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Intrinsically dark landscapes	National parks, areas of outstanding national beauty, etc
E2	Low district brightness areas	Rural, small village or relatively dark urban locations
E3	Medium district brightness areas	Small town centres or urban locations
E4	High district brightness areas	Town/city centres with high levels of night-time activity

UNESCO United Nations Educational, Scientific and Cultural Organization
IDA International Dark Sky Association

Table 2: ILP numerical guidance on obtrusive light

Obtrusive light limitations for exterior lighting installations

Environmental Zone	Sky glow ULR (Max %)	Light trespass into windows E_v (lux)		Source intensity I (kcd)		Building Luminance pre-curfew
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average L (cd/m ²)
E0	0	0	0	0	0	0
E1	0	2	1*	2.5	0	0
E2	2.5	5	1	7.5	0.5	5
E3	5.0	10	2	10	1.0	10
E4	15.0	25	5	25	2.5	25

* From public road lighting installations only.
ULR Upward light ratio of the installation, i.e. the proportion of light from the total installation that goes directly into the sky.
E Vertical illuminance in lux on nearby domestic windows.
I Light intensity in kilo-candelas in a potentially obtrusive direction, outside of the area being lit. The ILP guidelines state that these figures are for general guidance only and for some sports lighting applications with limited mounting heights may be difficult to achieve.
L Luminance in candelas per m². This guideline is intended to apply to buildings that are deliberately floodlit at night. L is a measure of how bright the building appears.

8.3 Illumination Criteria

With reference to the design parameters and based upon previous practical experience, the lighting scheme will be designed to achieve the average maintained illuminance levels at ground level shown opposite.

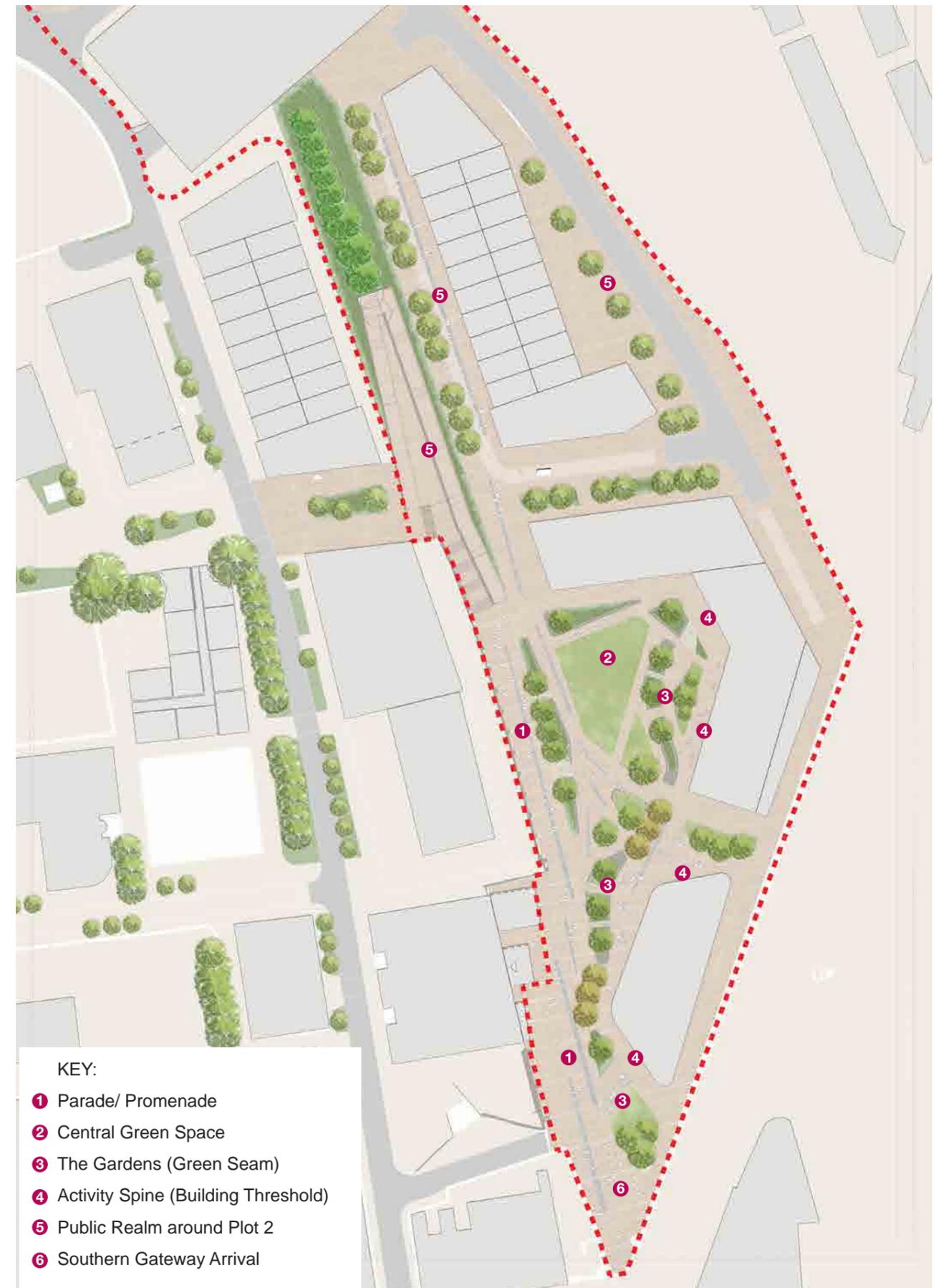
External Area	Average Illuminance (lux)	Minimum Illuminance (lux)	Working Plane AFFL (m)	Uniformity (min/av)	Document	Reference	Additional Notes
Pedestrian thoroughfare - Promenade	15	3	0	N/A	BS 5489-1_2020	Table A.6	P1 lighting classes (E4)
Pedestrian only - Activity Spine	7.5	0	N/A	BS EN 13201-2_2015	Table 3	P3 lighting classes	
Pedestrian only - Meandering routes	5	1	0	N/A	BS EN 13201-2_2015	Table 3	P4 lighting classes
Pedestrian only - Perimeter walk	3	0.6	0	N/A	BS EN 13201-2_2015	Table 3	P5 lighting classes
Pedestrians and motorised traffic - Plot 2	10	2	0	N/A	BS EN 13201-2_2015	Table 3	P2 lighting classes
Steps / Ramps	30	15	0	0.25	BS 8300-1_2018	Table 5	-



8.4 Area by Area Description

Summary of lighting elements

1. Parade/ Promenade
2. Central Green Space
3. The Gardens (Green Seam)
4. Activity Spine (Building Threshold)
5. Public Realm around Plot 2
6. Southern Gateway Arrival & Perimeter route



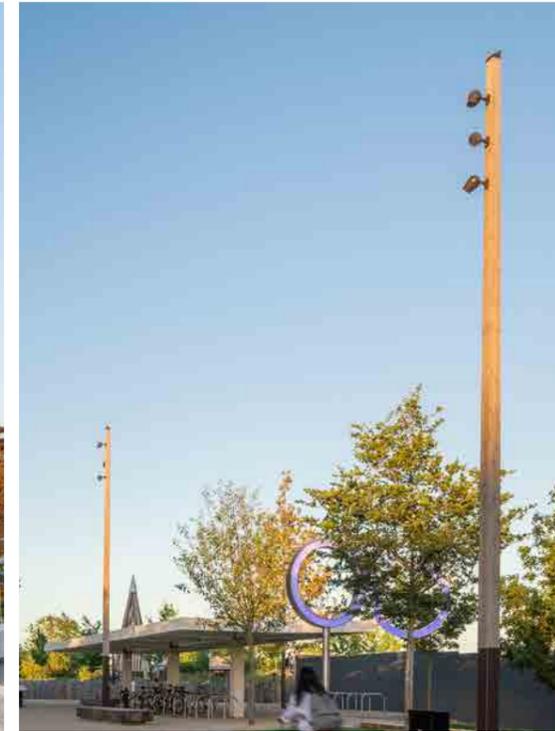
Phase 1 landscape masterplan

8.4.1 Parade / Promenade

The use of tall columns along the main thoroughfare route would minimise the quantity of columns required and allow low glare focused illumination. Locating light sources at a higher level is also beneficial when the space is used for markets by reducing shadowing associated with asymmetric illumination from shorter columns.

Recommendations

- Tall columns 8-16m
- Multi-head projectors to allow multi-directional focused/targeted illumination
- Columns with structural allowance for mounting of video/gobo projectors.



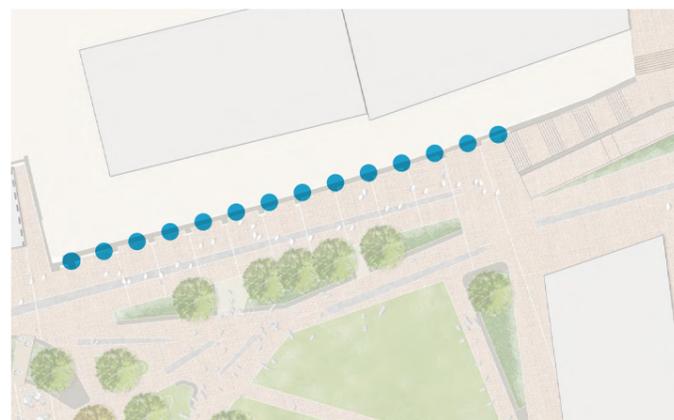
8.4.2 Parade / Promenade

The stone railway arches forms a decorative backdrop to the central green space. Illuminating this vertical surface will celebrate a significant piece of heritage/cultural architecture and creates a strong illuminated surface for visual orientation.

The arches can also form a canvas for projection. This is an opportunity for seasonal and artwork to be displayed.

Recommendations

- Architectural lighting treatments such as In-ground upright illumination to highlight texture/form.
- Video projection/mapping infrastructure.



Location key plan

Site photo of arches

Opportunities for enhancement - Video mapping/projection, gobo projection

8.4.3 Central Green Space

To create visual contrast in the wider open area scene the grass area will not be directly illuminated. During the hours of darkness illumination to trees, planters and pathways will delineate and frame the space.

The grass area could be used as a canvas for digital art and/or seasonal projections.



Location key plan



Opportunities for enhancement - gobo projection

8.4.4 The Gardens (Green Seam)

Planters

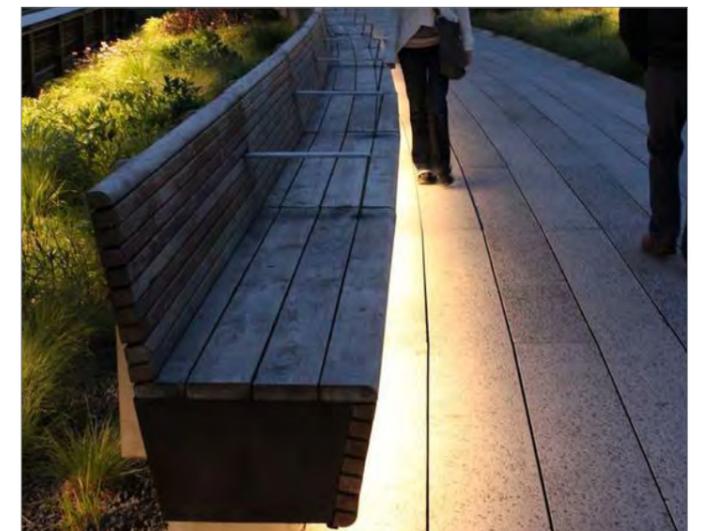
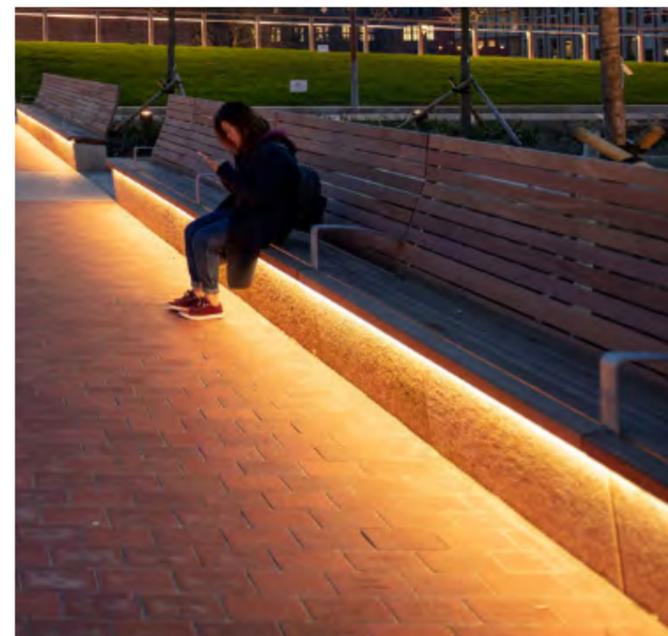
The form and material of planters can be accentuated with integral / concealed lighting. This treatment delineates the foot print and can double as general illumination to pathways.

Recommendations

- Concealed integral lighting to planter bases to provide low level halo and horizontal pathway illuminance.
- Concealed integral lighting to inner planter areas to provide accent illumination to planting.
- Planter mounted tree uplights



Location key plan



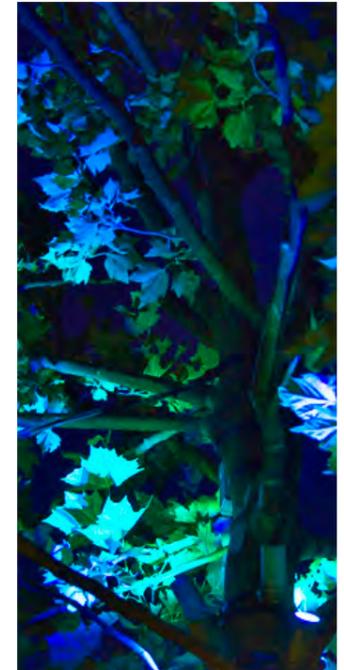
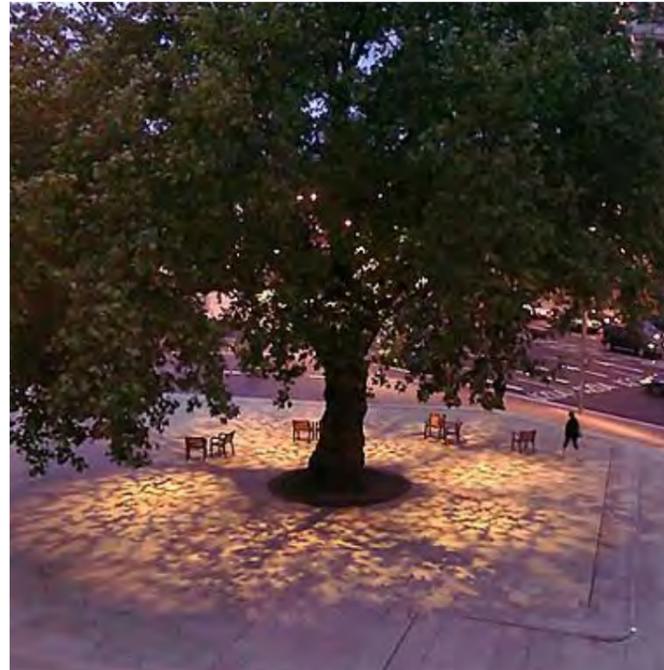
8.4.5 The Gardens (Green Seam)

Trees

Lighting to soft landscape elements such as trees, plants, and even grass ensures that the green character and quality of the space are not concealed at night. Feature lighting enhances the perception of safety and encourages use during the hours of darkness. Luminaires with 4000K colour temperature will enhance the appearance of green foliage.

Recommendations

- Uplighting to Trees, adjustable optics for optimal focussing and minimal light spill. High quality luminaire brands only, low cost luminaires generally become faulty in the first year due to water ingress.
- Lighting located within higher value trees, luminaires can be located within the tree canopy. Mock ups recommended.
- Festoon lighting may be used as an approach for both temporary and permanent installations as required.



8.4.6 Activity Spine

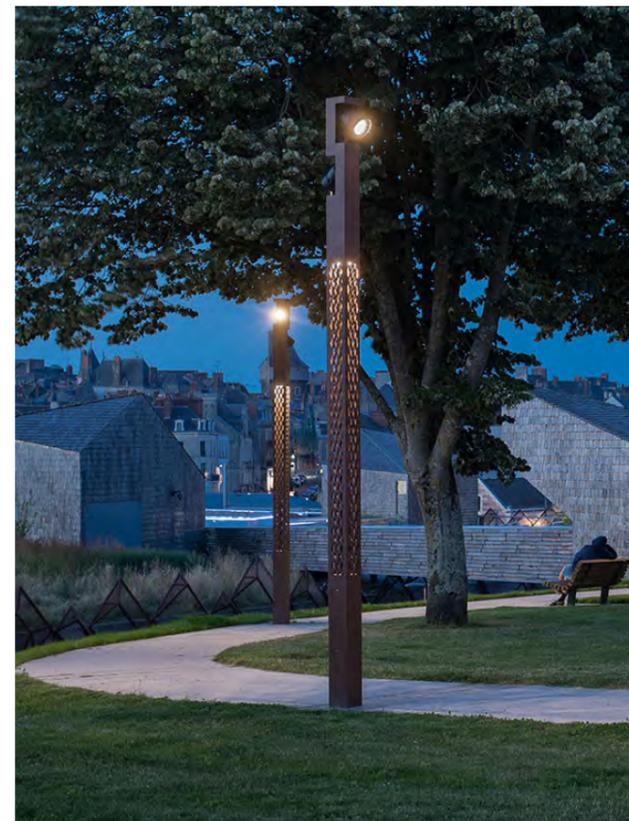
To give the 'activity spine' an identity and complement the activity/facade design, a different light source could be selected for this route. The illumination technique will be influenced by the use and facade design of the buildings.

Recommendations

- Catenary lighting creates a strong identity and charm. It provides flexibility of use as direct illumination is central over the pathways. The arrangement can work with variable path widths and open areas.
- Short columns can provide asymmetric illumination to pathways. The column design can also have a decorative element.
- Facade mounted luminaires can provide both general illumination to pathways and accent illumination to facades. Another benefit would be to de-clutter the landscape.



