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Revision
P1
P2

Date
28 July 2020
04 November 2020

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Introduction

Led by Sunderland City Council, the Farringdon Row development site sits as part of the wider Riverside Sunderland Regeneration area.

This report identifies the spatial and cost opportunities and constraints of providing multistorey + surface car parking to serve the Farringdon Row development, including and the proposed new developments on the adjacent Vaux site.

Our brief is to provide a 750 space multistorey car park (MSCP). Spaces to be split between:

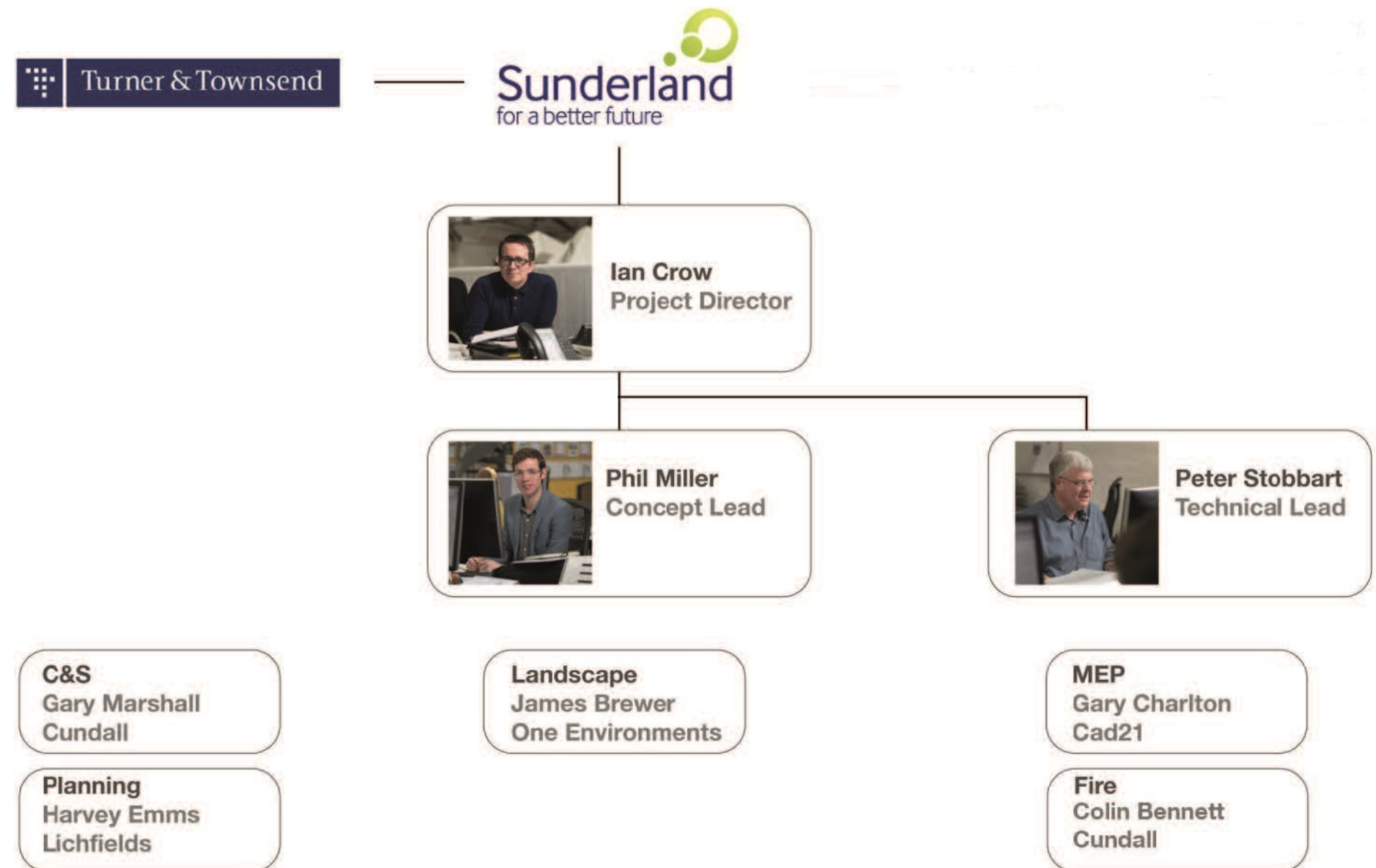
- 500 car parking spaces in a multistorey car park to serve business use related to commercial developments on the Vaux site.
- 156 car parking spaces in a multistorey car park to serve residential developments to the wider Farringdon Row development.
- Circa 90 to 100 car parking spaces to serve the new development on adjacent Vaux site.

Project Team

In December 2019, Ryder Architecture were approached to submit proposals for the appointment of a multi disciplinary team to develop the brief and concept design of this facility on the preferred Farringdon Row site.

Ryder submitted a capability statement, demonstrating our relevant experience and put forward a team including Cundall civil, structural and fire engineers, CAD21 MEP engineers, One Environments landscape architects and Lichfield's planning consultants.

The organogram summarises the day to day project management and delivery relationships implemented on the project.



Context

City Context

The city of Sunderland is located 12 miles north east of Durham and 11 miles south east of Newcastle. It is an important urban area of the Northeast of England with a population of 175,000 located in the county of Tyne and Wear.

London is 3hr 20 minutes away by train, Edinburgh 2hrs and Leeds 2hrs. Newcastle international airport is 1hr 5 minutes. The city has good road connections to the north and south via the A19 and A1(M).

The region is supported by the Tyne and Wear Metro, a light rail network which provides a fast and effective integrated public transport network connecting the conurbation.

Sunderland city centre is a distinct and diverse area developed on a strong nineteenth century grid plan centred around Sunderland station which provides both national and Tyne and Wear Metro services. The Metro is also served in and around the city centre by three other stations providing links to the nearby university, bus interchange and the stadium of light.

The primary shopping street, High Street West, runs east west between the A1018 and Keel Square connecting back to the Bridges Shopping Centre and the Vaux development. The 50,000 seat Stadium of Light is located on the northern bank of the River Wear occupying a commanding position overlooking the city.

The River Wear cuts through the centre of Sunderland in a steep gorge as it approaches the North Sea. It is spanned by the Wearmouth bridge and rail bridge located immediately to the north of the city centre.

Although The city centre is predominately composed of commercial offices and retail units, within a 15 minute walk of the centre there are large areas of nineteenth century housing stock, large scale retail units and industrial premises located beside the river.



Site Analysis

City Routes and Links

The site is situated at the southern end of the Farringdon Row development site which is part of the Riverside Sunderland regeneration area.

By car or bus, the site is on the western approach into the city centre along the A1231 from the Northern Spire and Queen Alexandra bridges. It also sits between key junctions with Hylton Road, Farringdon Row, Railway Row and A183 Livingstone Road with links to the Wearmouth Bridge and the Stadium of Light to the north.