Location key plan

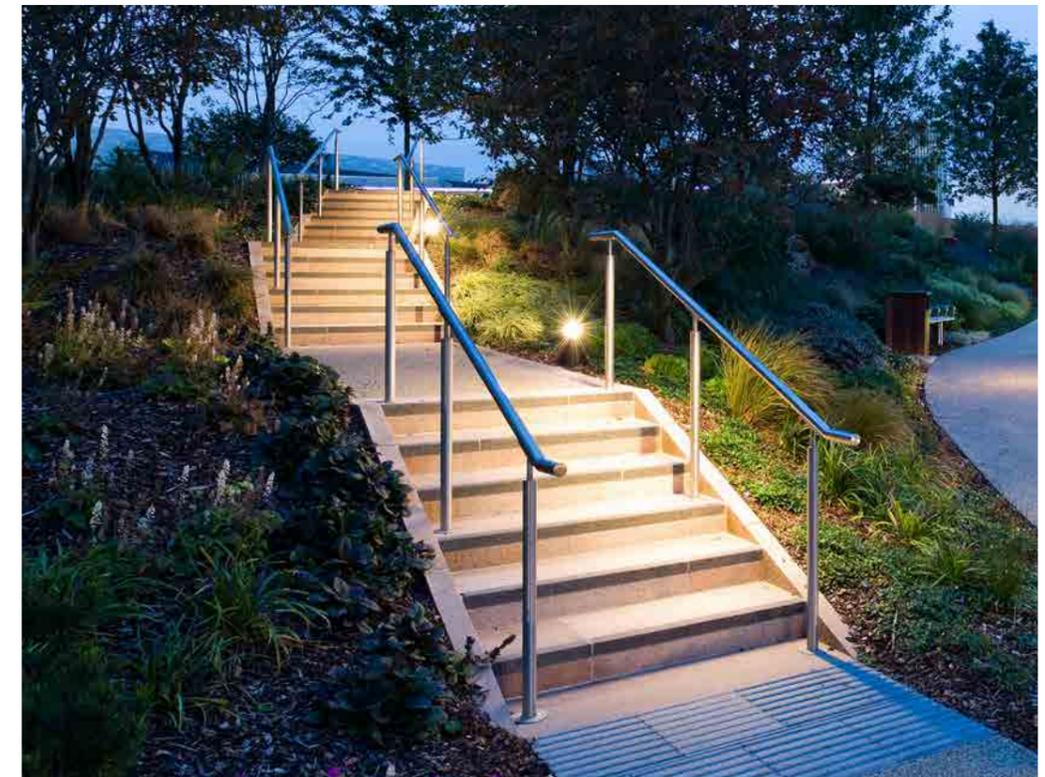
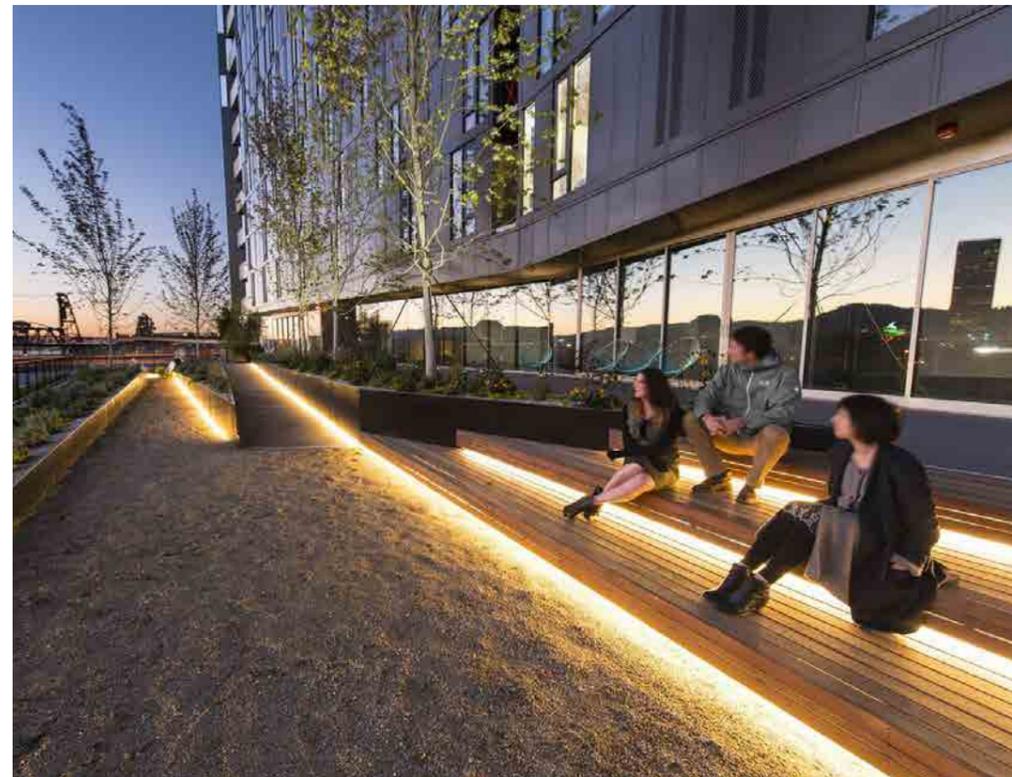


8.4.7 Public Realm - Plot 2, Terraces

Terraces require illumination for safety reasons, this illumination can in the form of integrated details that both delineates form and provides functional illumination.

Recommendations

- Integrated lighting details to vertical surfaces.
- Integral handrail lighting to steps.



8.4.8 Southern Gateway arrival and Perimeter Route

Southern Gateway

Accent illumination can be applied to tree lines and landscape details to create visual interest from beyond the site and act as visual orientation to draw people towards the central green space.

Recommendations

- In-ground uplighting to trees
- Integrated lighting details to landscape and planters

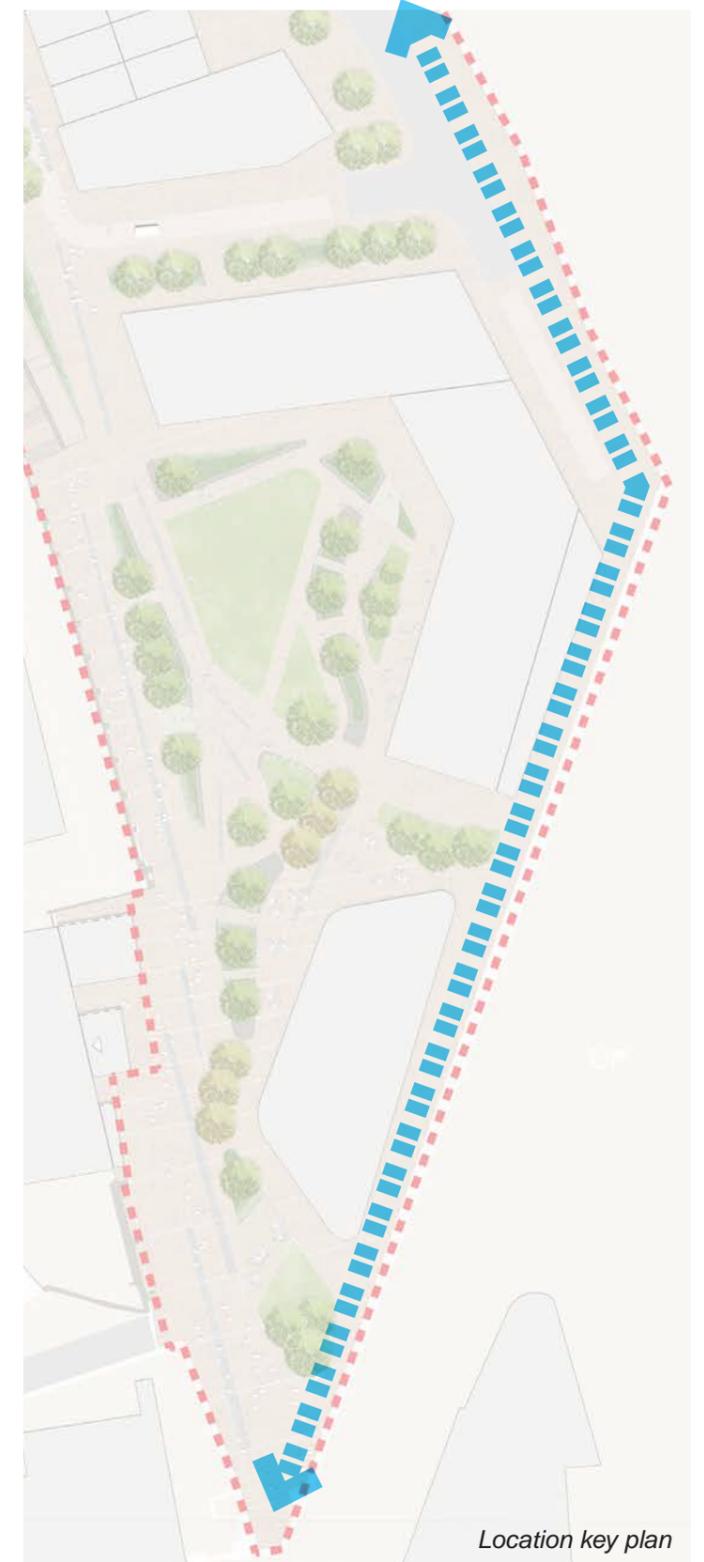
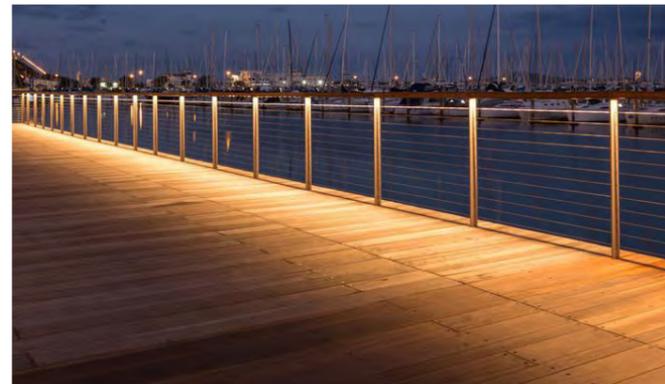


Perimeter Route

On arrival at the Southern Gateway the smaller perimeter pedestrian route will offer long views along this site boundary and existing stone walls. This route runs parallel to road and railway therefore controlled illumination is important to avoid light trespass.

Recommendations

- To maximise the elevated views of the city, low level light sources such as bollards and handrail lighting wis suggested. This type of illumination would also minimise light spill beyond the site boundary.

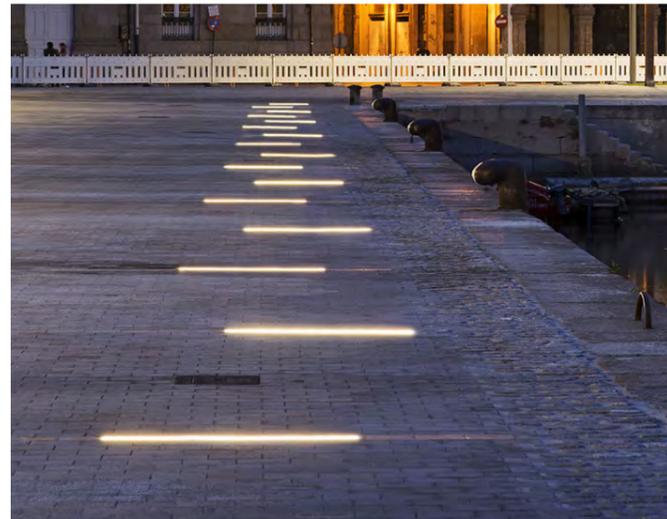


8.5 The Seam (Neighbourhood identity)

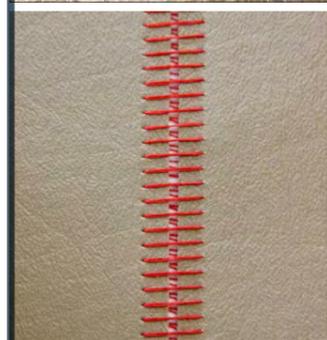
There are opportunities for the distinctive character of the Seam to be expressed with light. The use of self-illuminated or illuminated shapes/objects can be incorporated within the landscape to create an instantly recognisable neighbourhood identity. The 'Seam' identity could be an abstract shape or delineation located within the hardscaping, planter, seating or a bespoke lighting column.

Recommendations

- In-ground luminaires
- Gobo projection
- Seating/planter integrated luminaires
- Bespoke metal work columns



Reflective materials



Seam precedents



Small scale lit features



Large scale lit features



Decorative columns - bespoke design

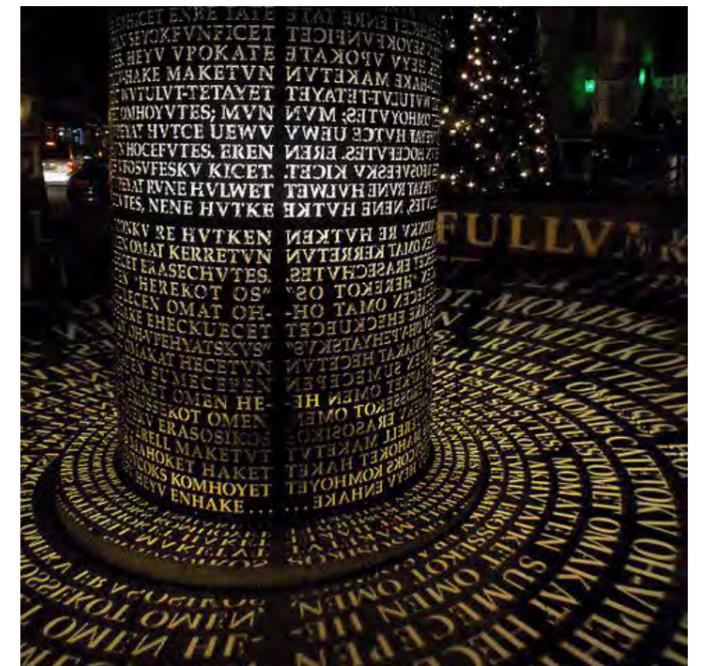
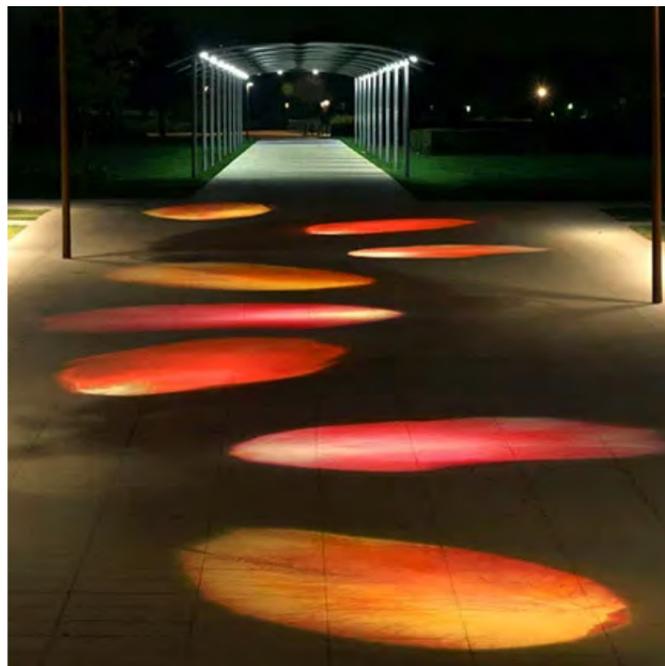
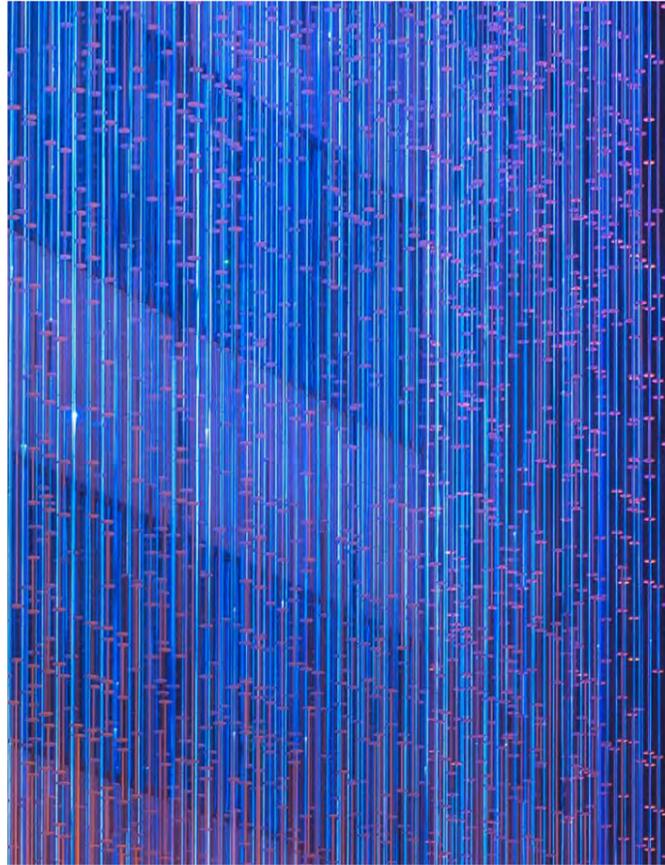
8.6.1 Opportunities For Enhancement - Digital and Fixed Art installations

This next section of the report identifies opportunities for further enhancement through light which are currently beyond the scope of this concept study.

Images are provided to promote further discussion.

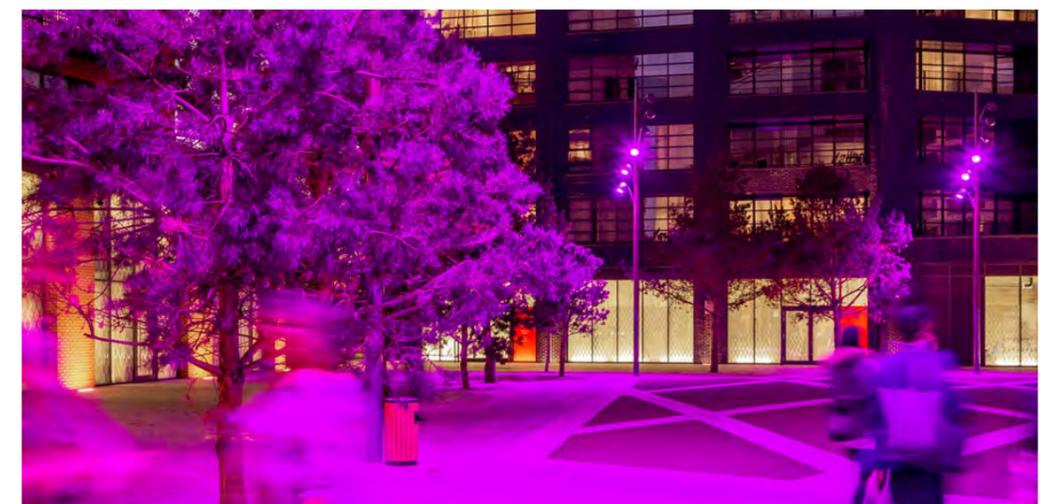
Fixed or temporary illuminated art installations.

There are many benefits of introducing art into the public realm such as; creating civic pride, creates an immersive night time experience that helps the night time economy and tourism.



8.6.2 Opportunities For Enhancement - Elements of play

Both child and adult play is important for wellbeing. Elements of play promotes human interaction and improves the overall experience of an environment.



8.6.3 Opportunities For Enhancement - Combined Technology

Many forms of technology can be integrated into light sources. This integral approach can help de-clutter landscape environments and reduce project cost.



CCTV



Charging point



WIFI



Speakers



Gobo projector

Blank page

SECTION 9.0

CIVIL ENGINEERING

9.0 Civil Engineering

9.1 Drainage

9.1.1 Flood Risk

The site equates to approximately 4.48Ha and is proposed for multi-phased development. The public realm forms part of the proposals for Phase 1, which extends to approximately 2.03Ha in area. A review of the Environment Agency's Flood Map for Planning shows the site to lie wholly within Flood Zone 1, defined as having a low risk of fluvial flooding. However, since the site is greater than 1 Ha a Flood Risk Assessment (FRA) will be required as part of planning in accordance with the National Planning Policy Framework (NPPF).

The purpose of the FRA is to review the flood risk associated with various flood sources and mitigate any risks through the design of the development. The risks associated with the proposed Phase 1 development is summarised as:

- **Fluvial** – The site is in Flood Zone 1, defined as land having less than a 1 in 1000 annual probability of river or sea flooding (<0.1%). The risk is therefore regarded as low.
- **Pluvial** – Surface water flooding maps provided the Environment Agency show Phase 1 to be at very low to low risk.
- **Groundwater** – The Preliminary Flood Risk Assessment (PFRA) produced by Barnsley Council states “that there is no local information available which provides evidence on future groundwater flood risk across Barnsley and groundwater rebound is not believed to be an issue within the borough.” Therefore, the risk of groundwater flooding is considered to be low.
- **Sewers** – The PFRA contains a review of Yorkshire Water's DG5 register. A DG5 property is defined as a property which has experienced flooding as a result of lack of capacity within the adopted sewer into which it discharges. The PFRA concluded that the sewer flooding generally appeared to be sporadic and infrequent. The risk is therefore considered to be low.
- **Reservoirs, canals and other artificial sources** – The site is not shown to be at risk from a reservoir breach and no artificial sources are located within close proximity to the site.