Situated just outside the city centre the site is approximately a 12 minute walk from Sunderland station linked by High Street West and the Bridges Shopping Centre and is minutes walk from transport links and the city centre.

The site is located adjacent to Riverside Park and as part of Riverside Sunderland regeneration development, two new bridges are proposed to link north and south of the river. The low level connection linking with Riverside Park, which will provide new walking and cycling infrastructure to connect the site to the broader city infrastructure.

- Key
- Indicative site boundary
 - - - Riverside Sunderland regeneration area boundary
 - - - Primary vehicular routes
 - - - Key pedestrian route
 - - - University campus boundary
 - - - Proposed bridge links
 - Rail line
 - M Metro station
 - ≡ National rail station



Sunderland City Centre

Historic Context

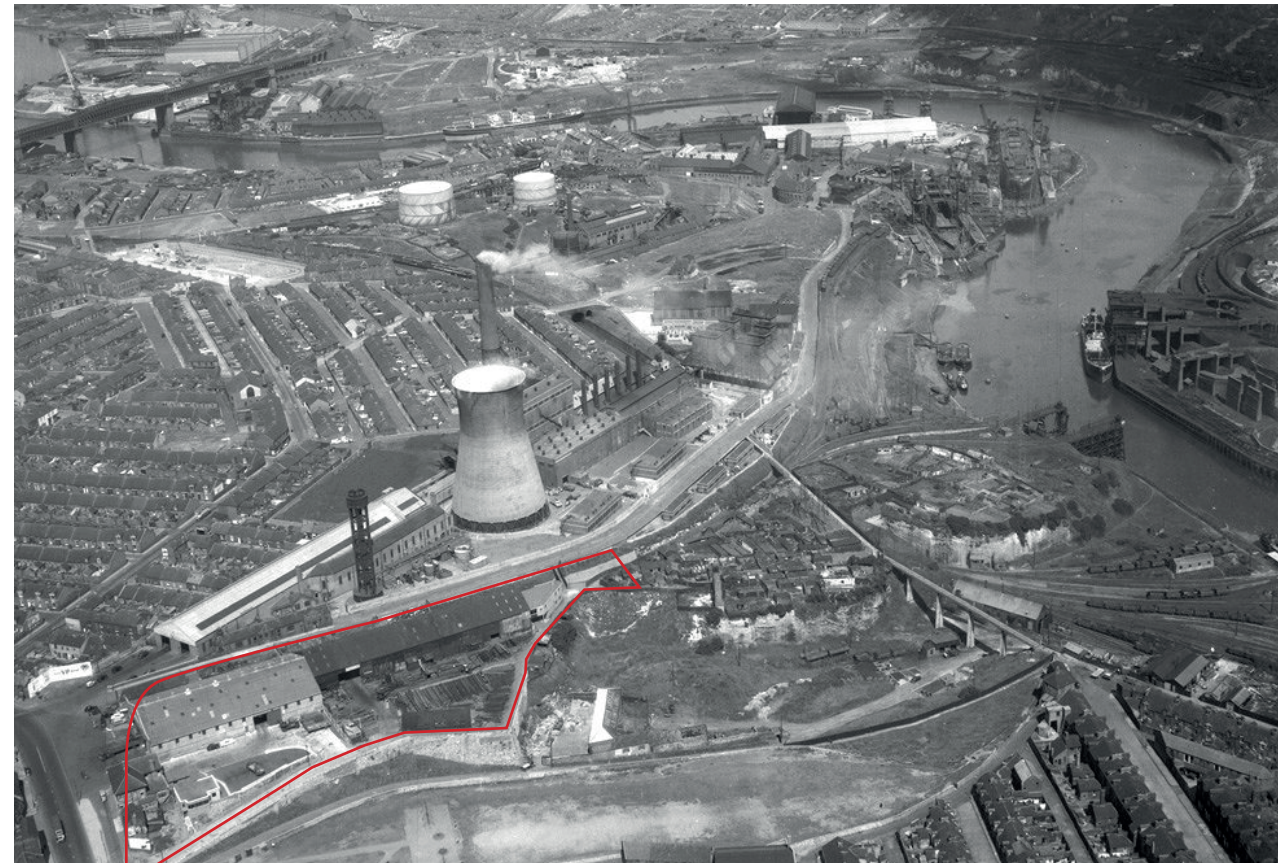
Sunderland is a historic city with its known roots going back to the granting of land to Benedict Biscop by the King of Northumbria in 674 CE. The settlement grew into a significant religious centre and was the birthplace of the venerable Bede.

The city developed into a nationally important port for salt and then coal exporting, leading to the creation of numerous coal staiths along the banks of the River Wear at what is now Galley's Gill park.

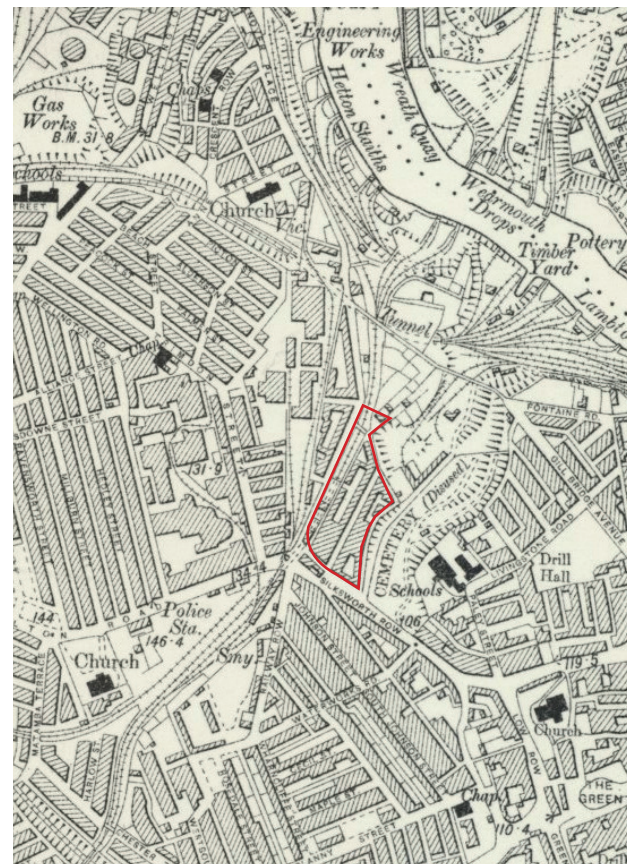
The coal and glass industries continued to expand through the nineteenth and into the twentieth centuries and the area around Sunderland City centre was dominated by heavy industry and the port with numerous freight lines bringing coal and goods to and from the banks of the river. To supply the needs of local workers the Vaux Brewery grew up on the south side of the river Wear on the edge of the city centre to become a major employer in its own right.

By the later half of the twentieth century industrial decline had reduced the amount of industry and employment around Sunderland's city centre. The dominant coal lines were removed and the industry around Farrington Row and the Vaux Brewery site shrank significantly. The Vaux Brewery itself closed in 2000 and the buildings were demolished shortly afterwards.

The Farrington Row site appears to have been predominately industrial in use since the nineteenth century with several small workshops and shed type buildings dotted across the site. The number of buildings on the site decreased throughout the twentieth century until on a handful of units remained facing onto Silkworth Row with large yards and areas of scrub behind. The last of these industrial units were cleared in 2004. The site has remained a vacant brownfield site since.



Farrington Row circa 1950



1900 OS Map



1955 OS Map



Farrington Row circa 1860



Galley's Gill circa 1985



2001 aerial view

Architectural Context

The architecture and style of buildings in Sunderland city centre and the area around Farringdon Row are reflective of the history and fortune of the city over the last three hundred years.

To the north of the site, the area along Farringdon row has been cleared and is currently a brownfield site. Further to the north is the River Wear. On the opposite bank is the Stadium of Light which was opened in 1997 and is an example of large scale stadium architecture with concrete and steel stands and brick accommodation. Adjacent is the Sunderland Aquatic Centre which opened in 2008 and is a low rise linear building with expressed standing seam roof and a large area of curtain walling at the entrance. Also on the same site is the Beacon of Light community centre which utilises a solid brick plinth and opaque polycarbonate cladding to the upper floors.

To the east of the site across the open space of Galley' Gill is the regeneration of Vaux West which is currently occupied by The Beam. Constructed in 2019, the six storey office building has an external colonnade and uses a mix of curtain walling and horizontal bronze coloured metal cladding panels to create strong horizontal banding at each floor.

The ongoing development of the new Sunderland City Hall and the proposed Landed commercial office development will start to fill out this large area of the city and create a new civic and commercial extension to the city centre. To the south of the site is a transitional area between the current city centre and the inner city. This is identified by larger scale institutional and cultural buildings based around the campus of Sunderland University and Minster. These buildings sit within smaller two to three storey domestic scale housing and small retail properties on Silkworth Row and Hylton Road.

To the west large industrial units and warehouse retail set around large areas of car parking create an open and sparse urban grain with a mainly utilitarian aesthetic of large volumes with simple repetitive metal and red brick cladding. This then changes into more inner city Victorian terraced housing stock of two to three storeys.

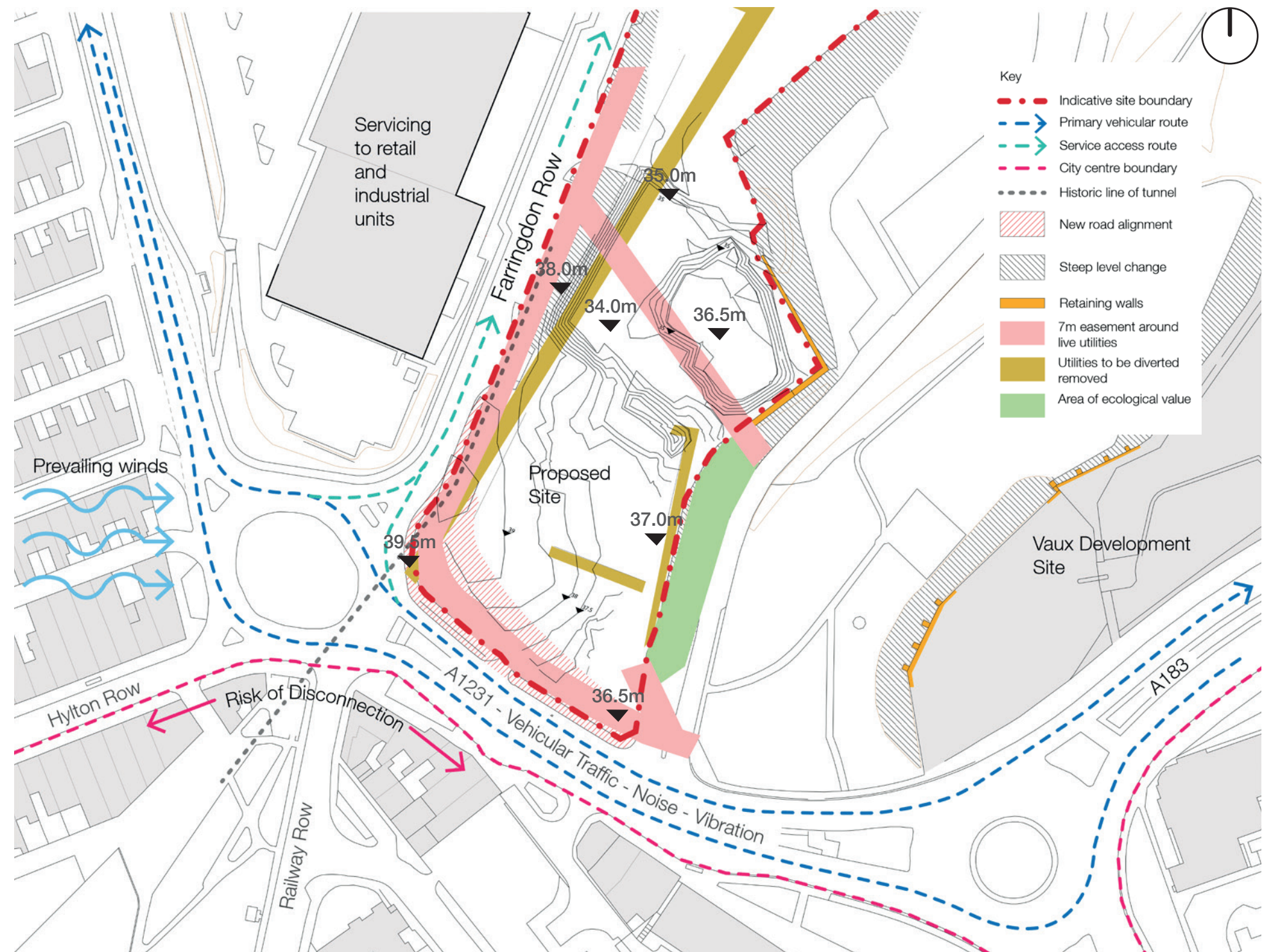


Adjacent prominent buildings

Site Constraints

There are several key site constraints which will influence the nature of development on the site. These constraints include:

- The busy arterial route to the south of the site generating noise and new road alignment reducing the site area and changing the shape of the site to the south.
- Condition of large retaining wall on the eastern edge of the site to be determined.
- Steep level changes within the site along Farringdon Row and on the eastern boundary of the site by Riverside Park.
- Service access to retail and industrial units along Farringdon Road generating traffic and noise.
- Prevailing westerly winds.
- Arterial roads acting as a barrier potentially disconnecting the site from the rest of the city centre.
- Primary utilities running along the boundary of Farringdon Row and A1231.
- Existing utilities on site require further investigation.
- A historic mineral line running along the boundary of Farringdon Row.