In addition to the above, the FRA also needs to demonstrate that the proposed location for development is suitable in terms of flood risk when compared to the likely usages, this is defined as the Sequential Test. The proposed usage for Phase 1 includes residential and car parking, which are defined as 'more vulnerable' and 'less vulnerable', respectively within the NPPF. Comparing these classifications with the Flood Zone 1 classification guidance,

determines that the proposed development is suitable, and the Sequential Test is passed.

9.1.2 Existing Drainage Network

The site is currently developed, comprising an existing car park in the east and a mixture of car parking and media buildings in the west. A GPR Survey undertaken by 1st Horizon in January 2018 confirmed the site to be served by separate private surface water and foul water drainage networks, discharging into the surrounding public sewer network.

The existing foul water connections, serving the buildings in the west of the site, are directed to the south with an assumed connection into the public combined sewer on Regent Street.

Due to the existing level difference across the site, there are approximately four assumed outfalls for surface water runoff. The north of Phase 1 is assumed to predominantly drain to the public surface water sewer on Old Mill Lane to the north of the site, with a small section draining to the west to a public surface water sewer on County Way. The south of Phase 1 drains to the east to the public surface water sewer on Eldon Street via a large backdrop through an existing retaining wall. The remainder of the site is shown to discharge to the south to the public surface water sewer on Regent Street.

It is unclear from the information available if flow controls are present within the site. It is therefore recommended that a CCTV Survey is undertaken to confirm if there are any existing restrictions on site. A CCTV Survey will also be able to identify the exact location and condition of the existing drainage infrastructure for potential re-use within the forthcoming drainage strategy.

9.1.3 Site Wide Discharge Strategy

The site-wide drainage strategy proposes to divide the infrastructure into two main systems in line with the phased scheme. As such, the overall discharge rate and volume of attenuation will be proportionally divided between the two phases based on the developable area, allowing each phase to be developed and constructed independently.

The drainage strategy also proposes to utilise the existing connections into the public sewer, where practicable. However, due to ongoing maintenance issues with the large backdrop outfall to Eldon Street, it is proposed that this connection is removed as part of the strategy with surface water runoff from this area being directed to the north.

Taking the above into account, Phase 1 proposes to direct surface water and foul water drainage to the north to the public sewers on Old Mill Lane. Further details on the drainage for Phase 1 is described in the following sections.

For Phase 2, it is proposed that the retained buildings will continue to utilise the existing drainage infrastructure and will discharge into the public sewers at existing rates, as confirmed in the correspondence from Yorkshire Water. Alternatively, surface water runoff from the proposed development within this phase will be restricted and attenuated on site prior to discharge into the public surface water sewer, either on Regent Street or Old Mill Lane, subject to approval from Yorkshire Water. The exact location for the outfall is currently being reviewed by Yorkshire Water and will depend on the capacity of the receiving sewers.

9.1.4 Drainage Discharge Allowances

The drainage strategy proposes to discharge into the surrounding public surface water sewers in line with the existing drainage regime. In accordance with local policy a minimum of 30% reduction on existing rates should be applied to previously developed sites. However, the pre-development enquiry from Yorkshire Water, states that post-development discharge rates to the public sewer should be restricted to the existing 1 in 1 year discharge rates in order to provide a betterment on the existing network. This has been taken into consideration within the outline drainage strategy.

The Lead Local Flood Authority and Yorkshire Water have been consulted to confirm outfall locations and discharge rates for the proposed development. However, at the time of writing a response is still awaited.

9.1.5 Proposed Outline Surface Water Strategy

The outline drainage strategy for the public realm proposes to direct surface water runoff from the roof and hardstanding areas within Phase 1 to the public surface water sewer on Old Mill Lane, subject to approval from YW.

Flows are to be restricted to the rates agreed by the LLFA and YW using appropriate flow control devices, prior to discharge into the public sewer. Excess runoff will be attenuated on site up to the 1 in 100 year plus 40% climate change event in the form of the following SuDS features; bio-retention areas, central basin, geo-cellular tank, permeable paving and blue/green roofs.

At the time of writing an external levels design was not available, however existing ground levels for Phase 1 currently fall towards the north of the site. It is therefore anticipated that the proposed SuDS features in the south of the site (i.e., bio-retention areas, detention basin, permeable paving and blue/green roofs) will primarily attenuate runoff from the hard landscaping areas, the ATH and Plot 1, with the geo-cellular tank in the north providing attenuation for the MSCP, access road and Plot 2.

For further details regarding the outline drainage strategy, refer to BDP's Outline Drainage Strategy Drawing included in the Appendix.

9.1.6 SUDS Strategy

Sustainable Drainage Systems (SuDS) can provide several benefits in addition to surface water management, including water quality treatment, amenity space and the encouragement of biodiversity.

The outline drainage strategy for Phase 1 aims to implement a variety of SuDS features in accordance with the CIRIA SuDS guidance and Local policy. It is proposed for as many SuDS features as possible to be put forward for adoption by Yorkshire Water under a S104 agreement to ensure that sufficient maintenance of the SuDS features is applied in the future.

In line with the Design and Construction Guidance and the suitability of the site, the adoptable SuDS features are proposed to be incorporated into the drainage strategy.

The bioretention areas and detention basin are proposed to be integrated into the central green open space in the public realm area in the south of the site. However, in order to maintain the amenity value of the area, the proposed features are to be designed offline, only providing attenuation in extreme rainfall events.

Non-adoptable features such as permeable paving within the hard landscaped areas and blue/green roofs on proposed flat roofs, are to also be included in the drainage strategy to provide additional storage.

SuDS Feature	Description	Example
Bioretention system	Shallow, planted depression that allows runoff to pond temporarily on the surface, before filtering through vegetation and underlying soil prior to collection or infiltration (i.e., rain garden or tree pit)	
Basin	Depression in the ground that is normally dry but is designed to store water to provide attenuation	
Tank/ Geo-cellular tank	Underground storage structure that creates a void space for the temporary storage of surface water before infiltration	

Based on the current proposals, the public realm, Multi-Storey Car Park (MSCP) and Active Travel Hub (ATH) are proposed to be constructed first with Plots 1 and 2 proposed to be developed at a later stage within Phase 1.

At present, it is assumed that plots 1 and 2 are to be developed for residential purposes. Depending on the structural/architectural design of the Plots, it is encouraged for these developments to incorporate source control SuDS, where feasible. Therefore, the use of blue/green roofs and rainwater harvesting should be considered as part of the design.

However, to ensure there is no detrimental impact on the infrastructure that will be in place prior to the development of Plots 1 and 2, an allowance for surface water attenuation from these areas has been incorporated into SuDS features located in the public realm.

9.1.7 Proposed Outline Foul Water Drainage Strategy

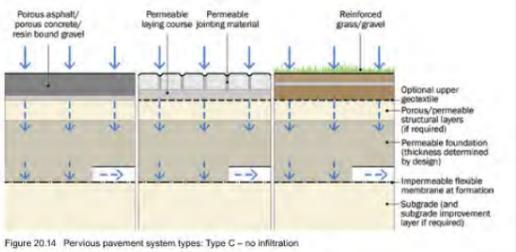
At present, there are no existing foul water connections located in Phase 1. As part of the proposals, the ATH and MSCP will require a new foul water drainage network to direct flows from the proposed toilet areas. Foul water flows will also be expected from Plots 1 and 2 at a later date and as such flows from these developments have been taken into consideration as part of the infrastructure works within the public realm.

In accordance with a pre-development response from YW, foul water flows from phase 1 will be allowed to discharge into the public combined sewer on Old Mill Lane to the north of the site via a new connection.

9.1.8 Next Steps

It is recommended that a CCTV survey is undertaken to confirm the location and condition of the existing drainage infrastructure, especially the outfall connections into the surrounding public sewers. This will help to inform the drainage strategy and confirm whether the existing connections can be utilised or if they may need to be upgraded or repaired.

The CCTV Survey will also be able to clarify if there are any existing storage structures or flow control devices on site that will need to be taken into consideration as part of the forthcoming strategy.

SuDS Feature	Description	Example
Permeable Paving	Pavement designed to infiltrate water either across the entire surface material (porous paving) or through the joints (permeable paving) allowing water to be temporarily stored in the subbase prior to infiltration to ground or to be collected in a perforated pipe at the base of the pavement structure	 <small>Figure 20.14 Permeable pavement system types: Type C – no infiltration</small>
Green/ blue roofs	Green roofs - areas of living vegetation installed on the top of buildings. Blue roof is explicitly designed to store water for attenuation	

SECTION 10.0

STRUCTURAL ENGINEERING

10.0 Structural Engineering

The following section looks at the structural concept design for the feature ramp, steps and associated retaining walls within the Public Realm.

10.1 Outline Architectural Proposals

The proposed landscape architectural solution to the ramp & stairs structure is shown below:

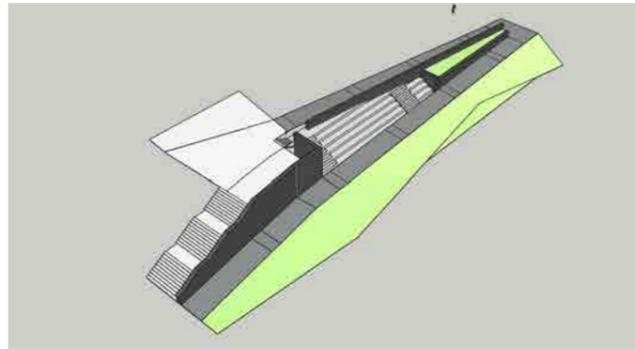


Figure 1 - Image of the Landscape Architect's ramp & stairs proposal

The steps are provided in two locations, providing access to the western boundary of the Phase 1 site, adjacent to the railway arches.

The ramp runs from north to south, with the second set of steps & seating set between the two ramps. A pocket of green space is provided in the triangular segment between the ramp.

The key aspects of the stair and ramp element for structural consideration are highlighted in the mark-up below.

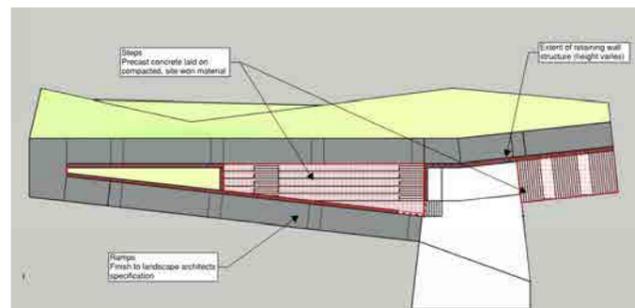


Figure 2 - Mark-up of key structural design aspects/considerations

10.2 Structural Options

Ultimately the design of the ramps and finishes to any visible elevations of the stair & ramp structure will be

determined by the Architectural team.

It is anticipated that the most appropriate solution for the staircases is precast concrete supported on well compacted site won material.

However, a number of possible structural solutions for the retaining wall aspects are shown below:

Reinforced concrete cantilever wall (with brick facing)

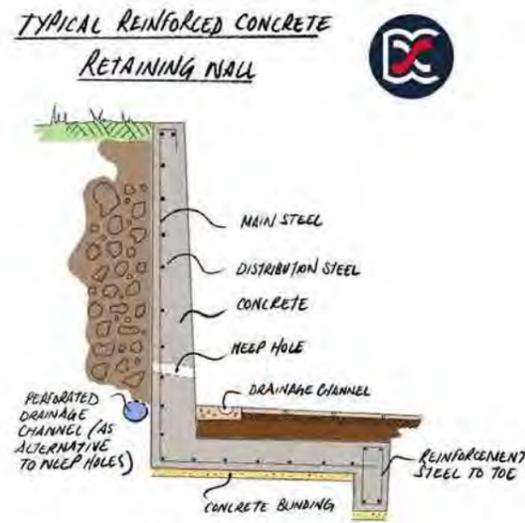


Figure 3 - Typical section through reinforced concrete cantilever retaining wall

Masonry Wall (with piers)



Figure 4 - Typical masonry retaining wall

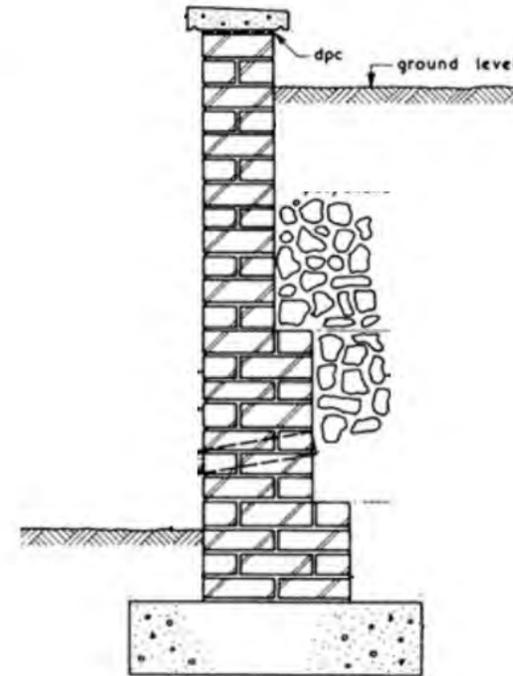


Figure 5 - Typical section through masonry retaining wall

Criblock



Figure 6 - Typical Criblock retaining wall with vegetation infill

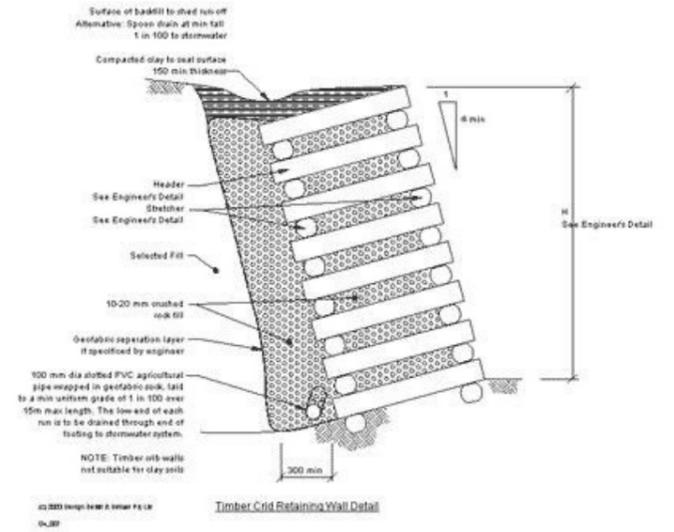


Figure 7 - Typical section through Criblock wall

Gabions

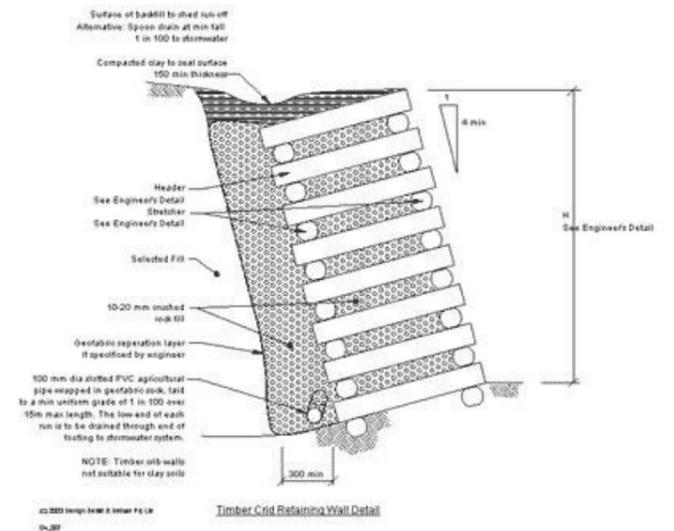


Figure 8 - Typical gabion retaining wall

Figure 8 - Section through gabion retaining wall

10.3 Key Design considerations

In the further development of the design of the stair and ramp structure, the following aspects will influence the design:

Existing Retaining wall

The proposed stair and ramp structure is proposed adjacent to the former railway arches; an existing retaining wall structure.

Intrusive investigation works are proposed for the railway arches to determine the composition and structural behaviour, the results of which will influence how the proposed stair and ramps interface.

Sustainability

As identified in the brief for the project, there is an aspiration for the scheme to be low to zero carbon, therefore any eventual design should make efforts in materiality and construction method to be as low embodied carbon as possible.

Visual impact

The location of the stair and ramp structure is in a prominent location in the site and will serve as an important aspect of the scheme by providing a link between the different elevations of the sloped site. Therefore, the visual appearance of the elements requires particular consideration and the selection of finishes may influence the structural form and construction method employed.

SECTION 11.0

UTILITIES & SMART CAMPUS

11.0 Utilities & SMART Campus

11.1 Utilities

11.1.1 Introduction

This chapter describes the existing utility infrastructure located within and immediately surrounding The SEAM Site (Phase 1). Existing utility infrastructure has been identified from a combination of asset plans from various relevant utility providers, and also from Topographical and Ground Penetrating Radar (GPR) Surveys carried out within the site.

This chapter also describes how estimated loadings have been derived for the proposed re-development of the site.

11.1.2 Existing Utilities

Electricity

Within the Phase 1 development site area, below ground electrical cabling has been identified from GPR Surveys. A main cable route enters the site from County Way at the south-west corner of the site, and runs through the existing car parks, extending all the way to the northern edge of the site, with various spurs extending towards lighting columns and payment machines. This cable route extends under the proposed footprint of the Active Travel hub building.

Other than a short length where this cable route enters the site at the south-west corner, this cabling is not shown on Northern PowerGrid asset plans. It is therefore assumed that these electrical cables are Low Voltage (LV) and will become redundant upon redevelopment of the site.

Beyond the Phase 1 site boundary, Northern PowerGrid asset plans show that there are established LV networks within the public highway domain serving existing adjacent development. 33kV routes are also indicated close to the site boundary close both at the Old Mill Lane / County Way junction to the north, and at the Regent Street / County Way junction to the south.

Gas

Within the Phase 1 development site area, one below ground gas main has been identified from GPR Surveys. This extends from County Way to the south-west and runs parallel to the adjacent Digital Media Centre (DMC) building under the initial access road into the existing car parks on the site. The gas main then extends up to the DMC building and appears to serve this building alone. This gas main is also identified on Cadent Gas asset plans of the area, where it is shown as a 90mm Low Pressure Main.

This existing gas main would need to be diverted or retained

as part of the development proposals. Whilst the gas main route extends relatively close to the proposed footprint of the Active Travel Hub building (to within less than 10m), the GPR Survey indicates it is far enough away from the proposed building that it should be possible for it to be retained in its current alignment.

Beyond the Phase 1 site boundary, Cadent Gas asset plans show that there are established Low Pressure networks within the public highway domain, serving existing adjacent development. These extend into the site to the south-west, as described above, and close to the site to the north, within Old Mill Lane.

Potable Water

Within the Phase 1 development site area, only one short length of water pipework was identified from GPR Surveys. This enters the site towards the north and appears to be connected to a single fire hydrant within the existing car parks on the site. This connection is not shown on Yorkshire Water asset records, which also show no other existing water mains within the site.