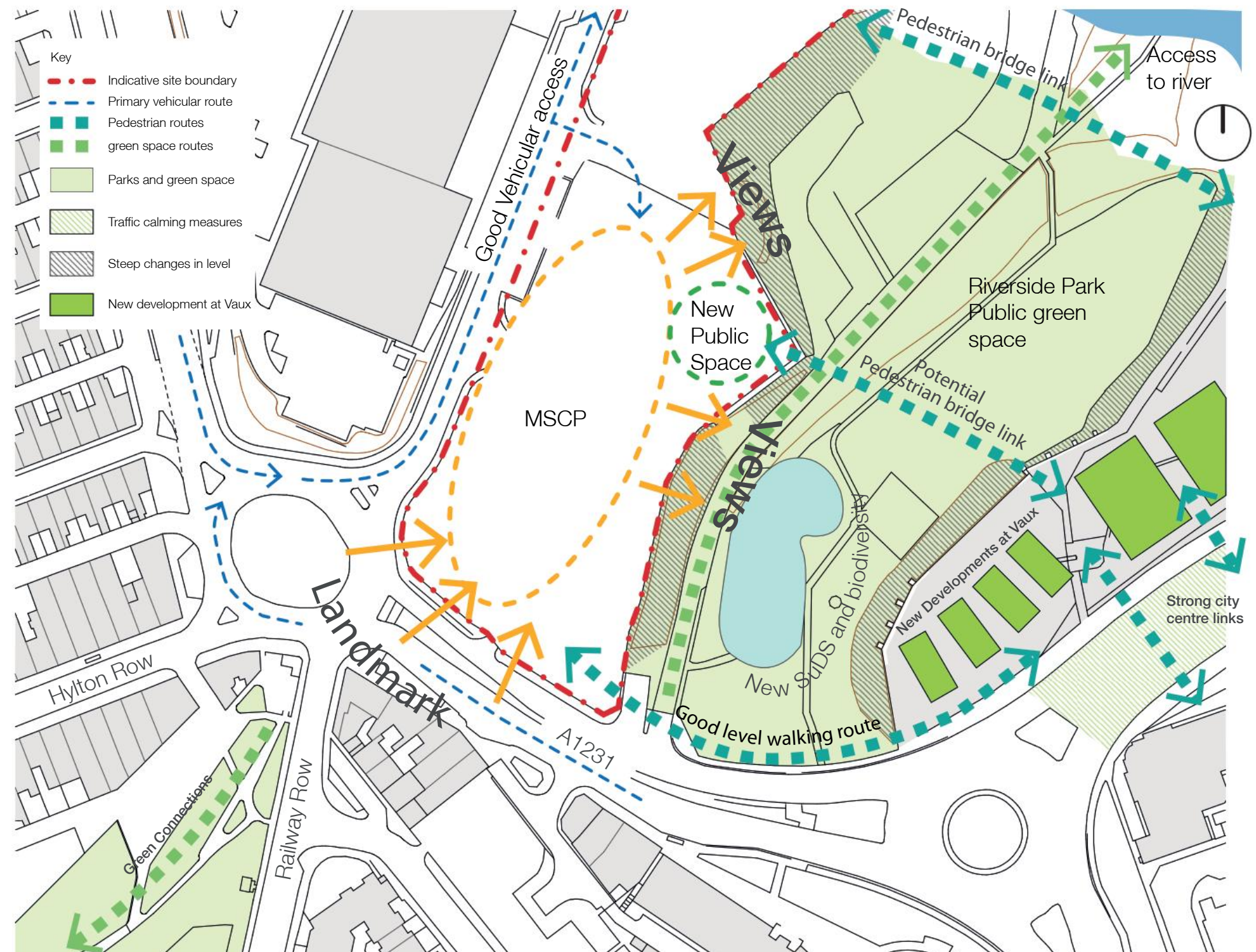


Constraints plan

Site Opportunities

The sites location and immediate context present a series of potential opportunities which can have a positive impact on the design development. These opportunities include:

- The site is on a key gateway into the city and the building can anchor the site as a landmark development.
- Good road connections to the site and good vehicular access is available to the site via Farringdon Row.
- Potential to create a new public space between the MSCP and Galley's Gill
- A new pedestrian link bridge can directly connect the site with the Vaux West Development area and the city centre beyond.
- The building has opportunities to take advantage of the views across Riverside Park and down to the River Wear.
- Level access routes are available from Silkworth Row A1231.
- The site has good opportunities to address adjacent green space and green corridors.



Opportunities plan

Concept Design Site Layout

Farringdon Row MSCP is situated in a northeast / southwest orientation running parallel to Farringdon Row. The car park provided 751 vehicle spaces across 13 split levels.

The building is 108m in length by 33m wide and is sited centrally on the site set back from the boundary on all sides.

The building is staggered at both the northern and southern sides to break up the form and respond to the irregular nature of the site, especially at the southern end overlooking the roundabout at the junction of Farringdon Row and Livingstone Road.

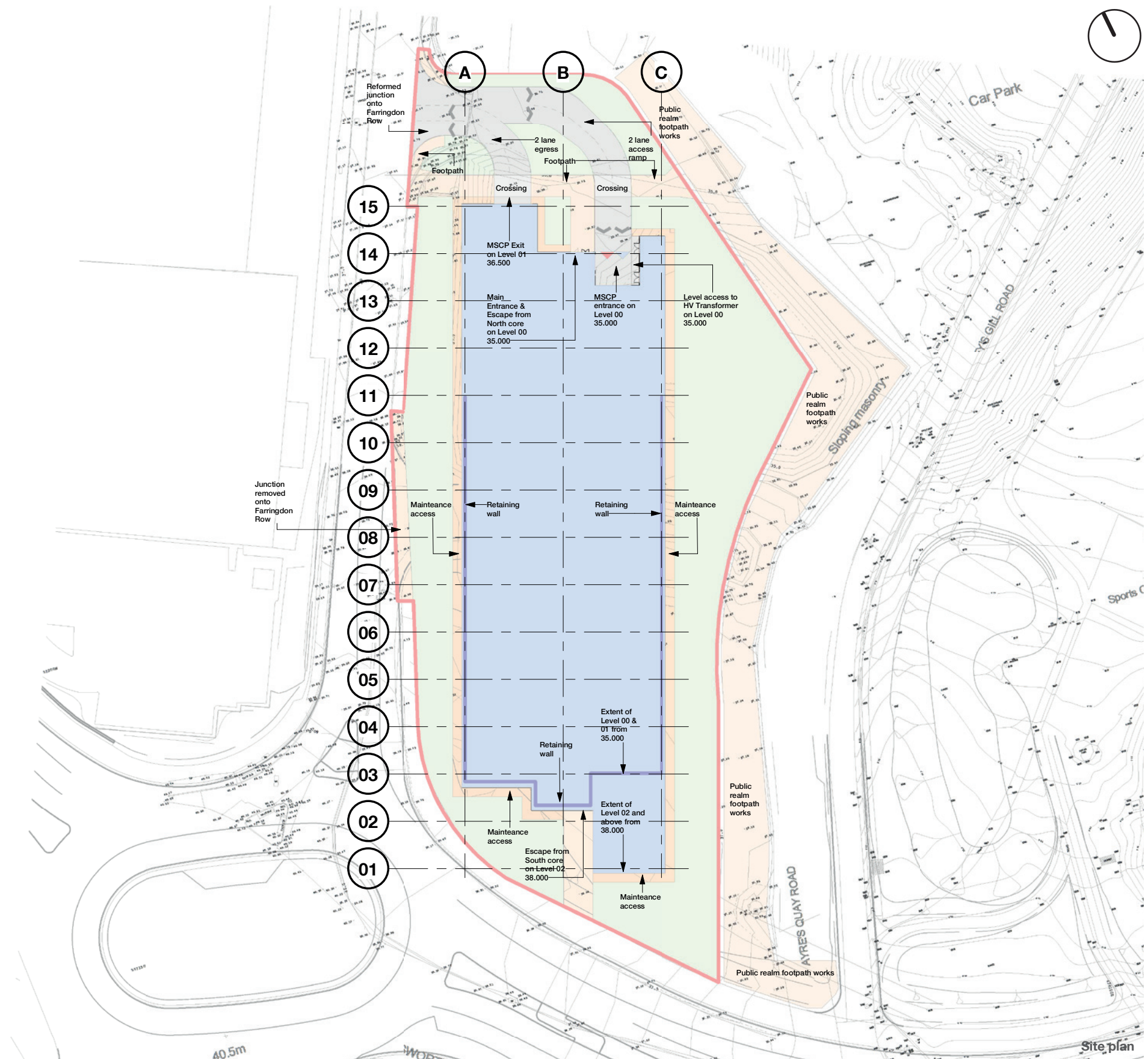
Access to the car park is at the northern end of the site and is set 110m from the junction with Farringdon Row and 50m from the T junction with the adjacent warehouse retail park.

The access to the MSCP utilises an existing access point on to the site however further works to Farringdon Row will be required to allow a dedicated right turn from the southern approach from the roundabout. A single access point widens to two lane access to separate barrier points at level 00 of the car park. This access will require site works to grade the slope of the site to a maximum gradient of 1:12.

To exit lanes are provided from the car park at level 01 and give a dedicated left and right turn onto Farringdon Row.

The MSCP occupies a side of 7,000sqm and is set in grounds of hard and soft landscaping as detailed in the appended landscape report.

To the east of the MSCP along the escarpment overlooking Galley's Gill a separate public access, the footpath is provided linking Silkworth Row with the northern portion of the Farringdon Row development.



Building Layout and Areas

The MSCP is a steel frame construction based on a 7.7m x 16m standard structural grid.

To maximise the efficiency of the floor plate the car park is a split level design with a 1.5m split in height between adjacent levels.

This strategy allows the car park to minimise ramp lengths and respond to the natural level changes across the site.

Level 00 has two dedicated entrance lanes as well as the primary utility connections including transformer and switch room. At the entry, there is also a management office, staff rest and maintenance store.

The car park operates a 6m wide single lane, one way system, with parking bays on either of the lane, standard bays are 2.4m x 4.8m in size. 48 accessible bays are proposed equating to 6.5% of the total 751 space provided.

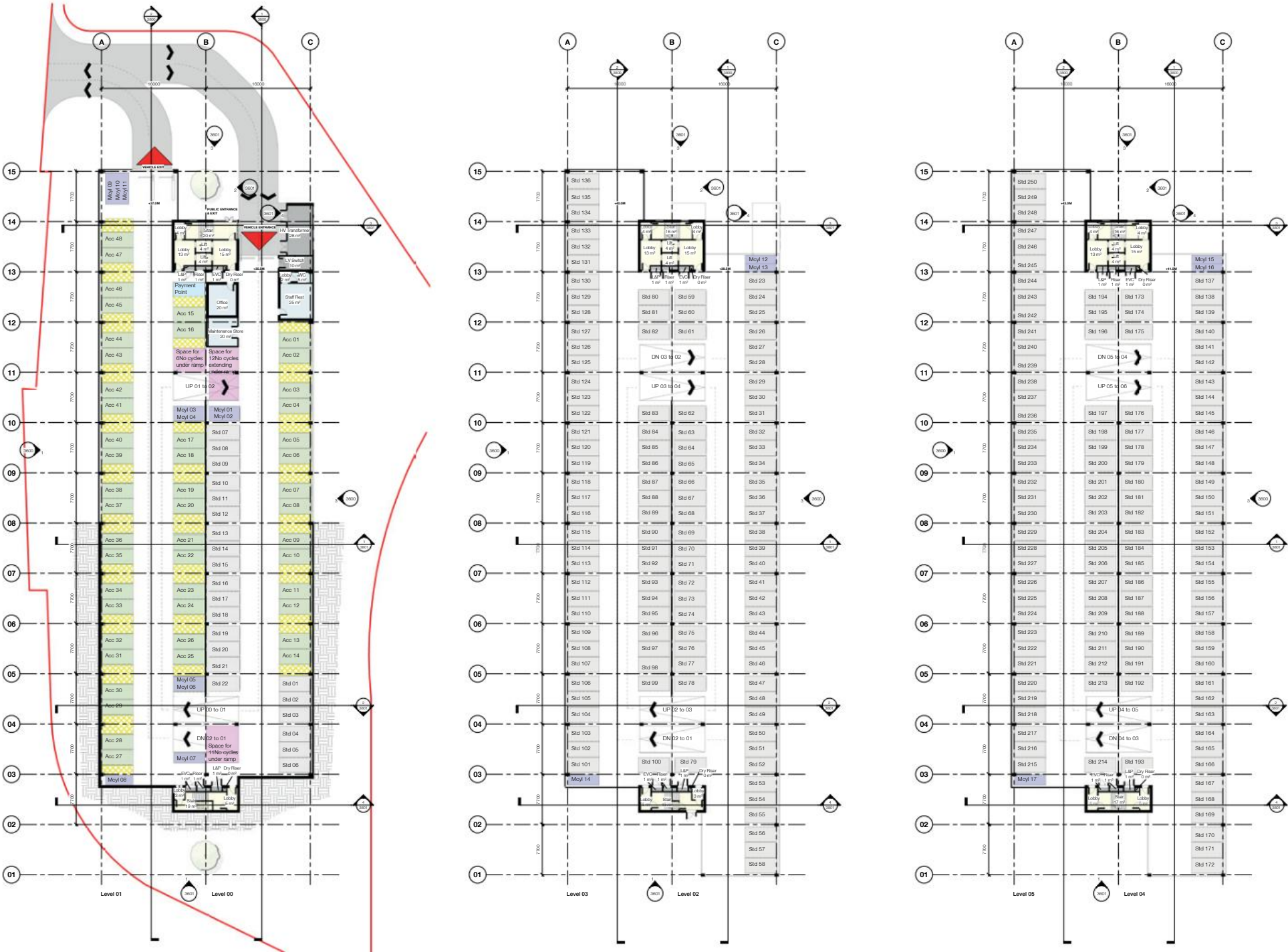
Motorcycle storage is provided throughout the car park and cycle storage of 24 spaces is provided across level 00 and 01.