Beyond the Phase 1 site boundary, Yorkshire Water asset plans show that there are existing water mains within the surrounding public highway domain, including a 5-inch cast iron main within Regent Street to the south of the site, and both 9-inch and 180mm mains within Old Mill Lane to the north of the site.

Drainage

Within the Phase 1 development site area, there are two separate surface water drainage networks identified on GPR Surveys. Neither of these are shown on Yorkshire Water asset plans, and it is therefore assumed that these are private, and appear to be draining the existing car parks on the site.

The first network appears to drain the southern part of the site, including the area under the footprint of the proposed Active Travel Hub building, with a 150mm outfall pipe shown discharging from the site eastwards Eldon Street, where it is presumed this connects to the public surface water sewer system. The second network appears to drain the northern areas of the site, with a 150mm outfall pipe shown discharging from the site northwards Old Mill Lane, where again it is presumed this connects to the public surface water sewer system. It is presumed both of these systems will become redundant upon redevelopment of the site.

Beyond the Phase 1 site boundary, Yorkshire Water asset plans show both foul and surface water sewer networks in the surrounding public highway domain, which generally convey flows from west to east. In Eldon Street to the south-

east of the site, the asset plans show a 450mm diameter surface water sewer and a 225mm diameter foul sewer. In Old Mill Lane to the north of the site, the asset plans show a 680mm diameter surface water sewer and a 300mm diameter foul sewer.

Telecommunications

Within the Phase 1 development site area, there are several telecommunications cables identified on GPR Surveys. These are situated towards the southern end of the existing car parks within the site. Some of this existing cabling appears to serve CCTV within the car park, but the purpose of other cable routes is not clear from the survey. It may be that some of these cable routes served the previous council buildings which used to occupy the central area of the site and are now redundant.

No assets are indicated within the site boundary on asset plans received from Cable & Wireless, CityFibre, Virgin Media, or Vodafone. BT Openreach asset plans do indicate above and below ground cable routes towards the north of the site, though these do not appear to have been identified on the GPR Survey. Again, it is possible that these cable routes served the previous council buildings which used to occupy the central area of the site and are now redundant.

Beyond the Phase 1 site boundary, there are established telecommunications networks within the surrounding public highway domain indicated on various providers' asset plans, most notably BT Openreach and Virgin Media.

11.1.3 Proposed Utilities

Electricity

The peak electrical demand from Phase 1 of the proposed SEAM development has been estimated as approximately 2,250kVA. This estimate is based on the following key assumptions:

- Peak electrical demand from the MSCP estimated as 1085kW, understood to include 20% provision of Electric Vehicle (EV) charging
- Peak electrical demand from Active Travel Hub estimated as 156kW
- Peak electrical demand from proposed Retail Units and Hotel in Development Plot 1 estimated as 730kW
- Peak electrical load per proposed dwelling (assume all electric scenario) of 3.0kW, with a diversity of 0.7

A capacity enquiry and budget estimate request for the supply of electricity to the development has been submitted

to Northern PowerGrid, the incumbent Distribution Network Operator (DNO). A response to this enquiry is currently awaited. Should any offsite network reinforcement works be required, these will be confirmed once a response has been received from Northern PowerGrid. In addition, requests for budget estimates have also been submitted to three Independent Distribution Network Operators (IDNOs) for comparison.

In the absence of any responses to the above enquiries, it is currently presumed that two new final distribution sub-stations will be required to serve the Phase 1 development, with HV electrical supply to these two sub-stations most likely to enter the site from Old Mill Lane to the north and run within a Primary Utilities corridor within the footway / public realm alongside the Primary Service Road, extending beyond the southern end of this service road to supply the Active Travel Hub. Indicative locations for the two new sub-stations are shown on the Proposed Utility Routing drawing in [Appendix??](#).

Connections from the two new sub-stations will be formed into the different Phase 1 development components, with the first sub-station situated towards the north of the site likely to supply the MSCP, and the second sub-station situated towards the centre of the Phase 1 site likely to serve the Active Travel Hub and Development Plots 1 & 2.

Gas

The UK Government's Spring Statement of 2019 announced that from 2025, they will introduce a "Future Homes Standard" that will require new homes to be highly energy efficient and prevent the use of fossil fuel heating systems. Whilst this doesn't currently cover non-residential buildings, non-fossil fuel heating systems are likely to continue to become more common.

As a result, it is therefore presumed that none of the proposed buildings on Phase 1 of the site wide development will be gas heated, and that therefore there will be no requirement for gas to be supplied to the development. If gas were to be required, it is likely to enter the site from Old Mill Lane to the north and run within the Primary Utilities corridor within the footway / public realm alongside the Primary Service Road extending beyond the southern end of this service road to supply the Active Travel Hub.

Potable Water

The peak water demand from Phase 1 of the proposed site wide development has been estimated as 6.2l/s, based on the following key assumptions:

- Daily water demand from the MSCP of 3,000 litres

- Daily water demand from the ATH of 1,500 litres
- Daily water demand from residential buildings based on 120 litres/person/day as recommended in The Code for Sustainable Homes (2010)

A Pre-Planning Enquiry has been submitted to Yorkshire Water to confirm whether there is sufficient spare capacity within the existing local network to supply the development. A response to this enquiry is currently awaited. Should any offsite network reinforcement works be required, these will be confirmed once a response has been received from Yorkshire Water.

In the absence of any responses to the above enquiry, it is currently presumed potable water supply to the development will be most likely to enter the site from Old Mill Lane to the north and run within a Primary Utilities corridor within the footway / public realm alongside the Primary Service Road, extending beyond the southern end of this service road to supply the Active Travel Hub.

Drainage

Proposals for new drainage infrastructure to serve the development are described in Chapter 6 of this document.

Telecommunications

New telecommunications connections are currently presumed to be most likely to enter the site from Old Mill Lane to the north and run within a Primary Utilities corridor within the footway / public realm alongside the Primary Service Road, extending beyond the southern end of this service road to supply the Active Travel Hub.

A search on BT Openreach's website suggests that Full Fibre to the Premises (FTTP) is not currently available in the area, but that Superfast Fibre to the Cabinet (FTTC) is available, offering speeds of up to 80Mbps.

11.2 SMART narrative for the SEAM

The starting point for our work was to create a consensus view of what 'smart' means within the context of the aspirations for BMBC, the community it serves and the embryonic businesses that will bring the SEAM to life. To get to this view Arcadis hosted two well attended workshops drawing in stakeholders from the community, academia, and business. Two overriding themes emerged. Digital start-up businesses of the kind that will be drawn to the SEAM told us that whilst basic digital infrastructure (high performance broadband, mobile coverage and WiFi) was important, space to collaborate was probably the key ingredient. We heard from the former CEO of one City Centre IOT focussed accelerator, that lack of a café in the purpose-built facility was one of her biggest regrets. Engagement with the wider community was also complicated by the ability to open up the ground floor as community space because of difficulties in securing access to the higher floors of the building, which were only overcome by further investment in remedial actions. This latter point is important because the second key theme that emerged from the workshops was the need for the SEAM to engage with the community and describe outcomes in practical terms showing benefit to the people and businesses of Barnsley and the wider South Yorkshire city region.

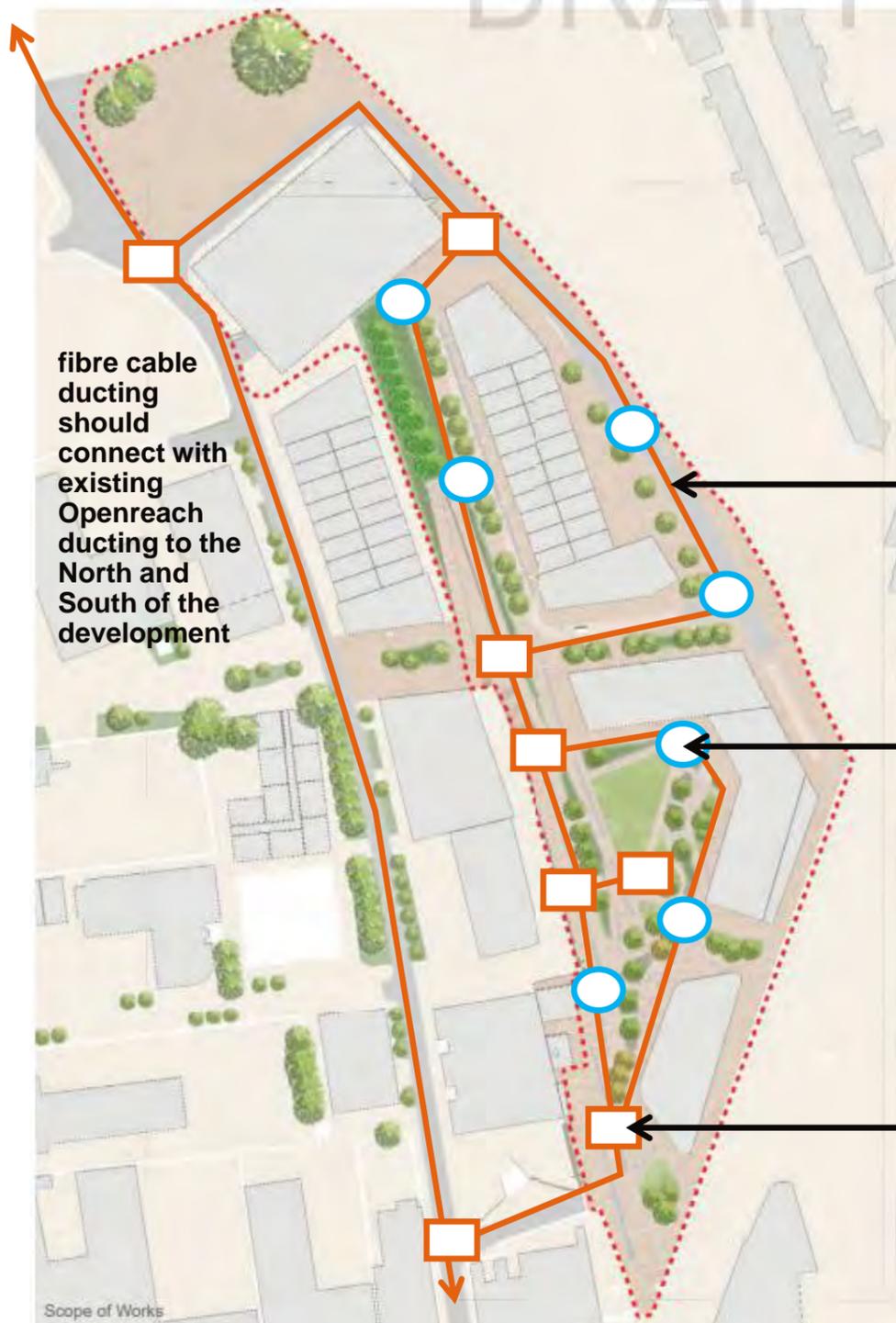
The need for the SEAM to explain itself in practical terms is at the heart of our smart proposal. Rather than seek to conceal the digital workings of the campus and the work of companies based in the SEAM hidden inside the buildings, our approach is to expose, inform and educate. The routes of fibre networks passing through the campus will be sketched out on the paving surface. Street furniture-mounted Internet of Things (IOT) gateways will connect to sensors in the soil, air quality and movement sensors. Information signage with QR codes will explain how fibre carries traffic to the internet and what the gateways and sensors are doing. Realtime information will be displayed on the public screen in the central green space. The same screen will allow visitors to browse cameo videos of the companies based in the SEAM and what they do. An event programme will be used to attract visitors to the campus, free public space WiFi will encourage people to stay, explore and engage. Interactive streetlights, recording and replaying shadows will bring a playful note to the engagement offer.

The outdoor spaces of the SEAM will become a place for experimentation for local businesses and academia. BMBC have plans for a local and regional IOT network which could potentially be managed from the SEAM. This network will deliver a range of practical applications far beyond the SEAM campus (ranging from air quality monitoring to more specialist applications such as informing better gritting decisions using road temperature sensors) but will support the innovation agenda of the SEAM. Hinged lighting

columns will allow new sensors and radio equipment to be installed simply and quickly, supporting that experimental agenda.

The multi-storey carpark and active travel hub are potentially uncomfortable bed-fellows but we can use the smart agenda to explain how both are part of one transitional journey. A barrierless and ticketless parking solution will give a real-time view of car park occupancy. These vehicle journeys could be turned into a carbon target to be offset by active travel; hire bikes could use IOT tracking to record mileage (and do more such as give insight for road repairs and potential future cycle routes) and a parking premium could even be applied at busy times to subsidise bike hire and fund carbon offset. All of this information will be visualised on the Big Screen.

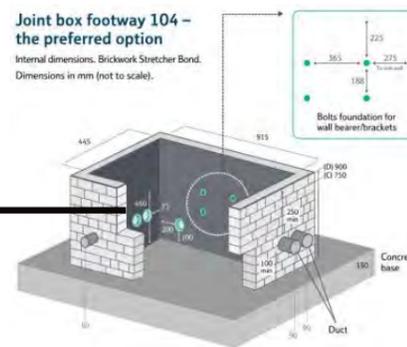
11.2.1 Fibre Ducting & Chambers



Twin wall 90mm fibre cable ducting



Connection into street lighting column for telecoms circuit for public space WiFi



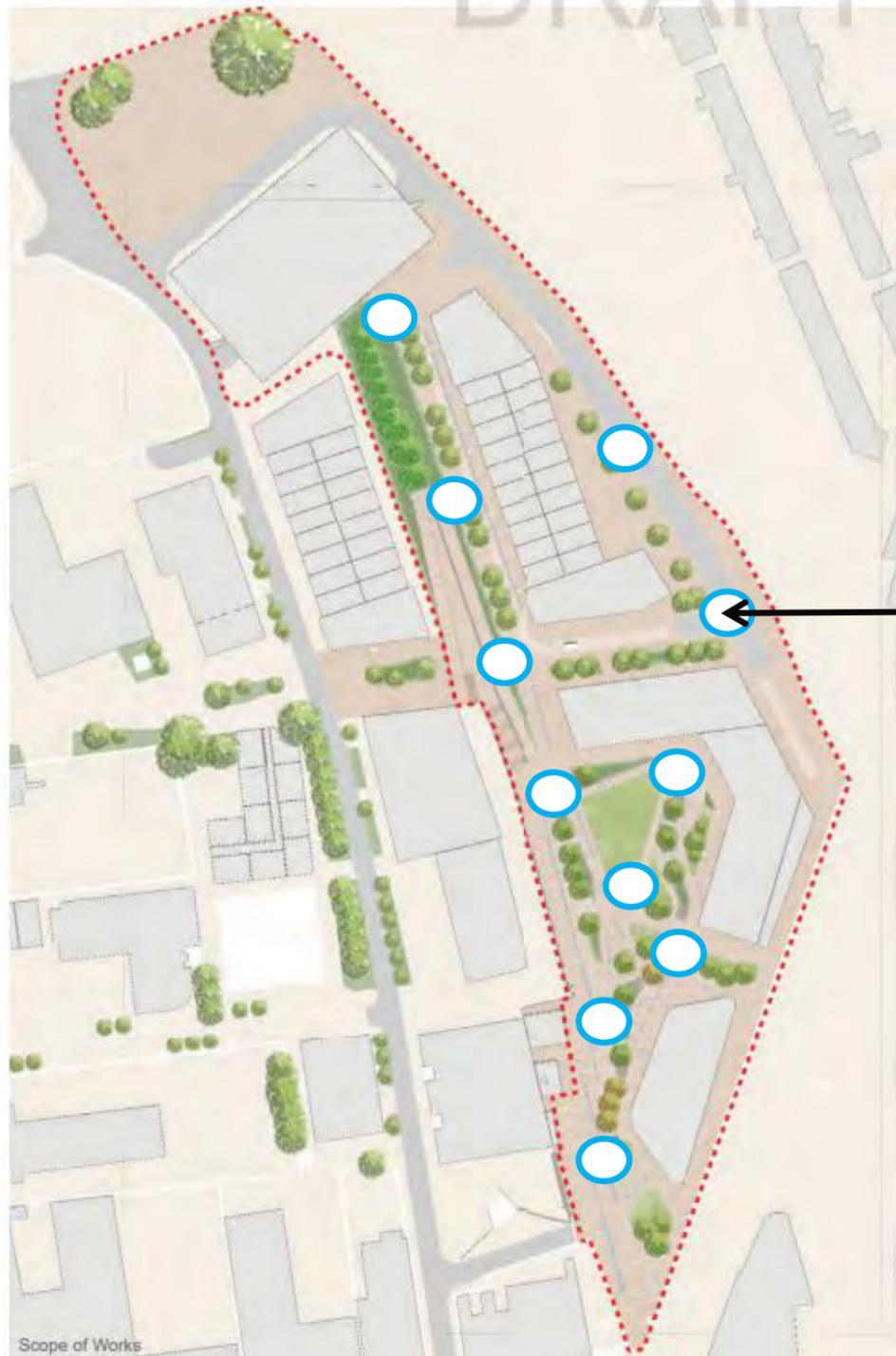
11.2.2 Location of large outdoor screen



Additional external power sources required for outdoor events

NOTE: There will be application development work to integrate live sensor feeds into an engaging format and other content such as overviews of SEAM businesses, explanatory videos of the technology of the SEAM etc

11.2.3 Location of public space WiFi access points



WiFi access points will be attached to street light columns and will require power and

NOTE: Each WiFi access point will require a broadband connection and there will be ongoing rental costs.

11.2.4 Location of LoRaWAN 'IOT' gateways and sensors



Additional external power sources required for outdoor events

NOTE: There will be application development work to integrate live sensor feeds into an engaging format and other content such as overviews of SEAM businesses, explanatory videos of the technology of the SEAM etc

SECTION 12.0

SUSTAINABILITY STRATEGY

12.0 Sustainability Strategy

Introduction

Reflecting Barnsley Metropolitan Borough Council's (BMBC's) strong sustainability and climate change agendas, sustainable development is a key driver and major priority for the Seam. Jointly appointed to develop the overall sustainability strategy, the BDP and Arcadis sustainability consultants have worked closely with BMBC and the design team to develop the sustainability outcomes and targets (referred to as "outputs" within this document) for the Active Travel Hub (ATH), multi-storey car park (MSCP), Plots 1 and 2, and the public realm.

This section of the report details:

- The methodologies employed to derive the sustainability outcomes and outputs.
- The agreed strategy, including measurable, ambitious and unambiguous outputs.
- Where applicable, the design response, to date

12.1 Methodology

Establishing the Vision and Outcomes:

The vision and outcomes reported have been developed through:

- A review of the sustainability objectives and targets set out within:
 - o Barnsley Local Plan 2012 – 2033
 - o Barnsley Zero Carbon Sustainable Energy Action Plan 2020 – 2025
 - o The Seam Barnsley Digital Campus Development Blueprint
- A workshop with the design team and Barnsley Metropolitan Borough Council (BMBC). The aim of the workshop, held on 18th November 2021, was to:
 - o Review and agree the overall vision and outcomes for Phase 1.
 - o Highlight any wider ambitions or stretch targets.
- Further liaison with the design team and BMBC to further develop the outcomes in line with their overarching ambitions. This included separate meetings with BMBC's Sustainability and Climate Change Group Leader.

Establishing the Outputs and the Sustainability Strategy:

The purpose of establishing the outcomes was to allow them to serve as underlying design principles, underpinning the overall strategy, and allowing the project team, supported by the BDP and Arcadis Sustainability Consultants, to set measurable, ambitious and unambiguous targets / outputs relevant to environmental, social and economic sustainability.