Parking provision per level is summarised in the table below.

Level	Standard	Accessible	Total
00	22	14	36
01	0	34	34
02	57	0	57
03	57	0	57
04	57	0	57
05	57	0	57
06	57	0	57
07	57	0	57
08	57	0	57
09	57	0	57
10	57	0	57
11	57	0	57
12	57	0	57
13	57	0	57

703 48 751

Motorcycle spaces = 27
Cycle spaces = 24



Level 00 to 05

Building Layout and Areas

Above level 01 the MSCP follows a typical floor plate and repeated number of parking bays.

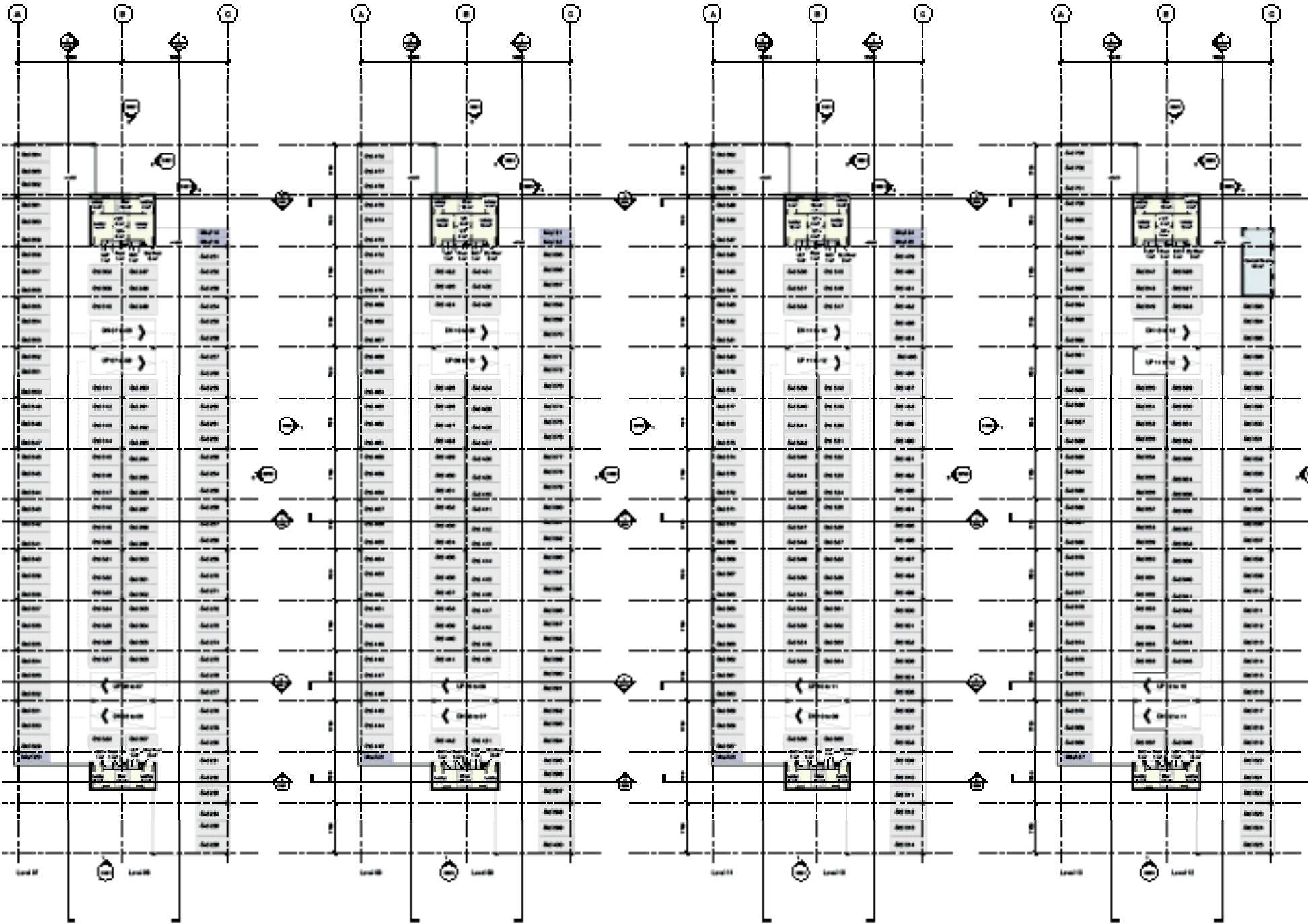
The upper levels are accessed via two circulation cores at the northern and southern ends of the building. The primary core is at the northern end and contains two passenger lifts which will be double sided to allow entry from each split level. Both cores include an escape stair, lobbies and service risers.

Level 12 also includes a control room with views across Galley's Gill and the city centre.

A lightweight steel structure roof is proposed over the uppermost two levels.

The gross floor area of the building is summarised below.

Level	GFA
00	1,565sqm
01	1,510sqm
02	1,540sqm
03	1,510sqm
04	1,540sqm
05	1,510sqm
06	1,540sqm
07	1,510sqm
08	1,540sqm
09	1,510sqm
10	1,540sqm
11	1,510sqm
12	1,540sqm
13	1,510sqm
Total GFA	21,375sqm