Based on each outcome, a number of outputs and KPIs were established, based on best practice. Best practice was established through a review of the following documents and frameworks:

- Barnsley Local Plan 2012 – 2033
- Barnsley Zero Carbon Sustainable Energy Action Plan 2020 – 2025
- Barnsley Sustainable Travel SPD (Draft document November 2021)
- LETI Climate Change Emergency Design Guide
- UKGBC guidance
- RIBA 2030 Climate Challenge (v2)
- BREEAM New Construction 2018
- BREEAM Communities
- WELL Building Standard v2
- WELL Building Standard Communities
- Home Quality Mark
- CEEQUAL v6
- Future Buildings Standard
- Future Homes Standard
- Living Buildings Challenge

The KPIs and outputs set have been linked to the Barnsley Council Plan 2021 - 2024, which sets out key ambitions for the Borough, and to demonstrate the alignment the Phase 1 delivery with Barnsley’s sustainability and climate change agenda:

For completeness, and to demonstrate the holistic and joined up approach to sustainability throughout Phase 1, the strategy presented in this document contains outcomes and outputs for the ATH, MSCP, Plots 1 and 2, and the public realm areas.

It should be noted that the sustainability strategy should remain a live document, incorporating any future updates relevant to design changes, industry trends or Council policies and agendas.

Barnsley - the place of possibilities			
Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley
People are safe and feel safe.	People have the opportunities for lifelong learning and developing new skills including access to apprenticeships.	Business start ups and existing local businesses are supported to grow and attract new investment, providing opportunities for all.	People live in great places, are recycling more and wasting less, feel connected and valued in their community.
People live independently with good physical and mental health for as long as possible.	Children and young people achieve the best outcomes through improved educational achievement and attainment.	People have a welcoming, safe and enjoyable town centre and principal towns as destinations for work, shopping, leisure and culture.	Our heritage and green spaces are promoted for all people to enjoy.
We have reduced inequalities in health and income across the borough.	People have access to early help and support.	People are supported to have safe, warm, sustainable homes.	Fossil fuels are being replaced by affordable and sustainable energy and people are able to enjoy more cycling and walking.
Enabling Barnsley	We are a modern, inclusive, efficient, productive and high-performing council		

12.2 The Sustainability Vision

Following the workshops described in Section 11.2, the following overarching vision was agreed for Phase 1:

“To lead by example through the development of a digital SMART campus which is climate resilient and supports the 2045 “Zero45” net zero carbon target for the Borough of Barnsley. This is achieved by demonstrable contributions to the local community, wellbeing, reduced carbon emissions, and the restoration and enhancement of the natural environment. The masterplan aims to be a catalyst for carbon reduction across the local, regional, national and international communities, aspiring to be an exemplar beacon of sustainability within the built environment.”

12.3 Sustainability Strategy

Please note the sustainability strategy should be read alongside the Active Travel Hub Stage 2 report, the Multi-Storey Car Park Stage 2 report, and the supporting sections of this report.

Links to Barnsley Council Plan

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
1. Transport and Connectivity									
1.1 In support of Barnsley's zero carbon strategy, the scheme contributes to a reduction in health inequality, improved local air quality and general health and wellbeing, and increased fossil fuel free local travel. Improvements in connectivity and quality external environments increase footfall within the area, thereby supporting local businesses, increasing revenues, and reducing crime rates. Also refer to topics: - 2.1 Multi-Functional Green Space - 6.1 External Spaces	Emerging Sustainable Travel SPD Compliance	ALL PHASE 1: A transport assessment and travel plan will be produced, in line with the emerging Sustainable Travel SPD requirements, to further inform the design and promote sustainable transport measures.	The design response will be confirmed following receipt of the interim / final transport assessment and travel plan. This will occur in the next stages of design.					Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses, obesity and mental health issues such as depression. Reduced vehicular transmissions including carbon monoxide, particulate matter and nitrogen oxides. Increased footfall within the area and increased revenue for local businesses. Further indicators and measures are to be confirmed on receipt of the interim / final transport assessment and travel plan.	Sustainable Travel SPD (Draft Document November 2021)
	Cycle Storage	ACTIVE TRAVEL HUB: The use of bicycles as a mode of transport is promoted. PLOTS 1 & 2: The use of bicycles as a mode of transport is promoted. Safe and secure cycle storage is provided for residents of Plots 1 and 2. The number of cycle storage spaces required is informed by a transport assessment. Alternatively, the following is met: - Studios/1 bedroom dwellings - storage for 1 cycle for every two dwellings - 2/3 bedroom dwellings - storage for 1 cycle - 4 + bedrooms - storage for 2 cycles	The ATH, by the very nature of its design and purpose, will promote active travel and the use of bicycles, thereby improving health and wellbeing, and reducing transport-based emissions. The current design comprises: • 98 standard spaces • 5 accessible spaces • 15 secure lockers for foldable bikes • 4 vertical lockers for standard sized cycles Currently, 100% of the entire provision has been assumed to require charging facilities (i.e., E-bike charging). To support the requirements of frequent and longer stay users, lockers, showers, toilets and drying facilities are provided. Security has also been a key consideration, with double-fob entry and CCTV provided. A lobby arrangement has been proposed with two entrances to prevent 'tailgating' to gain access to the cycle storage area. With regards to Plots 1 and 2, the requirements of this output will need to be reflected in the drawings and specifications, moving forward.					The number of safe and secure cycle storage spaces meet or exceed the requirements of this output. Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses, obesity and mental health issues such as depression. Reduced vehicular transmissions including carbon monoxide, particulate matter and nitrogen oxides.	Barnsley Local Plan 2012–2033 BREEAM Communities Home Quality Mark

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
1. Transport and Connectivity									
<p><i>(continued)</i></p> <p>1.1 In support of Barnsley's zero carbon strategy, the scheme contributes to a reduction in health inequality, improved local air quality and general health and wellbeing, and increased fossil fuel free local travel. Improvements in connectivity and quality external environments increase footfall within the area, thereby supporting local businesses, increasing revenues, and reducing crime rates.</p> <p>Also refer to topics: - 2.1 Multi-Functional Green Space - 6.1 External Spaces</p>	<p>Pedestrian and Cyclist Routes</p>	<p>PUBLIC REALM: Dedicated and safe cycle paths are provided from the site entrance to cycle storage, and connect to off-site cycle paths, where possible. For safety purposes, these are segregated from vehicles and pedestrians as appropriate: - On low speed streets, below 20mph (30km/h), cyclists can be integrated with vehicles - On busy streets or where there are higher traffic speeds there should be clearly defined cycle lanes - Separate cycle tracks should be introduced where space allows - Pedestrians and cyclists can share the same space, but steps must be taken to segregate the two, for example, a raised kerb or clear markings. Where pedestrians and cyclists share the same space but segregation is not possible, a minimum width of 3 metres should be provided.</p> <p>Dedicated and safe footpaths are provided, where required.</p>	<p>As per the details in the Landscape Strategy, three alternative cycle routes have been considered:</p> <ol style="list-style-type: none"> 1. Connecting route via the ramp and Promenade: This link allows cyclists to move through the lower areas of the masterplan and connect back onto County Way via the proposed ramp. Concerns have been raised about the risk of conflict between pedestrians and cyclists moving at speed especially along the ramp. 2. Promenade Route routing behind the MSCP: The link directs cyclists through the new space, providing opportunities for dedicated cycle path integrated into the public realm. Routing behind the MSCP appears to be less direct and could put cyclists off taking this route. 3. County Way cycle route: This route follows the line of County Way, avoiding a route through the Phase 1 project area. This route is straight and direct and could re-connect between the pub and DMC01. <p>Cycle route provision and layout will be considered further in the following stages.</p> <p>Traffic running across the site will be restricted. However, where roads and pedestrian routes cross / run in parallel, dedicated pedestrian pathways will be provided.</p> <p>Compliance with the remaining requirements are to be considered as the design progresses.</p> <p>Please refer to the Landscape and Public Realm Concept Design Strategy for further details.</p>	●		●	●	<p>The number and design of dedicated cycle and pedestrian cycle paths and routes meet or exceed the requirements of this output.</p> <p>Reduced collisions between cyclists / pedestrians and motor vehicles.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses, obesity and mental health issues such as depression.</p> <p>Reduced vehicular transmissions including carbon monoxide, particulate matter and nitrogen oxides.</p> <p>Increased footfall within the area and increased revenue for local businesses.</p>	<p>Barnsley Local Plan</p> <p>BREEAM Communities</p> <p>BREEAM NC 2018</p> <p>Sustainable Travel SPD (Draft Document November 2021)</p>
	<p>Quality Cyclist and Pedestrian Environments</p>	<p>PUBLIC REALM: Quality external environments have been designed in order to promote active travel and movement. This is demonstrated through at least two of the following being present at regular intervals along at least 75% of active travel routes: - Seating - Trees, planters and/or other landscaped/biophilic elements - Natural (e.g. landscape elements such as trees) or man-made shading devices intended to block direct sunlight and glare - Artistic installations</p>	<p>Based on the current landscape and public realm design, a variety of open space and green space typologies and planting will be provided alongside key travel routes. Although street furniture and artistic installations will be decided in the following design stages, based on the current design intentions, that the requirements of this output will be met. For further details please refer to the Landscape and Public Realm Concept Design Strategy (3rd Edition).</p>	●		●	●	<p>The number of elements / features meet or exceed the requirements of this output.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses, obesity and mental health issues such as depression.</p> <p>Reduced vehicular transmissions including carbon monoxide, particulate matter and nitrogen oxides.</p> <p>Increased footfall within the area and increased revenue for local businesses.</p>	<p>BREEAM Communities</p>

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
1. Transport and Connectivity									
<p><i>(continued)</i></p> <p>1.1 In support of Barnsley's zero carbon strategy, the scheme contributes to a reduction in health inequality, improved local air quality and general health and wellbeing, and increased fossil fuel free local travel. Improvements in connectivity and quality external environments increase footfall within the area, thereby supporting local businesses, increasing revenues, and reducing crime rates.</p> <p>Also refer to topics: - 2.1 Multi-Functional Green Space - 6.1 External Spaces</p>	Connectivity	<p>PUBLIC REALM: A connected campus is created, identifiable by its use of planting, where varied green space and green infrastructure links combine to establish legible active travel routes throughout the site.</p>	<p>A movement framework has been developed as part of the Landscape Strategy to determine the layout and design of the streetscape, and hence promote sustainable modes of movement and transport.</p> <p>As per the details in the Landscape Strategy, the change of level along the edge creates a distinct landscape setting with proposed ramp, sloping and terraced landscapes and attractive walkways. At the core of the public realm masterplan there is an opportunity to establish an attractive network of routes, and green spaces based along a main north-south axes that leads towards the town centre.</p> <p>As per the details in the Landscape Strategy (section "Movement Strategy), the 'Promenade' will generate the greatest footfall and will be founded on the creation of a high quality public realm and a diverse and high quality green landscape infrastructure, which will interface with a new greenspace, proposed development and ATH building and other community facing amenities, such as DMC01, a cafe and other leisure uses. New tree planting and a green infrastructure of bio-diverse rich planting will give rise to a greener neighbourhood with strong sustainable principles.</p> <p>Current proposed active travel routes will allow easy navigation around the development using key features to aid navigation. As the design progresses, the following principles shall remain embedded within the design: - New routes into the development are a continuation of existing routes from the surrounding area - Routes connect residential areas to, and between, community focal points in the development and surrounding area</p> <p>As per the current landscape designs, the primary, secondary and tertiary routes identified create legible travel routes. All will be provided with tree planting and green space provision.</p>	●		●	●	<p>The number and design of active travel route meets or exceed the requirements of this output.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses, obesity and mental health issues such as depression.</p> <p>Reduced vehicular transmissions including carbon monoxide, particulate matter and nitrogen oxides.</p> <p>Increased footfall within the area and increased revenue for local businesses.</p> <p>Improved real-estate value.</p>	BREEAM Communities
	Wayfinding	<p>PUBLIC REALM Wayfinding signage detailing directions and route information is provided to aid active travel around the development and into the surrounding area, contributing to accessibility, reduced stress and user empowerment. Signage includes the following: - Forward-facing street map that includes street names - Basic cardinal directions - Designation of active travel routes - Identification and location of, distance to and/or time to key community focal points such as those within an 800m walk distance or bicycle ride</p> <p>Where appropriate and feasible, wayfinding is connected to the SMART Technology Strategy.</p>	Wayfinding solutions will be developed in the later stages of the design.	●		●	●	<p>The signage design and links to SMART technologies meets or exceed the requirements of this output.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses, obesity and mental health issues such as depression.</p> <p>Reduced vehicular transmissions including carbon monoxide, particulate matter and nitrogen oxides.</p> <p>Increased footfall within the area and increased revenue for local businesses.</p> <p>Improved real-estate value.</p>	BREEAM Communities WELL Communities

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
1. Transport and Connectivity									
<p><i>(continued)</i></p> <p>1.1 In support of Barnsley's zero carbon strategy, the scheme contributes to a reduction in health inequality, improved local air quality and general health and wellbeing, and increased fossil fuel free local travel. Improvements in connectivity and quality external environments increase footfall within the area, thereby supporting local businesses, increasing revenues, and reducing crime rates.</p> <p>Also refer to topics:</p> <ul style="list-style-type: none"> - 2.1 Multi-Functional Green Space - 6.1 External Spaces 	Safety and Security	<p>PUBLIC REALM:</p> <p>Street layouts and the design of pedestrian and cycle routes are safe and secure by incorporating the following:</p> <ul style="list-style-type: none"> - In residential areas, all streets and open spaces are overlooked - All access points and routes through the site are well lit, direct and overlooked - Pedestrian crossings are designed to ensure safety for all users - A clear distinction is made between public, semi-public and private external spaces <p>Design measures are incorporated into the masterplan to ensure safety with regard to large vehicles, pedestrian and cyclist movement. As a minimum, vehicle delivery areas are not accessed through parking areas and do not share pedestrian and cyclist routes.</p>	Compliance with these requirements will be demonstrated as the design progresses and the site layout is confirmed. Current safety features include, for example, provision of HMV bollards, and well lit cyclist and pedestrian routes.					<p>The number of safety measures meet or exceed the requirements of this output.</p> <p>Provision of appropriate cycle and pedestrian paths.</p> <p>If required, number of pedestrian crossings.</p> <p>Reduced local crime rates.</p> <p>Reduced collisions between cyclists / pedestrians and motor vehicles.</p>	<p>BREEAM Communities</p> <p>BREEAM NC 2018</p> <p>Home Quality Mark</p>
	Car Sharing	<p>MULTI-STOREY CAR PARK:</p> <p>To promote car sharing, priority parking spaces are provided for at least 5% of the total car parking capacity. Spaces are located nearest the development entrance.</p> <p>Where appropriate, the promotion of car sharing may be linked to the SMART Technology Strategy.</p>	This concept and outcome will be considered further in the next stages of the design.					<p>The % car sharing spaces meets or exceed the requirements of this output.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses.</p> <p>Reduced vehicular transmissions including carbon monoxide, particulate matter and nitrogen oxides.</p>	<p>BREEAM Communities</p> <p>BREEAM NC 2018</p>
	Electric Vehicle Charging Points	<p>MULTI-STOREY CAR PARK:</p> <p>At least 10% of parking spaces incorporate electric vehicle charging points. The minimum charging point specification shall be mode "3", 32AMP, 7kW.</p> <p>Infrastructure is provided for future provision, and to meet a 20% target.</p> <p>PLOTS 1 & 2, PUBLIC REALM:</p> <p>If private / in-plot parking is provided, 1 EV charging point is provided per dwelling. Where unallocated parking is provided for residents, EV charging points are provided for at least 10% of spaces. The minimum charging point specification shall be mode "3", 32AMP, 7kW.</p>	<p>The current MEP design of the MSCP includes charging points for 10% of parking spaces. Of this 10%:</p> <ul style="list-style-type: none"> - 70% will be slow charging spaces (7.4kW) - 20% will be fast charging spaces (22kW) - 10% will be rapid charging spaces (43kW) <p>Infrastructure allowing for future additional provision (20% of parking spaces) is allowed for in the design.</p> <p>The requirements and responses for the remainder of the development will be confirmed in the next stages of design.</p>					<p>The % EV charging points >7kW meets or exceed the requirements of this output.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses.</p> <p>Reduced vehicular transmissions including carbon monoxide, particulate matter and nitrogen oxides.</p>	<p>BREEAM NC 2018</p> <p>Building Regulations Part S (2021)</p> <p>Home Quality Mark</p> <p>Sustainable Travel SPD (Draft Document November 2021)</p>

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
1. Transport and Connectivity									
<p><i>(continued)</i></p> <p>1.1 In support of Barnsley's zero carbon strategy, the scheme contributes to a reduction in health inequality, improved local air quality and general health and wellbeing, and increased fossil fuel free local travel. Improvements in connectivity and quality external environments increase footfall within the area, thereby supporting local businesses, increasing revenues, and reducing crime rates.</p> <p>Also refer to topics: - 2.1 Multi-Functional Green Space - 6.1 External Spaces</p>	SMART Parking Technologies	<p>ACTIVE TRAVEL HUB AND MULTI-STOREY CAR PARK:</p> <p>As part of the wider SMART Technologies Strategy, SMART technologies are employed to reduce traffic congestion, improve parking management, reduce pollution and optimise the use of available spaces.</p>	<p>As per the MEP strategy, allowance has been made for an IoT-based system within the ATH and MSCP to allow for the communication of free and occupied bike parking (ATH) and car parking (MSCP) spaces over web or mobile applications. The SMART parking system comprises of bike sensors, which are installed per cycle bay and link up to a network of WiFi enabled SmartSpots, which in turn feed real time data into a SmartCloud platform. This will not only show live parking events, but affords users detailed site information such as parking trends and abuse of parking spaces, allowing informed decisions to be made around how the status of each individual bay is regulated.</p>	●		●	●	<p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses.</p> <p>Reduced vehicular transmissions including carbon monoxide, particulate matter and nitrogen oxides.</p> <p>Increased footfall within the area and increased revenue for local businesses.</p> <p>Reduced overhead costs associated with parking meters and enforcement effectiveness.</p>	Bespoke

2. Biodiversity and Green Infrastructure									
<p>2.1 Opportunities for nature are increased. This is achieved through the provision of quality habitats which are joined up at all scales, and which enhance human health and wellbeing, support wildlife corridors, enhance climate resilience and deliver environmental benefits.</p> <p>Also refer to topics: - 1.1 Quality Cyclist and Pedestrian Environments - 1.1 Connectivity - 3.1 Urban Heat Island Mitigation - 3.2 Nature-Based SUDs Solutions - 6.1 Edible Landscapes</p>	Multifunctional Green Space	<p>ALL PHASE 1:</p> <p>A network of multifunctional green infrastructure assets and public green spaces are delivered, in line with Barnsley's Green Space Strategy and Green Infrastructure Strategy. Consultation has taken place with Barnsley Metropolitan Borough Council, existing residents and potential users of the development to understand the desired uses, design, quantity and location of accessible and natural green space.</p> <p>An ecosystem service approach is adopted with regards to green space and green infrastructure design.</p>	<p>Sustainability and delivery of ecosystem services have been key drivers for the design of Phase 1. As detailed in the Landscape and Public Realm Concept Design Strategy, through the creation of the 6 character areas, a number of different green space and green infrastructure typologies are proposed:</p> <ol style="list-style-type: none"> 1. Parade Promenade: Although largely hard surface, trees and planters will be provided. 2. Central Green Space: A large open lawn enclosed by colourful planting. 3. The Gardens (Green Seam): A natural setting with displays of form, colour and texture of varying plants. The space will be rich in biodiversity with structured mixed planting for all year round interest. 4. The Activity Spine (Building Threshold): Soft landscape edges will be shaped to accommodate established desire lines. 5. Public realm around Plot 2: Although largely hard surface, soft landscaping, trees and planters may be provided. 6. Southern Gateway Arrival: The Gateway marks the town entrance into the Digital Campus and therefore impressions of the 'green' nature of the public realm. <p>Furthermore, street trees, pocket parks, and planters will be provided throughout the development. A 200m2 green roof space is also proposed to the ATH.</p> <p>Together, the landscape design will offer numerous ecosystem services, including, for example: - Opportunities for recreation, as well as providing aesthetic and "spiritual" (also referred to as sense of place) services - Mitigation and control measures relating to water quality, noise, air quality and light pollution - Climate change mitigation and reduction of the urban heat island effect, shading and biotic cooling - Management of surface water run off and flood risk management - Improvement in biodiversity</p> <p>Consultation and development of the ecosystem services approach will be considered further in the next stages of design.</p>	●		●	●	<p>Increased number of green space typologies and % cover of green space and green infrastructure.</p> <p>Increased percentage of surface water attenuation resulting from nature-based SUDs solutions.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses, obesity and mental health issues such as depression.</p> <p>Reduced mortalities resulting from heatwaves.</p> <p>Improved air and water quality.</p> <p>Reduced flood risk and surface water runoff, and subsequent local flooding events.</p> <p>Improved ecological / biodiversity value (% biodiversity net gain - DEFRA / Natural England).</p> <p>Increased footfall within the area and increased revenue for local businesses.</p> <p>Improved real-estate value.</p>	<p>Barnsley Local Plan 2012–2033</p> <p>BREEAM Communities</p> <p>Home Quality Mark</p>

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
2. Biodiversity and Green Infrastructure									
<p>2.2 The natural environment is improved and is an attractive place to live, work and play in, helping to secure further inward investment, improve health and wellbeing and promote social cohesion.</p> <p>Also refer to topics: - 1.1 Quality Cyclist and Pedestrian Environments - 1.1 Connectivity - 3.1 Urban Heat Island Mitigation - 3.2 Nature-Based SUDs Solutions - 6.1 Edible Landscapes</p>	<p>Biodiversity</p>	<p>ALL PHASE 1: Through the production of a net gain plan (as per the Environment Act), adverse impacts on habitats will be minimised. This applies to both the pre-development and post-development biodiversity value of onsite habitats, the biodiversity value of any offsite habitat produced in relation to the development, and any statutory biodiversity credits purchased (if applicable, plus any further requirements set out in secondary legislation).</p>	<p>Following the completion of the ecology survey, a net gain plan will be established. It is thought, however, that a net gain will be easily achieved based on the ecological improvements proposed for the site.</p>	●		●	●	<p>Improved ecological / biodiversity value (% biodiversity net gain - DEFRA / Natural England).</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses, obesity and mental health issues such as depression.</p> <p>Reduced mortalities resulting from heatwaves.</p> <p>Improved air and water quality.</p> <p>Improved local air quality.</p> <p>Reduced flood risk and surface water runoff, and subsequent local flooding events.</p> <p>Increased footfall within the area and increased revenue for local businesses.</p> <p>Improved real-estate value.</p>	<p>Barnsley Local Plan 2012–2033</p> <p>BREEAM Communities</p> <p>CEEQUAL v6</p> <p>Home Quality Mark</p> <p>RIBA 2030 Climate Challenge v2</p>

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
3. Climate Resilience									
<p>3.1 The development is resilient to future impacts of climate change. Appropriate and robust analysis demonstrates that increases in rainfall, summertime temperatures and flood risk will be managed effectively, and potable water consumption minimised.</p> <p>Also refer to topics: - 2.1 Multi-Functional Green Space - 2.2 Biodiversity - 3.2 Nature-Based SUDS - 6.3 Overheating</p>	<p>Urban Heat Island Mitigation</p>	<p>ALL PHASE 1: Localised temperatures are reduced and thermal comfort improved. At least 75% of all non-occupiable or non-mechanical rooftops (excluding areas with photovoltaic installations) meet one or more of the following: - Uses a green roof system that includes at least a 2-inch covering of hardy groundcover - Low-sloped roofs (slope ≤ 2:12) have a three-year aged solar reflectance index (SRI) of 64, or an initial SRI of 82 - Steep-sloped roofs (slope > 2:12) have a three-year aged SRI of 32, or an initial SRI of 39</p> <p>PUBLIC REALM: Localised temperatures are reduced and thermal comfort improved. For 50% or more of pedestrian-accessible street segments in the project and for 50% of roadways in the project, one or more of the following is met: - Pavements provide shade with trees or with architectural devices or structures that have a three-year aged solar reflectance (SR) value of at least 0.28, or an initial SR of at least 0.33 at installation - Roads use paving materials with a three-year aged solar reflectance (SR) value of at least 0.28, or initial SR of at least 0.33 at installation</p>	<p>In line with the current proposals, >75% of the ATH roof area comprises either green roof or photovoltaic panels. The green roof specification will be defined in the following stages, however the current design is in line with this output.</p> <p>This issue will be addressed further in the following stages of design. The requirements will need to be reflected within the drawings and specifications for Plots 1 and 2.</p>	●		●	●	<p>The % applicable surfaces meets or exceed the requirements of this output.</p> <p>Reduced mortalities resulting from heatwaves.</p> <p>Increased footfall within the area and increased revenue for local businesses.</p> <p>Lower energy bills (associated with any required mechanical cooling).</p>	<p>WELL Communities</p>

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
3. Climate Resilience									
<p><i>(continued)</i></p> <p>3.1 The development is resilient to future impacts of climate change. Appropriate and robust analysis demonstrates that increases in rainfall, summertime temperatures and flood risk will be managed effectively, and potable water consumption minimised.</p> <p>Also refer to topics:</p> <ul style="list-style-type: none"> - 2.1 Multi-Functional Green Space - 2.2 Biodiversity - 3.2 Nature-Based SUDS - 6.3 Overheating 	Regulated Water Consumption	<p>ACTIVE TRAVEL HUB, MULTI-STOREY CAR PARK: Issues around future water scarcity are managed through the specification of low-water-consuming fittings. A 40% reduction against baseline water consumption is achieved, in line with the BREEAM 2018 Wat 01 methodology (or any future revision thereof).</p> <p>PLOTS 1 & 2: Issues around future water scarcity are managed through the specification of low-water-consuming fittings. Potable water consumption is limited to 75 litres/person/day.</p>	<p>In line with the BREEAM pre-assessment produced for the ATH (see Section 7 for further details), water consumption is anticipated to be reduced to a minimum of 40% reduction over a notional baseline. This can be achieved through the following specification:</p> <ul style="list-style-type: none"> • WCs: 3.75 litre effective flush volume • Wash-hand basin taps: 5 litres/min • Showers: 6 litres/min • Kitchenette taps (if provided): 6 litres/min • Kitchen taps (pre-rinse nozzles only): 7.30 litres/min • Domestic sized dishwashers: 40 litres/use • Commercial sized dishwashers: 7.5 litres/rack <p>The same rational can be applied to the MSCP.</p> <p>The technical details above should form part of the Stage 3 specification to ensure compliance. Technical requirements for Plots 1 and 2 will need to be defined at a later date, and once the proposals have been developed further.</p>					<p>Reduced water consumption (% reduction or litres/person/day).</p> <p>Reduced water bills.</p>	<p>BREEAM NC 2018</p> <p>RIBA 2030 Climate Challenge v2</p>
	Unregulated Water Consumption	<p>ALL PHASE 1: The potable water demand relating to the irrigation of planting is offset through one or a combination of the following solutions:</p> <ul style="list-style-type: none"> - Planting relies solely on precipitation, during all seasons of the year - Drip-fed subsurface irrigation incorporating soil moisture sensors. The irrigation control should be zoned to permit variable irrigation to different planting assemblages. This should link to the SMART Technologies Strategy - Reclaimed/recovered water from a rainwater collection or waste water recovery system, with appropriate storage. This includes borehole water - All planting specified is restricted to contextually appropriate species that thrive without irrigation and will continue to do so in those conditions likely as a result of climate change, i.e. typically warmer and drier conditions 	<p>The offsetting of potable water with regards to irrigation will be considered in the following stages of design. That said, as part of the drainage strategy, the project will work to alleviate storm-water runoff as part of a sustainable drainage system strategy (SUDs), by allowing the surface water to be directed into soft planted areas for natural absorption and slow percolation in the soil layers.</p>					<p>Reduced water consumption (litres of water saved and / or % offset through reclaimed / recovered water),</p> <p>Reduced water bills.</p>	<p>BREEAM NC 2018</p>
	Potable Water Offsets	<p>ACTIVE TRAVEL HUB, MULTI-STOREY CAR PARK, PLOTS 1 & 2: The design allows for the future installation of greywater / or rainwater harvesting tanks (as appropriate).</p>	<p>Allowance has been made for a greywater harvesting tank within the MSCP design, and for a rainwater harvesting tank within the ATH design.</p> <p>For Plots 1 and 2, allowance for either or options must be made within future design proposals.</p>					<p>Layouts allow for future integration of appropriately sized rainwater and / or greywater harvesting tanks (size tbc.)</p> <p>Reduced water consumption.</p> <p>Reduced water bills.</p>	<p>Bespoke</p>
	Water Leak Detection	<p>ACTIVE TRAVEL HUB, MULTI-STOREY CAR PARK: Water leak detection systems which are capable of detecting major water leaks on the mains water supply within the building and between the building and the utilities water meter are provided.</p> <p>Flow control devices (e.g. PIRs and solenoid valves) that regulate the water supply to each WC area or sanitary facility, according to demand, are provided.</p>	<p>Water leak detection and flow control devices will be incorporated into the design in the following stages.</p>					<p>Reduced water consumption.</p> <p>Reduced water bills.</p> <p>Reduced maintenance costs resulting from water damage to properties.</p>	<p>BREEAM NC 2018</p>

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
3. Climate Resilience									
<p>3.2 As a result of the development, there is improved protection from flooding through increased water storage capacity, enhanced water quality, a reduction in the amount of pollution to the water environment and the creation of new habitats for wildlife.</p> <p>Also refer to topics: - 2.1 Multi-Functional Green Space - 2.2 Biodiversity - 3.1 Rainfall Events (Peak Rate of Runoff) - 3.1 Rainfall Events (Volume of Runoff)</p>	<p>Rainfall Events (Peak Rate of Runoff)</p>	<p>PUBLIC REALM: Drainage measures are specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site / achieves a 30% betterment. This will comply with the 1-year and 100-year return period events. Allowance will be made for climate change, in line with best practice.</p>	<p>Based on the current drainage design, this will be achieved. Please refer to Section 6 of this report for further details.</p>	●		●	●	<p>Reduced flood risk and surface water runoff, and subsequent local flooding events.</p>	<p>Barnsley Local Plan 2012–2033 BREEAM Communities BREEAM NC 2018 CEEQUAL v6 Home Quality Mark</p>
	<p>Rainfall Events (Volume of Runoff)</p>	<p>PUBLIC REALM: Drainage design measures are specified so that the post-development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site’s development / achieves a 30% betterment. This will be for the 100-year 6-hour event, including an allowance for climate change. Any additional predicted volume of run-off for this event will be prevented from leaving the site by using infiltration or other SUDS techniques.</p>	<p>Based on the current drainage design, this will be achieved. Please refer to Section 6 of this report for further details. For further details regarding the SUDS strategy, please refer to the concept design response summary of output 3.2 f</p>	●		●	●	<p>Reduced flood risk and surface water runoff, and subsequent local flooding events. Improved water quality.</p>	<p>Barnsley Local Plan 2012–2033 BREEAM Communities BREEAM NC 2018 CEEQUAL v6 Home Quality Mark</p>
	<p>Nature-Based SUDS Solutions</p>	<p>PUBLIC REALM: Where feasible the use of nature based solutions and sustainable urban drainage (SUDS) measures such as raingardens, swales and tree pits will be maximised within the drainage strategy.</p>	<p>The outline drainage strategy for Phase 1 aims to implement a variety of SUDS features in accordance with the CIRIA SuDS guidance and Local policy. It is proposed for as many SUDS features as possible to be put forward for adoption by Yorkshire Water under an S104 agreement to ensure that sufficient maintenance of the SuDS features is applied in the future.</p> <p>In line with the Design and Construction Guidance and the suitability of the site, the following adoptable SuDS features are proposed to be incorporated into the drainage strategy:</p> <ul style="list-style-type: none"> - Bioretention systems, e.g. rain gardens or tree pits - Storage basins, which are depressions in the ground that are normally dry but are designed to store water to provide attenuation (and are comprised of vegetation) - Tanks / geo-cellular tanks <p>The bioretention areas and detention basin are proposed to be integrated into the central green open space in the public realm area in the south of the site. However, in order to maintain the amenity value of the area, the proposed features are to be designed offline, only providing attenuation in extreme rainfall events.</p> <p>Non-adoptable features such as permeable paving within the hard landscaped areas and blue/green roofs on proposed flat roofs, are to also be included in the drainage strategy to provide additional storage.</p> <p>Based on the current proposals, the public realm, MSCP and ATH are proposed to be constructed first with Plots 1 and 2 proposed to be developed at a later stage within Phase 1. At present, it is assumed that Plots 1 and 2 are to be developed for residential purposes. Depending on the structural/architectural design of the Plots, it is encouraged for these developments to incorporate source control SuDS, where feasible. Therefore, the use of blue/green roofs and rainwater harvesting should be considered as part of the design.</p> <p>However, to ensure there is no detrimental impact on the infrastructure that will be in place prior to the development of Plots 1 and 2, an allowance for surface water attenuation from these areas has been incorporated into SUDS features located in the public realm.</p>	●		●	●	<p>Fewer localised flooding events (on and offsite). Improved water quality. Improvements in ecological / biodiversity value (% biodiversity net gain - DEFRA / Natural England). Improved real-estate value.</p>	<p>Barnsley Local Plan 2012–2033 BREEAM Communities BREEAM NC 2018 CEEQUAL v6 Home Quality Mark WELL Communities</p>

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
4. Energy and Operational Carbon									
4.1 Businesses and residents benefit from reduced running costs and are less reliant on natural resources. Barnsley residents and businesses have improved quality of life, and health and socioeconomic inequalities are reduced across the Borough.	Net Zero Operational Carbon	<p>ACTIVE TRAVEL HUB, MULTI-STOREY CAR PARK, PLOTS 1 & 2:</p> <p>In line with current best practice, e.g. the UK Green Building Council (UKGBC), LETI and RIBA 2030 Climate Challenge guidance, and in support of Barnsley's 2045 net zero target, a route to achieving net zero operational carbon for the multi-storey car park, Active Travel Hub and residential units of Plots 1 and 2 will be investigated. Any available district heat networks will be utilised, where appropriate.</p> <p>Alongside a costing exercise, the requirements and outcomes of the net zero carbon study will be implemented, as far as practically and technically possible.</p> <p>Nature-based carbon capture programmes will be considered for any required offsetting.</p>	<p>High level net zero operational carbon solutions have been proposed at Concept Design, as detailed below. These will need to be developed further at the following stages, and as the proposals develop.</p> <p>With regards to heat networks, BMBC are currently assessing opportunities to create a new district heat network within Barnsley Town Centre to provide lower-carbon, locally generated heat for residential and commercial properties. At present, no allowance has been made for this within the utilities strategy, however, this will require further updates if, and when, a district heating scheme is brought forward as an option, and the likely heating demand of the various plots is established.</p> <p>MSCP: It is currently understood that the car park will not be covered by Part L, is not a habitable area and will not be heated. It is advised, however, that any energy demand is offset via PVs, with PV provision maximised on the canopy. All energy demands, e.g. lighting, should be reduced as far as practically possible. To support this approach, and as per the MEP strategy, the building services engineering design will implement the following strategies:</p> <ul style="list-style-type: none"> • Use of the most onerous envelope performance as is commercially available at construction. • Construct with the minimum air permeability, be mechanically ventilated, with appropriately sized and shaded windows. • Mechanically ventilate generally, with openable windows as required. • Efficient building engineering systems with heat recovery where possible to minimise resource consumption and pollution. • Reduce wasted energy and water wherever feasibly possible. • Use renewable energy sources wherever practical. <p>ATH: Based on the Future Building Standard, it is recommended that in order to become NZC, a minimum carbon reduction of 27% over the current Part L 2013 should be achieved. This needs to be accompanied by:</p> <ul style="list-style-type: none"> • Low carbon heating (likely electric heat pumps) • An increase in fabric standards • Renewable energy sources (PVs) • Smart metering and access to energy consumption data. <p>The Future Building Standard will be implemented in 2025. It will deliver buildings that are 'zero carbon ready' and do not feature a fossil fuel heat source. From 2022 to 2025 interim changes to Part L 2013 through this standard will produce 27% less CO2 emissions compared to current standards.</p> <p>More specifically, and as per the MEP strategy, the building services engineering design will implement the following strategies:</p> <ul style="list-style-type: none"> • Use of the most onerous envelope performance as is commercially available at construction. • Construct with the minimum air permeability, be mechanically ventilated, with appropriately sized and shaded windows. • Mechanically ventilate generally, with openable windows as required. • Efficient building engineering systems with heat recovery where possible to minimise resource consumption and pollution. • Reduce wasted energy and water wherever feasibly possible. • Use renewable energy sources wherever practical. <p>As per the M&E strategy, a space heating target of <15kWh/m2/yr has been set, in line with current LETI guidance.</p> <p>The approach to net zero operational carbon should be further investigated at RIBA Stage 3. Once the full and final energy model is available, requirements for offsetting, is necessary, can be established.</p> <p>Plots 1 & 2: Based on the Future Home Standards, a minimum 31% reduction in CO2 emissions will be required (over the current Part L 2013). A fabric first approach will be adopted, focusing on high standards of fabric insulation (e.g. high performing triple glazed windows with a whole unit U-value of less than 1.0 W/m²K, and low air Permeability (< 1 m³/h/m² at 50 Pa). In line with the Future Homes Standard, Plots 1 and 2 will be fully electric and will not be connected to the gas grid.</p>	●	●	●	<p>Energy use intensity value (kWh/m²/year)</p> <p>Space heating demand (kWh/m²/year)</p> <p>Reduced carbon emissions (kWh/year, kWh/m², kgCO₂e/m², tCO₂e and /or % reduction against baseline)</p> <p>Reduced operational costs.</p> <p>Improved air quality, e.g. a reduction in NOx emissions where gas boilers are no longer used.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses.</p> <p>Improved real-estate value.</p>	<p>Future Buildings Standard</p> <p>Future Homes Standard</p> <p>UKGBC Guidance</p> <p>LETI Climate Emergency Design Guide</p> <p>RIBA 2030 Climate Challenge v2</p>	