Option 02 - Ground

Scale and Massing

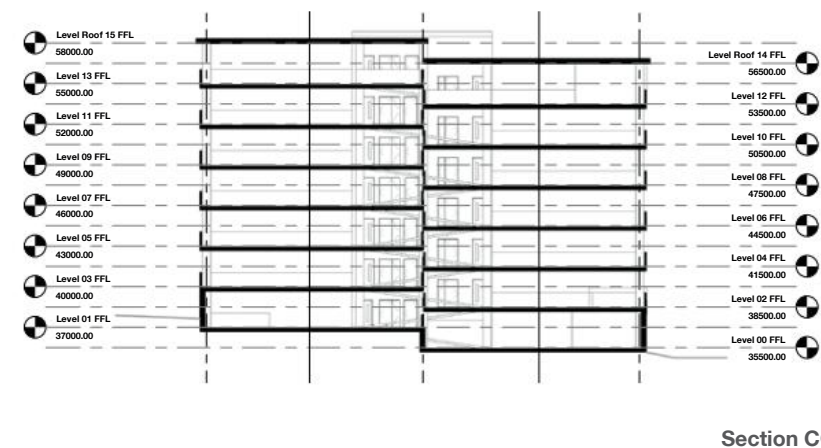
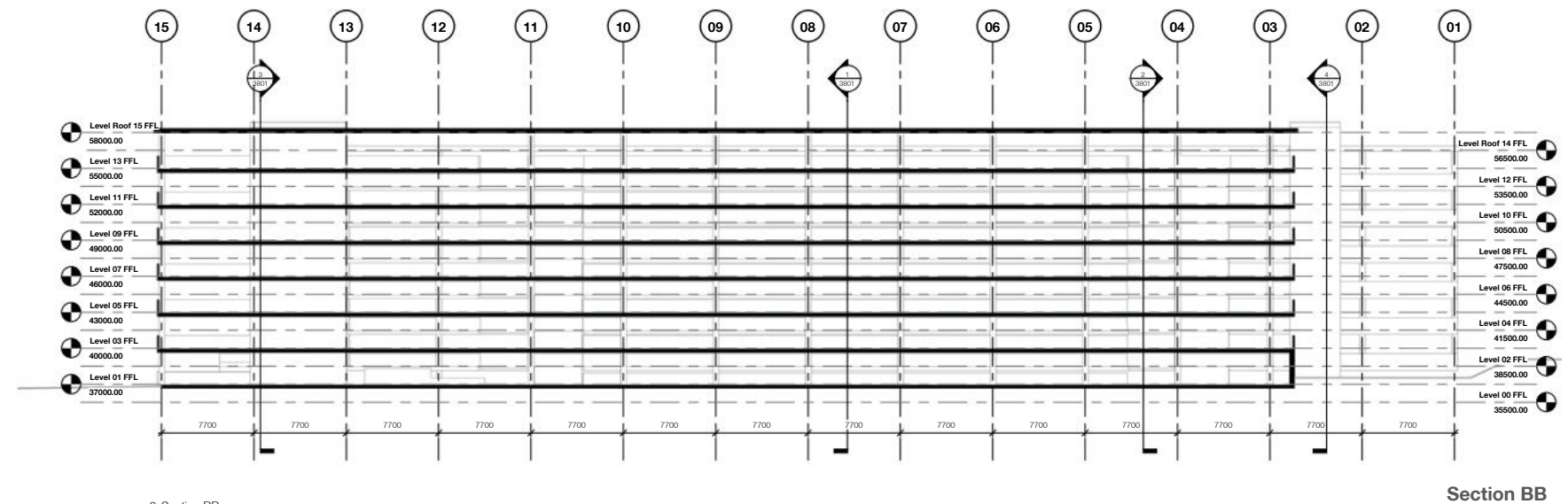
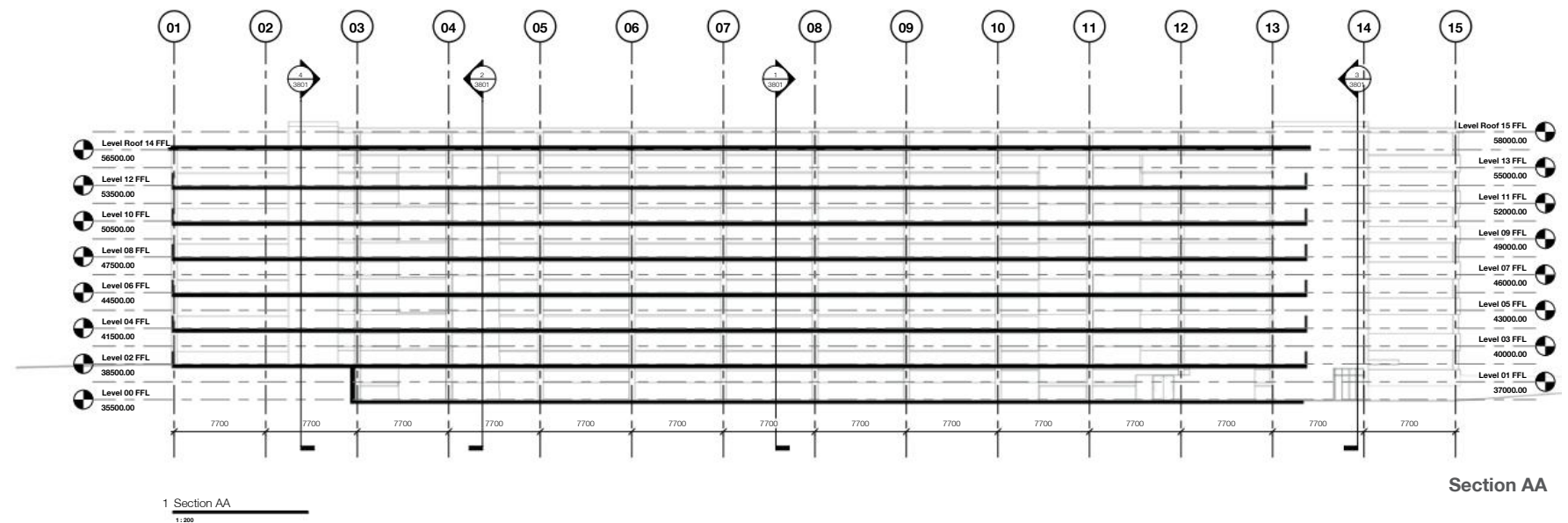
The split level design of the car park has been designed to respond to the level changes present on the existing site.

This enables the design to make the most of the difference in height on the site, from the highest point at circa +39.5m to the lowest at +35m to accommodate the maximum level of car parking before adding upper floors to the building.

The car park is 21m in height across both split levels. From the roundabout at the southern end of Farringdon Row, the MSCP's max height is +58.5m. This is equivalent to approximately five floors of office accommodation.

The appearance of the building then steps down on the eastern side to a max height of +57m.

The northern and southern sides of the building are stepped which further break up the mass of the form and the proposed external cladding allows a level of transparency and light to reduce the visual impact of the building.



Elevations

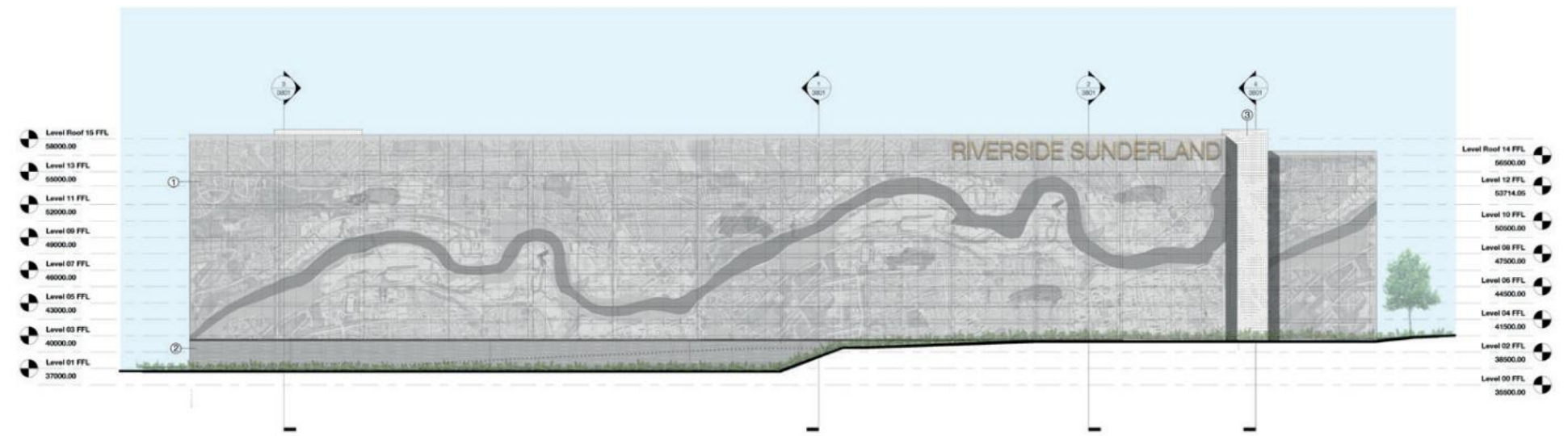
The elevational treatment for the MSCP had been designed to reflect its prominent position as a gateway to the Riverside Sunderland regeneration area.