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
<p><i>(continued)</i> 4.1 Businesses and residents benefit from reduced running costs and are less reliant on natural resources. Barnsley residents and businesses have improved quality of life, and health and socioeconomic inequalities are reduced across the Borough.</p>	<p>Low Energy External Lighting</p>	<p>PUBLIC REALM: Low energy external light fittings are provided within the construction zone. The fittings meet the following: - Have an average initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt. - Are fitted with automatic controls to prevent to prevent operation during daylight hours. - In areas of intermittent pedestrian traffic (e.g. bin and bike stores), presence detection is specified.</p>	<p>This issue will be addressed in the following stages of design.</p>	●		●	●	<p>The lighting specification meet or exceeds the requirements of this output. Reduced operational costs. Reduced carbon emissions.</p>	<p>BREEAM NC 2018</p>
	<p>Building Energy Metering</p>	<p>ACTIVE TRAVEL HUB: In order to monitor and reduce energy consumption, and to reduce the performance gap, energy metering systems are installed so that at least 90% of the estimated annual energy consumption is assigned to the end-use categories, as follows (and as applicable): - Space heating* - Domestic hot water* - Humidification - Ventilation (major fans) - Pumps - Lighting and small power - Renewable or low carbon systems (separately) - Controls - Any other major energy consuming plant or systems, where appropriate. The energy consuming end uses listed will be easily identifiable to building users, e.g. through labelling or data outputs. *Space heating and hot water can be metered together where it is impractical to sub-meter these separately.</p>	<p>This is currently reflected within the MEP strategy.</p>	●		●	●	<p>Metering specification meets or exceeds the requirements of this output. Reduced operational costs. Reduced carbon emissions.</p>	<p>BREEAM NC 2018</p>
	<p>Low and Zero Carbon Technologies</p>	<p>ACTIVE TRAVEL HUB, MULTI-STOREY CAR PARK, PLOTS 1 & 2: Renewable energy opportunities are exploited and battery storage technologies incorporated, where feasible. Opportunities to utilise mine water heating will be investigated, and where possible and feasible, utilised.</p>	<p>The current MEP strategy proposes 235m² of roof mounted PVs at 35kW to the ATH, and 1450m² roof mounted PVs at 250kW to the MSCP. An initial assessment concluded that there is insufficient PV area available to charge a battery capable of meeting the ATH's and MSCP's energy demands. As such, battery storage has been discounted for these two buildings. A renewables strategy for Plots 1 and 2 will need to be undertaken by the developers. Previous rotary boreholes identified potential mine working voids beneath the site. However, the investigations were not sufficiently targeted. Further investigations will be required in the following stages to establish whether the utilisation of mine water for heating is viable.</p>	●		●	●	<p>Reduced operational costs. Reduced carbon emissions.</p>	<p>Barnsley Local Plan 2012–2033 Bespoke BREEAM NC 2018</p>

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
5. Resource Efficiency and Embodied Carbon									
5.1 The scheme contributes to a sustainable circular economy and a reduction in embodied carbon emissions, supporting the Barnsley Net Zero Carbon agenda and targets, improving mental and physical health and wellbeing, and promoting the local economy and local skillsets. The impact on the Borough's waste on the environment is minimised.	Recycled and Reclaimed Materials	<p>ALL PHASE 1: At least 25% (by volume) of suitable / useable material from demolition or de-construction on site will be incorporated into the project.</p> <p>PUBLIC REALM: At least 15% of road or path construction material is locally reclaimed or constituted from recycled material.</p>	This issue will be addressed in the following stages of design. The requirements will need to be reflected within the drawings and specifications for Plots 1 and 2.	●		●	●	<p>The % recycled or reclaimed materials meet or exceed the requirements of this output.</p> <p>Reduced vehicular transmissions (associated with the transport of new materials) including carbon monoxide, particulate matter and nitrogen oxides.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses.</p>	BREEAM Communities CEEQUAL v6
	Locally Sourced Materials	<p>ALL PHASE 1: Manufacturer locations for materials adhere to the following restrictions:</p> <ul style="list-style-type: none"> • 20% or more of the materials construction budget come from within 500km of construction site. • 30% of the total materials construction budget come from within 1000km of the construction site or closer. • An additional 25% of the materials construction budget come from within 5000km of the construction site. • The remaining 25% of materials may be sourced from any location. <p>Exclusions may apply where materials with lower overall embodied carbon values are procured (compared to the locally sourced alternative).</p>	This issue will be addressed in the following stages of design. The requirements will need to be reflected within the drawings and specifications for Plots 1 and 2.	●		●	●	<p>The % recycled or reclaimed materials meet or exceed the requirements of this output.</p> <p>Increased local spend and increased revenue for local businesses.</p> <p>Reduced vehicular transmissions (associated with the transport of new materials) including carbon monoxide, particulate matter and nitrogen oxides.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses.</p>	Living Building Challenge
	Modular Construction and Prefabrication	<p>ALL PHASE 1: A feasibility study will be carried out to investigate the use of modular construction and prefabrication . This will include both services and building elements.</p> <p>Modular construction / prefabrication will be used where the feasibility study has shown this will reduce deliveries, waste, time and resource spent on site.</p>	This issue will be addressed in the following stages of design. The requirements will need to be reflected within the drawings and specifications for Plots 1 and 2.	●		●	●	<p>Reduced vehicular transmissions including carbon monoxide, particulate matter and nitrogen oxides.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses.</p> <p>Reductions in on site waste generation and waste to landfill.</p> <p>Fewer reported accidents at work (relevant to construction site activities).</p>	BREEAM NC 2018 CEEQUAL v6 UKGBC Circular Economy Programme

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
5. Resource Efficiency and Embodied Carbon									
<p><i>(continued)</i></p> <p>5.1 The scheme contributes to a sustainable circular economy and a reduction in embodied carbon emissions, supporting the Barnsley Net Zero Carbon agenda and targets, improving mental and physical health and wellbeing, and promoting the local economy and local skillsets. The impact on the Borough's waste on the environment is minimised.</p>	Material Efficiency	<p>ALL PHASE 1:</p> <p>At each stage of the project, opportunities for materials efficiencies relevant to design, specification and construction will be identified and implemented, where appropriate, to reduce the quantity of materials required, waste, and all subsequent and associated carbon emissions.</p>	<p>This issue will be addressed in the following stages of design. The requirements will need to be reflected within the drawings and specifications for Plots 1 and 2.</p> <p>Moving forward, design teams will need to consider the following at each stage of design to promote material efficiency:</p> <ul style="list-style-type: none"> - Increasing the utilisation factor of structural members - Designing to standard material dimensions to reduce off-cuts and waste on site - Removing redundant materials from the design - Using materials that can be recycled or reused at the end of their service life - Making use of recycled or reclaimed materials - Designing for deconstruction and material reuse - Using pre-fabricated elements where appropriate to reduce material waste - Consider using an 'exposed thermal mass' design strategy to reduce finishes - Avoiding over-specification of predicted loads - Using lightweight structural design strategies - Making use of bespoke structural elements where this will reduce overall material use - 'Rationalisation' of structural elements - Optimising the foundation design for embodied environmental impact. 	●		●	●	<p>Cost savings as a result of materials and waste minimisation.</p> <p>Reduced on site waste generation and waste to landfill.</p> <p>Reduced vehicular transmissions including carbon monoxide, particulate matter and nitrogen oxides.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses.</p>	<p>BREEAM NC 2018</p> <p>UKGBC Circular Economy Programme</p>
	Future Disassembly / De-Construction	<p>MULTI-STOREY CAR PARK, PUBLIC REALM:</p> <p>At least 15% (by volume) of components or pre-fabricated units used can be easily separated on disassembly / de-construction into material types suitable for recycling or reuse.</p> <p>ACTIVE TRAVEL HUB, PLOTS 1 & 2:</p> <p>Design features that will enable and facilitate future disassembly and functional adaptation will be incorporated within the design.</p>	<p>This issue will be addressed in the following stages of design. The design and nature of the MSCP will likely exceed this target, however.</p> <p>The requirements will need to be reflected within the drawings and specifications for Plots 1 and 2.</p>	●			●	<p>Reduced carbon emissions associated with the production of new products and materials (applicable to future projects).</p>	<p>BREEAM NC 2018</p> <p>CEEQUAL v6</p> <p>UKGBC Circular Economy Programme</p>
	SMART Waste and Recycling	<p>ALL PHASE 1:</p> <p>Informed by the SMART Technologies Strategy and in collaboration with DMC and Barnsley College, SMART Waste and recycling projects are piloted to promote resource efficiency to SMEs and residents across the campus.</p>	<p>Compliance with this output will be explored and developed in the following stages of design.</p>	●	●	●	●	<p>Number of projects piloted.</p> <p>Contribution to living lab and learning opportunities and reduced waste.</p>	Bespoke

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
5. Resource Efficiency and Embodied Carbon									
<p><i>(continued)</i></p> <p>5.1 The scheme contributes to a sustainable circular economy and a reduction in embodied carbon emissions, supporting the Barnsley Net Zero Carbon agenda and targets, improving mental and physical health and wellbeing, and promoting the local economy and local skillsets. The impact on the Borough's waste on the environment is minimised.</p>	Net Zero Embodied Carbon	<p>ACTIVE TRAVEL HUB, MULTI-STOREY CAR PARK, PUBLIC REALM:</p> <p>In line with the LETI, UKGBC and / or RIBA 2030 Climate Challenge guidance, using the RICS Whole Life Carbon Assessment for the Built Environment professional statement 2017, different low embodied carbon superstructure, substructure, hard landscaping and services options will be investigated, with the aim to meet either of the following embodied carbon targets:</p> <ul style="list-style-type: none"> - Target embodied carbon of <970kgCO2e/m2 - Stretch target embodied carbon of <750kgCO2e/m2 	<p>A formal embodied carbon analysis should take place in the next stages to further inform the design with regards to low carbon materials, and to meet the relevant targets.</p> <p>Although formal analysis of each asset (in full) has not yet taken place, embodied carbon has been considered as part of the Concept Design. Following an optioneering exercise and the latest Inventory of Carbon and Energy database for carbon figures (applicable to Stages A1 - A3, 'cradle to gate'), the recommended structural frame option for the MSCP (Option G1 - precast double tee steel frame) has been selected on the basis of being the most sustainable and lowest embodied carbon solution, whilst still achieving the requirements of the brief, minimising internal columns and likely being one of the quicker options to construction (thereby reducing further emissions related to site and installation works). Please refer to Section 5 of the Multi-Storey Car Park Stage 2 report for further details.</p> <p>Further narrative and analysis on low carbon options will be provided in the next stages of the design.</p>	●		●	●	<p>Reduction in embodied carbon associated with the development (kgCO2e/m2).</p> <p>Increased local spend and increased revenue for local businesses.</p> <p>Reduced vehicular transmissions including carbon monoxide, particulate matter and nitrogen oxides.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses.</p> <p>Cost savings as a result of materials and waste minimisation.</p> <p>Reduced on site waste generation and waste to landfill.</p>	<p>LETI</p> <p>RICS Whole Life Carbon Assessment Framework</p> <p>RIBA 2030 Climate Challenge v2</p> <p>UKGBC</p>
6. Health and Wellbeing									
<p>6.1 The development supports measures which address issues of health inequality, obesity and heart disease, and contributes towards good physical and mental health, including encouraging active travel and non-sedentary behaviour.</p> <p>Also refer to topics:</p> <ul style="list-style-type: none"> - 1.1 All topics - 2.1 Multi-Functional Green Space - 2.2 Biodiversity - 3.1 Urban Heat Island Mitigation - 3.2 Rainfall Events (Volume of Runoff) - 3.2 Nature-Based SUDs Solution - 6.2 All topics - 6.3 All topics 	Interior Fitness Circulation	<p>MULTI-STOREY CAR PARK, PLOTS 1 & 2:</p> <p>At least one staircase will be open to regular occupants, servicing all floors of the project and is aesthetically designed through the inclusion of at least two of the following on each floor:</p> <ul style="list-style-type: none"> - Artwork - Light levels of at least 215 lux when in use - Windows or skylights that provide access to daylight - Natural design elements (e.g. plants, water features, images of nature) - Gamification <p>Stairs will ideally be physically or visually located before any lifts, and signage provided directing building users to stairs.</p>	<p>This issue will be addressed fully in the following stages of design. Consideration has been given to interior fitness circulation with regards to the MSCP staircase, with openable windows provided to allow for natural ventilation and daylight ingress.</p> <p>The requirements of this output will need to be reflected within the drawings and specifications for Plots 1 and 2.</p>	●			●	<p>The design meets or exceeds the requirements of this output.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as obesity and mental health issues such as depression.</p> <p>Improved real-estate value.</p>	WELL Building Standard v2

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
6. Health and Wellbeing									
<p><i>(continued)</i></p> <p>6.1 The development supports measures which address issues of health inequality, obesity and heart disease, and contributes towards good physical and mental health, including encouraging active travel and non-sedentary behaviour.</p> <p>Also refer to topics:</p> <ul style="list-style-type: none"> - 1.1 All topics - 2.1 Multi-Functional Green Space - 2.2 Biodiversity - 3.1 Urban Heat Island Mitigation - 3.2 Rainfall Events (Volume of Runoff) - 3.2 Nature-Based SUDs Solution - 6.2 All topics - 6.3 All topics 	External Activity Spaces	<p>PUBLIC REALM:</p> <p>A variety of activity spaces are provided to encourage movement and exercise, taking into account different age ranges and physical and neurological needs.</p>	<p>As per the Landscape Strategy, the Northern Plot 2 public realm is conceived as a flexible, community focused outdoor space with the capacity to be used for a range of activities including play, community garden and green space. The topography in the space is relatively even, up to the retaining wall and sloped planted bank with existing mature trees, which define the upper and lower Courthouse. Open space around Plot 2 is limited, so the concept aims to utilise activity within the confines of pocket spaces and linear design responses.</p> <p>The concept ideas also propose opening up the steps and ramp between the upper and lower tier in order to maximise viewpoints across the valley and create further opportunity for community to meet and socialise. This is explained in more detail within the Landscape Strategy report.</p> <p>Another key consideration with regard to facilitating activity is the inclusion of power sources and WiFi to enable the use of technology for events and temporary pop-up facilities. This will need to be integrated seamlessly into the design. As well as being a relaxing space, the Central Green will incorporate an element of activity. This use will tie in to the wider philosophy of the green, allowing for small scale activity within the defined social spaces of the design.</p> <p>Yoga, pilates, stretching and body weight exercises would all be suitable for the Central Green space and would compliment the lush, green, calm feel. By not defining specific areas for exercise and activity, we allow the layout to be more flexible for users to make decisions about where to undertake exercise, based on the time of day, sunlight direction, other events etc.</p> <p>The Central Green will be designed to allow integration of temporary active uses, such as table tennis. Tables could be set up in a similar way to other events tying into wider Campus activities.</p> <p>Opportunities for a Pump Track for children are also incorporated within the design.</p>	●		●	●	<p>The design meets or exceeds the requirements of this output.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as obesity and mental health issues such as depression.</p> <p>Increased footfall within the area and increased revenue for local businesses.</p> <p>Improved real-estate value.</p>	WELL Communities
	Edible Landscapes	<p>ACTIVE TRAVEL HUB, PLOTS 1 & 2, PUBLIC REALM:</p> <p>Where appropriate and feasible, communal food growing spaces or edible landscapes are provided for use by residents of Plots 1 and 2 and the Active Travel Hub. For residences, it is suggested that >50m² or 1m² per residential unit of growing space is provided. For the Active Travel Hub, it is suggested that >18.5m² of growing space is provided.</p>	Edible landscapes are currently under consideration. They will be considered further in the next stages of design.	●	●	●	●	<p>The area of edible landscape meets or exceeds the requirements of this output.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as obesity and mental health issues such as depression.</p> <p>Increased footfall within the area and increased revenue for local businesses.</p> <p>Improved real-estate value.</p>	<p>Home Quality Mark</p> <p>WELL Building Standard v2</p> <p>WELL Communities</p>

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
6. Health and Wellbeing									
<p>6.2 Social cohesion and mental health is supported by the provision of high quality social spaces which are fully accessible, considering all physical and neurological needs.</p> <p>Also refer to topics: - 1.1 Quality Cyclist and Pedestrian Environments - 1.1 Connectivity - 1.1 Wayfinding - 1.1 Safety and Security - 2.1 Multi-Functional Green Space - 6.1 All topics - 6.3 All topics</p>	<p>Nature Based Design (Biophilic Design)</p>	<p>ACTIVE TRAVEL HUB, MULTI-STOREY CAR PARK, PLOTS 1 & 2: Social cohesion and mental health is supported by the provision of high quality internal social spaces.</p> <p>The following are integrated throughout internal spaces, including common circulation routes, shared seating areas and rooms and workstations (where applicable): - Natural materials, patterns, shapes, colours, images or sounds - Plants (e.g., potted plants, plant walls) or views of nature</p>	<p>The biophilic design strategy will be developed in the following stages, however, based on the current design of the ATH and MSCP, building users in occupied spaces will have views out into nature and the surrounding green spaces, thereby alleviating feelings of stress and supporting mental health and wellbeing.</p>	●		●	●	<p>The design meets or exceeds the requirements of this output.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such mental health issues, including depression.</p> <p>Improved real-estate value.</p>	<p>Living Building Challenge</p> <p>WELL Building Standard v2</p>
	<p>Sense of Belonging and Connection to Place</p>	<p>ALL PHASE 1: Social cohesion and mental health is supported by the provision of high quality internal and external social spaces.</p> <p>Buildings and the public realm contain features intended solely for the celebration of culture, spirit and place.</p> <p>This will be linked to the SMART Technology Strategy, where feasible and appropriate.</p>	<p>The landscape and public realm provides an array of different, high quality, external spaces of varying use and design. This is represented by the six character areas, all of which will be furnished with varying degrees and types of planting and soft landscaping, hard landscaping, street furniture, and other installations. As described in the Landscape Strategy, the six character areas are:</p> <ol style="list-style-type: none"> 1. Parade Promenade: This is the main connecting avenue linking through the Digital campus. The paved surfaces are designed to create a visual continuity, and the levels to be adjusted to create a step free accessible route. The Promenade will be a location for linear pop-up markets such as flea markets and flower markets, creating interest and a feeling of connection to place. 2. Central Green Space: The central community green space, enclosed by colourful planting, will comprise a large open lawn to encourage activity in the summer, with infrastructure to allow for covering the space in winter for activities. This will naturally draw residents into the area. 3. The Gardens (Green Seam): The Gardens will comprise a natural setting with displays of form, colour and texture of varying plants. Creating a distinct and clear visual identity linking through the public realm, the space will be rich in biodiversity with structured mixed planting for all year round interest. 4. The Activity Spine (Building Threshold): This area will highlight main building entrances with a distinctive surface treatment. Areas of uplift will be enhanced with warmer, lighter tones using granite trims and finishes. Soft landscape edges will be shaped to accommodate established desire lines. 5. Public realm around Plot 2: Providing access to the Plot 2 residential development, landscape treatments will be defined for residential demarcation. It will be of high quality aesthetic and open character, and will create the opportunity to incorporate informal play along the linear route. 6. Southern Gateway Arrival: The Gateway marks the town entrance into the Digital Campus and therefore impressions of the 'green' nature of the public realm. The public realm palette, including surfacing will be cohesive with the overall design whilst create a notable entrance point. The design layout will aim to open and invite people into the public realm area. <p>The current landscape design also maximises viewpoints with scenic views over the landscape, encouraging a sense of belonging and connection to place.</p> <p>The approach to public art will be developed in the following stages, however this may take the form of: - Stand alone artwork where the public realm provides a platform to house artwork - Artwork integrated into public realm components (e.g. surfaces, raised walls, furniture etc.) - Artwork overlaid as digital art / interactive lighting (aligning with the SMART Technology Strategy)</p> <p>As per the requirements of the sustainability strategy, high quality internal spaces will also be provided, with designs incorporating, for example, biophilic elements and healthy materials.</p>	●	●	●	●	<p>The design meets or exceeds the requirements of this output.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such mental health issues, including depression.</p> <p>Increased footfall within the area and increased revenue for local businesses.</p> <p>Decreased local crime rates.</p> <p>Improved real-estate value.</p>	<p>WELL Building Standard v2</p> <p>WELL Communities</p>

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
6. Health and Wellbeing									
<p><i>(continued)</i></p> <p>6.2 Social cohesion and mental health is supported by the provision of high quality social spaces which are fully accessible, considering all physical and neurological needs.</p> <p>Also refer to topics:</p> <ul style="list-style-type: none"> - 1.1 Quality Cyclist and Pedestrian Environments - 1.1 Connectivity - 1.1 Wayfinding - 1.1 Safety and Security - 2.1 Multi-Functional Green Space - 6.1 All topics - 6.3 All topics 	<p>Inclusive and Accessible Design</p>	<p>ALL PHASE 1:</p> <p>The design allows for multiple uses for different users, including children, the elderly and disabled people with consideration given to safety, comfort, disturbance and security. The design adheres to UK accessible design laws and standards.</p>	<p>The design brief for the Seam and its components delivers facilities that accommodate the needs of all users. With regards to the ATH, cycle parking is an integral aspect of any cycle network, as well as the wider transport system including other public transport modes. The availability of secure cycle parking at interchange points has a significant influence on cycle use and the efficiency of the network. The fear or direct experience of vandalism or theft can deter cycling, which in turn can reduce the return on any investments made to deliver new routes and transport infrastructure enhancements. The ATH brief explicitly aims to address this concern by providing a modern facility that caters to all users and their respective cycling needs.</p> <p>Proximity to Barnsley Railway Station is essential for cyclists and site users with mobility impairments. For short stay users the primary concern would be convenience of access, while having a safe place to secure their cycle. With longer stay parking however, security is the primary concern. Such users are more likely to trade convenience for additional security, shelter from weather, and secure access.</p> <p>Further examples of inclusive and accessible design are details within the landscape strategy, for example the ramp provision alongside step provision to aid with level changes, and different character areas, each intended for different uses (see previous output for further details). All internal and external spaces will be safe and comfortable, in line with the requirements of the sustainability strategy, e.g. external spaces are overlooked, and issues such as thermal comfort will be addressed in both internal and external spaces. The response to this output will continue to be developed as the design progresses, with issues such as audio and visual accessibility in the materials specification, the use of technology to support audio and visual accessibility and facilities to support parents explored further.</p>	●		●	●	<p>The design meets or exceeds the requirements of this output. The development is wheelchair friendly and incorporates audio/visual accessibility features.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as mental health issues, including depression.</p> <p>Increased footfall within the area and increased revenue for local businesses.</p> <p>Improved real-estate value.</p>	<p>Barnsley Local Plan 2012–2033</p> <p>BREEAM Communities</p> <p>UK Part M Regulations</p>
	<p>Digital Connectivity</p>	<p>ALL PHASE 1:</p> <p>The development achieves the requirements below relevant to digital infrastructure OR WiFi networks:</p> <ul style="list-style-type: none"> - Digital infrastructure: A “dig once” principle is adopted, whereby all new buildings must install internet cables or fibre optics cables when laying underground lines. The development is provided with provider-neutral wiring that any Internet service carrier can connect to from an access point in or near the building. - WiFi Networks: A network of free-to-use WiFi hotspots or zones is available in public spaces. The network covers at least 75% of the public use area owned, operated or managed by the project owner. 	<p>The current SMART and digital infrastructure strategy confirms that free-to-use WiFi will be available across the site.</p>	●	●	●	●	<p>The % WiFi cover or digital infrastructure meets the requirements of this output.</p> <p>Increased footfall within the area and increased revenue for local businesses.</p> <p>Improved real-estate value.</p> <p>Improved socioeconomic outcomes.</p>	<p>BREEAM Communities</p> <p>Sustainable Travel SPD (Draft Document November 2021)</p>

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
6. Health and Wellbeing									
6.3 Steered by the health metrics proposed in the RIBA 2030 Climate Challenge (version 2) documentation, the unintended consequences of poor health and wellbeing are avoided through avoidance of overheating and poor indoor air quality, and through the promotion of natural light in occupied spaces, thereby enhancing quality of life and promoting physical and mental wellbeing. Also refer to topics: - 3.1 Urban Heat Island Mitigation	Overheating	ACTIVE TRAVEL HUB, MULTI-STOREY CAR PARK, PLOTS 1 & 2: All occupied spaces achieve 25-28°C maximum for 1% of occupied hours.	This issue will be addressed in the following stages of design. The requirements will need to be reflected within the performance requirements for Plots 1 and 2.	●		●	●	The PMV, PPD, and % occupied hours meet the thresholds of the relevant standards (e.g. CIBSE TM52 or CIBSE TM59). Improved health and social outcomes. Reduced mortalities resulting from heatwaves. Reduced energy costs resulting from mechanical cooling.	RIBA 2030 Climate Challenge v2
	Healthy Materials	ACTIVE TRAVEL HUB, MULTI-STOREY CAR PARK, PLOTS 1 & 2: The following thresholds will be met for all occupied spaces: - Total VOCs: <0.3mg/m3 - Formaldehyde: <0.1mg/m3	This issue will be addressed in the following stages of design. The requirements will need to be reflected within the specifications for Plots 1 and 2.	●		●	●	Post construction, but pre-occupation, air quality testing confirming the total VOC emissions are <0.3mg/m3 and formaldehyde emissions <0.1mg/m3. Reductions in non-elective admissions and presentations to GPs relevant nose, ear, eye and throat irritation.	BREEAM NC 2018 RIBA 2030 Climate Challenge v2 WELL Building Standard v2
	Healthy Sunlight Exposure	ACTIVE TRAVEL HUB, MULTI-STOREY CAR PARK, PLOTS 1 & 2: At least 75% of occupied spaces receive sufficient daylight and a view out.	This issue will be addressed in the following stages of design. It is thought, however, that this will be achieved for the ATH and MSCP. The requirements will need to be reflected within the drawings and specifications for Plots 1 and 2.	●		●	●	The % floor area meets or exceeds the requirements of this output. Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as mental health issues, including depression. Reduced energy costs resulting from a lower artificial lighting demand.	Living Building Challenge

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
6. Health and Wellbeing									
<p><i>(continued)</i> 6.3 Steered by the health metrics proposed in the RIBA 2030 Climate Challenge (version 2) documentation, the unintended consequences of poor health and wellbeing are avoided through avoidance of overheating and poor indoor air quality, and through the promotion of natural light in occupied spaces, thereby enhancing quality of life and promoting physical and mental wellbeing.</p> <p>Also refer to topics: - 3.1 Urban Heat Island Mitigation</p>	Healthy Entrances	<p>PLOTS 1 & 2: Where apartment blocks (or retail units within Plots 1 & 2) are provided, all regularly used building entrances (not individual dwelling entrances) incorporate the following: - The building includes an entryway system composed of grilles, grates, slots or rollout mats or removable carpet tiles that are at least the width of the entrance and 3m long in the primary direction of travel (sum of indoor and outdoor length). - One of the below is in place to slow the movement of air from outdoors to indoors: - Building entry vestibule with two typically closed doorways. - Revolving entrance doors.</p>	This issue will be addressed in the following stages of design. The requirements will need to be reflected within the drawings and specifications for Plots 1 and 2.	●				<p>The number of compliant entrances meet or exceed the requirements of this output.</p> <p>Improved health and social outcomes including contributions to a reduction in presentations to GPs regarding issues such as respiratory illnesses.</p>	WELL Building Standard v2
7. Sustainable Communities and Social Value									
<p>7.1 Social value opportunities and an approach to procurement which prioritises local suppliers and manufacturers supports the local economy and local communities, enhancing their quality of life and benefiting health and wellbeing.</p> <p>Also refer to topics: - 5.1 Locally Sourced Materials - 5.1 SMART Waste and Recycling</p>	Fair Payment	<p>ALL PHASE 1: In accordance with the Construction Supply Chain Payment Charter, main contractors will pay their Tier 1 supply chain within 30 calendar days from the end of the calendar month in which the work is carried out or products are supplied.</p>	This issue will be addressed in the following stages of the development, and should form part of the contractor's tender requirements.			●	●	<p>The contractor's payment policy reflects these requirements.</p> <p>Reductions in the number of working days lost due to labour disputes.</p>	Bespoke
	Community Benefits and Social Value	<p>ALL PHASE 1: There is local labour and engagement with under-presented groups and apprentices on the project. Local is defined as being within the sub-region.</p> <p>Demonstrate that more than 50% of workers are from the sub-region (South Yorkshire). Alternatively, adhere to BMBC's requirements for local workforces.</p>	This issue will be addressed in the following stages of the development, and should form part of the contractor's tender requirements.	●	●	●	●	Increased percentage of local labour and apprentices.	CEEQUAL v6
<p>7.2 The integration of SMART technologies and digital infrastructure within buildings and the public realm create a 'living laboratory' for digital experimentation and creativity, enhance the overall user experience of the space, and assist in the reduction resource consumption and improved air quality.</p> <p>Also refer to topics: - 1.1 Wayfinding - 1.1 Car Sharing - 1.1 SMART Parking Technologies - 1.4 Car Sharing</p>	SMART Technologies	<p>ALL PHASE 1: SMART technologies and digital infrastructure are integrated within buildings and public realm to create a 'living laboratory' for digital experimentation and creativity.</p>	<p>SMART Technologies and Digital Art is one of the key public realm themes. As detailed in the landscape strategy, digital technology can enhance placemaking by creating meaningful experiences for people in the Digital Campus by fusing fixed components such as connected street furniture, digital wayfinding features, with mobile and personal devices, including smartphones and wearable products.</p> <p>As described in previous sections, SMART Technologies will be integrated into the development, e.g. regarding car sharing and parking. Infrastructure in the form of fibre ducting and chambers, additional power points, and IoT gateways and sensors will be provided to allow for future SMART technology integration. Examples of opportunities include:</p> <ul style="list-style-type: none"> Digital artists augmenting building facades with either projection or through the interface of screens. Also using walls (e.g. existing arches) and facades as canvases for artists to interact digitally with the public. Screens displaying data, for example Andrea Polli's Particle Falls (2008–2018), an installation showing the quality of the air with streams of blue pixels when it is pure and red spots when it is saturated with PM2.5 particles. Light Installations using LED technology software, lenses, to create of dazzling virtual spaces Immersive technology such as Augmented Realities to invite visitors to interact with public space. Sculptures, for example artists like Ken Kelleher reimagine the digital sculpture with the use of computers to render what place sculpture could occupy in urban spaces. The use of data to encourage engagement, e.g. realtime data from hire bikes including location and journey map, gamification of carbon offsets for car journeys to the Seam, displays of Barnsley and regional data sets and energy and water consumption, and displays of air quality. 	●	●	●	●	<p>The SMART Technologies strategy meets or exceeds the requirements of this output.</p> <p>Increased learning opportunities for the local community.</p>	Bespoke

Outcome	Topic	Output	Concept Design Response Summary	Healthy Barnsley	Learning Barnsley	Growing Barnsley	Sustainable Barnsley	Measurement / Indicators	Metric / KPI Reference
7. Sustainable Communities and Social Value									
7.3 As a result of local community consultation, the development improves health and wellbeing and reduces crime and vandalism (including littering) through and creating a sense of place and pride in place.	Community Engagement	<p>ALL PHASE 1: Local communities and stakeholders have influenced the development proposals.</p> <p>The community and stakeholder engagement process meets the requirements of the BREEAM New Construction 2018 Man 01 Stakeholder Consultation (interested parties) and BREEAM Communities G01 Consultation Plan issues, demonstrating that teams have considered public space, local heritage, amenity uses, inclusive design and diverse uses, alongside local priorities into design.</p> <p>All relevant stakeholders have been consulted regarding the effects on neighbours that are expected to occur during both the construction and operation of the completed works.</p>	<p>Consultation activities have commenced, including consultation with the local community on the Active Travel Hub. Further consultation activities will take place in the next stages to inform the design.</p> <p>Moving forward, in order to comply with this output, a consultation plan should be put in place. This will need to be reviewed by the BMBC. Consultation should also be undertaken early enough for the community and stakeholders to influence key decisions.</p>	●		●	●	<p>Consultation events are carried out in line with the requirements of this output. The design incorporates the outputs of the consultation events, as appropriate.</p> <p>Reduced local crime rates.</p>	<p>BREEAM Communities</p> <p>BREEAM NC 2018</p> <p>CEEQUAL v6</p>
7.4 A sustainable community and buildings are delivered, resulting in improved environmental, social and economic sustainability.	Sustainability Frameworks	<p>ACTIVE TRAVEL HUB: The design, construction and operation of the Active Travel Hub is supported by frameworks including BREEAM and the WELL Building Standard. The building achieves BREEAM Very Good, as a minimum.</p> <p>MULTI-STOREY CAR PARK, PUBLIC REALM AND PLOTS 1 & 2: The design, construction and operation of these assets are supported by frameworks including BREEAM, WELL Building Standard and the Home Quality Mark, and achieve the targets set out in this strategy.</p>	<p>Why way of compliance with the sustainability strategy, the development will be supported by the relevant frameworks. The frameworks should be revisited throughout the design, however, and additional sustainability and wellbeing features incorporated, where appropriate.</p> <p>A BREEAM pre-assessment exercise has been undertaken for the ATH, proposing a strategy for achieving BREEAM 'Very Good'. For further details please refer to the Active Travel Hub Stage 2 Report.</p>	●	●	●	●	<p>BREEAM 'Very Good' certification for the Active Travel Hub.</p> <p>The measurements and indicators will encompass numerous environmental, social and economic sustainability benefits.</p>	<p>Barnsley Local Plan 2012–2033</p>
	Life Cycle Costing	<p>ALL PHASE 1: All major design or specification changes relevant to the sustainability strategy are supported by a life cycle costing exercise to ensure the subsequent operational expenditure is not compromised due to savings in capital expenditure.</p>	<p>The use of life cycle costing exercises to inform major design changes will be applied in the following stages.</p>	●	●	●	●	<p>Reduced operational expenditure.</p> <p>Improved environmental performance.</p>	<p>Bespoke</p>

12.4 Next Steps

In order to ensure that the sustainability strategy remains embedded within the design, the appointment of a Sustainability Advisor is advised. The Sustainability Advisor will oversee the delivery of the strategy, undertaking regular workshops with the project team and reviews of proposals in order to ensure they align with sustainability outcomes and outputs. Part of the role will also be to assign responsibilities for outputs to key project team disciplines, ensuring all parties are aware of the requirements for each output within the strategy.

As mentioned in in the methodology section, the sustainability strategy should remain a live document, incorporating any future updates relevant to design changes, industry trends or Council policies and agendas.

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SECTION 13.0

INCLUSIVITY

13.0 Inclusivity

13.1 Project Commitments

a) Meeting the Public Sector Equality Duty

In accordance with the Equality Act 2010, Barnsley Council have a public sector equality duty to consider the needs of people with protected characteristics when using The Seam. The Equality Act states that it is against the law to treat any person unfairly or less favourably than someone else because of their personal characteristic. The Act defines nine characteristics protected against discrimination, and design development for The Seam should ensure systematic assessment is made of the impact of the design upon these characteristics.

- Ethnicity
- Sex
- Age
- Marriage / Partnership
- Religion / Beliefs
- Sexual Orientation
- Gender Reassignment
- Paternity / Maternity
- Disability

The duty requires due regard to:

- Eliminate unlawful discrimination
- Advance equality of opportunity between people who share a protected characteristic and those who don't
- Foster or encourage good relations between people who share a protected characteristic and those who don't

b) Making Reasonable Adjustments

The Equality Act requires that reasonable adjustments be considered for protected characteristics in relation to accessibility. Reasonable adjustments may be achieved through multi-disciplinary decisions regarding design trade-offs or compromises required when considering factors such as proportionality, cost, operational concept for The Seam, and other project objectives.

c) Meeting Best Practice Guidance

It is important that The Seam design meets applicable standards and guidance for an accessible and inclusive outcome, including those as described within BS8300: 1: 2018 - Design of an accessible and inclusive built environment. External environment. Code of practice. The design should be informed by recognised benchmark publications and guidance for inclusive and accessible environments, for example the Sign Design Guide.

To ensure that The Seam meets and hopefully exceeds legislative commitments and standards, design development should consider recognised principles of inclusive design to help shape and drive decisions.

As an example, the Design Council defines five principles of an inclusive design as one that:

1. Places people at the heart of the design process
2. Acknowledges diversity and difference
3. Offers choice where a single design solution cannot accommodate all users.
4. Provides for flexibility in use
5. Provides buildings and environments that are convenient and enjoyable to use for everyone

Where met, these principles should provide solutions that are:

- **Inclusive** - Everyone can use safely, easily and with dignity
- **Responsive** - Take account of what people say they need and want
- **Flexible** - Can be used by different people in different ways
- **Convenient** - Everyone can use without too much effort or separation
- **Accommodating** - Accommodates all people, regardless of their age, gender, mobility, ethnicity, or circumstances
- **Welcoming** - Welcomes all people with no disabling barriers that might exclude some people
- **Realistic** - Offers alternatives to help balance everyone's needs and recognizing that one solution may not work for all

"Inclusive Design is about making places everyone can use"
"Inclusive Design is everyone's responsibility"
 (Commission for Architecture and the Built Environment)

13.2 Design Development

The Seam draft Stage 2 'Blueprint' has been subject to an accessibility review to identify potential barriers to an inclusive environment. Topics identified as requiring attention regarding inclusive design development include:

a) Creating a smart and dynamic digital ecosystem

Digital technology such as information points need to be usable by a wide range of people (e.g., sight impaired), with alternative systems available for those unable to use digital systems (e.g., smart phones). Reliance on digital technology solutions can both enable and disable people.

b) Embedding digital artwork

Artwork should be:

- Culturally sensitive
- Available in different formats including visual and tactile
- Placed in safe locations and provided with hazard notification
- Appropriate for people with neurodiverse conditions

c) Consultation and engagement

Consultation with a diverse range of stakeholders is essential to understand the perspective of people that will use the new spaces, their diverse characteristics and their requirements and goals in the space. The consultation process must be accessible and inclusive to ensure people's views are properly understood.

d) General design features

The Seam has proposed features for which their design will influence the level of access provided, and each should be considered against design standards and guidance to benefit a diverse range of people. These are:

- Ease of use for access control systems
- Provision of accessible information points
- Provision of accessible public sanitary facilities
- Suitable styles of lighting
- Flexible and effective wayfinding and signage
- Frequency and style of seating
- Use of appropriate flooring and surfaces
- Avoidance of congested areas
- Size and demarcation of circulation routes
- Provision of safe and accessible routes to ramped areas and terraces
- Provision of level access to transport links
- Design and location of potentially hazardous street furniture
- Provision of weather protection
- Location of potentially hazardous green features
- Provision of an assistance dog spending area

e) Active Travel Hub

The Seam should specifically promote the safe use of active travel by a diverse range of people. The design should consider:

- Accommodating a wide range of transport options, including those used by people with reduced mobility, for example mobility vehicles, wheelchairs etc.
- Providing safe, accommodating, flexible and accessible storage for cycles, e-scooters etc.
- Segregation of cyclists (and other vehicles and mobility aids) and pedestrians to reduce the risk of collisions.
- Safe management of transport users in general, including in shared spaces.
- Reducing the risks presented by 'abandoned' cycles, scooters etc.

f) Accessible Play Areas

The design of play areas should provide a range of sensory play options in addition to purely physical activities. There should be accessible observations points for responsible adults.

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