A limited palette of materials is proposed to wrap the functional nature of the building.

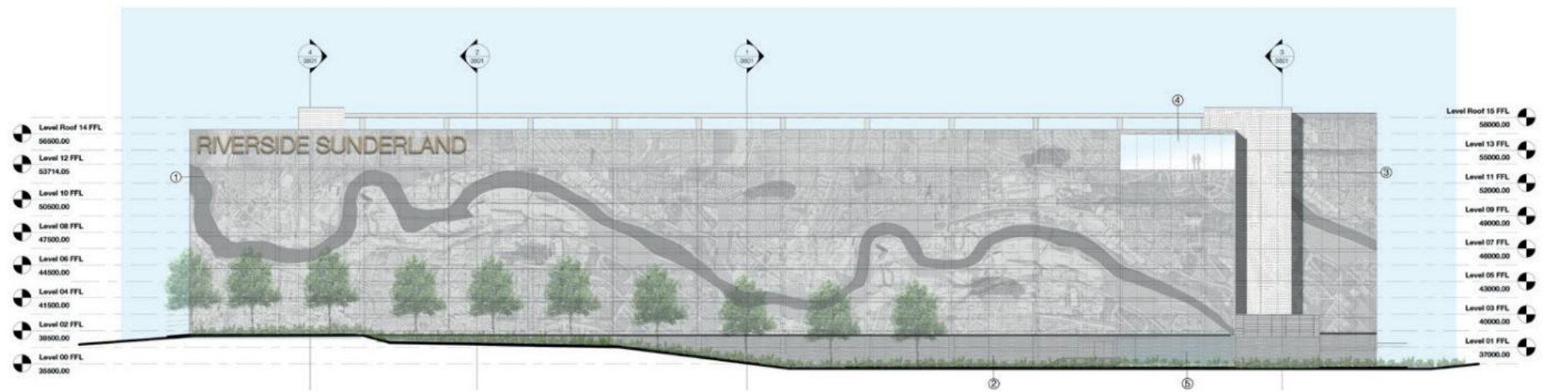
Perforated rain screen panels are proposed to enable adequate natural ventilation but also allowing the rectilinear nature of the building to be broken up through bold use of graphics.

The lower levels are proposed as an expanded metal mesh to separate the main mass of the building from the level changes across the site.

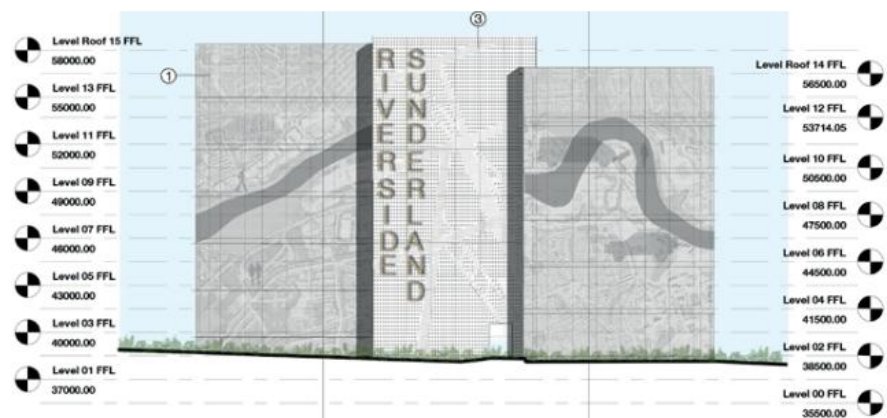
The rain screen cladding system and graphics shown here are indicative only and subject to design development in consultation with Sunderland City Council.



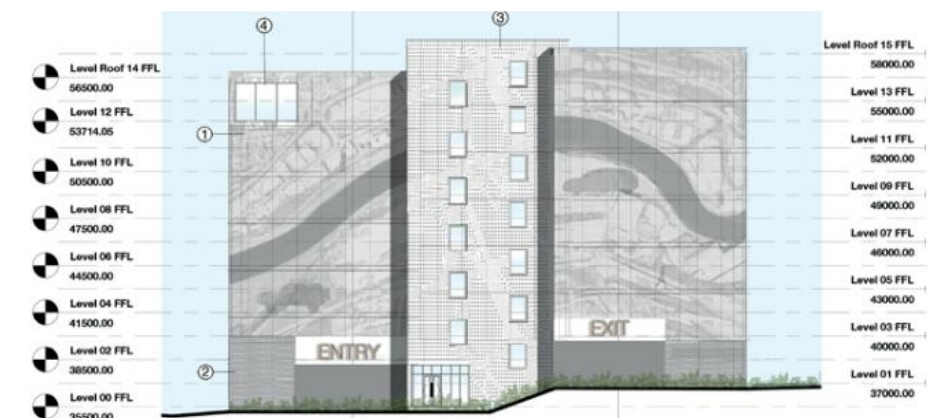
West elevation



East elevation



South Elevation



North elevation

Appendices

6.0 Landscape

New Site | New Identity

The layout and quality of the landscape design proposals is a key ingredient in defining the new setting for the Farringdon Row multi-storey car park (MSCP) given its strategic location.

The MSCP is situated on an important visually prominent gateway site into the city centre's Riverside development. This part of the city has as a fascinating industrial past and the site's modern day identity and characteristics are closely linked with the open spaces and views of Galley's Gill to the east, the existing mixed urban context around Farringdon Row and the neighbourhoods to the west and south.

The proposed public realm and landscape proposals developed by One Environments primarily aim to provide clear and direct entrance routes to the MSCP whether by car or on foot and serve to strengthen both visual and physical links with the adjacent open green spaces.

The concept design process has resulted in a site layout comprising three principle landscape character zones set around the new building in the southwest corner; all closely connected visually and open physically to the surrounding environment. Sustainable strategies inform the site levels, water management, material selection and use of surrounding spaces to improve bio-diversity and functionality.

The planting design will be contemporary in character and designed to respond to both the strategic aims and design objectives outlined in this report.

Landscape Design Drivers

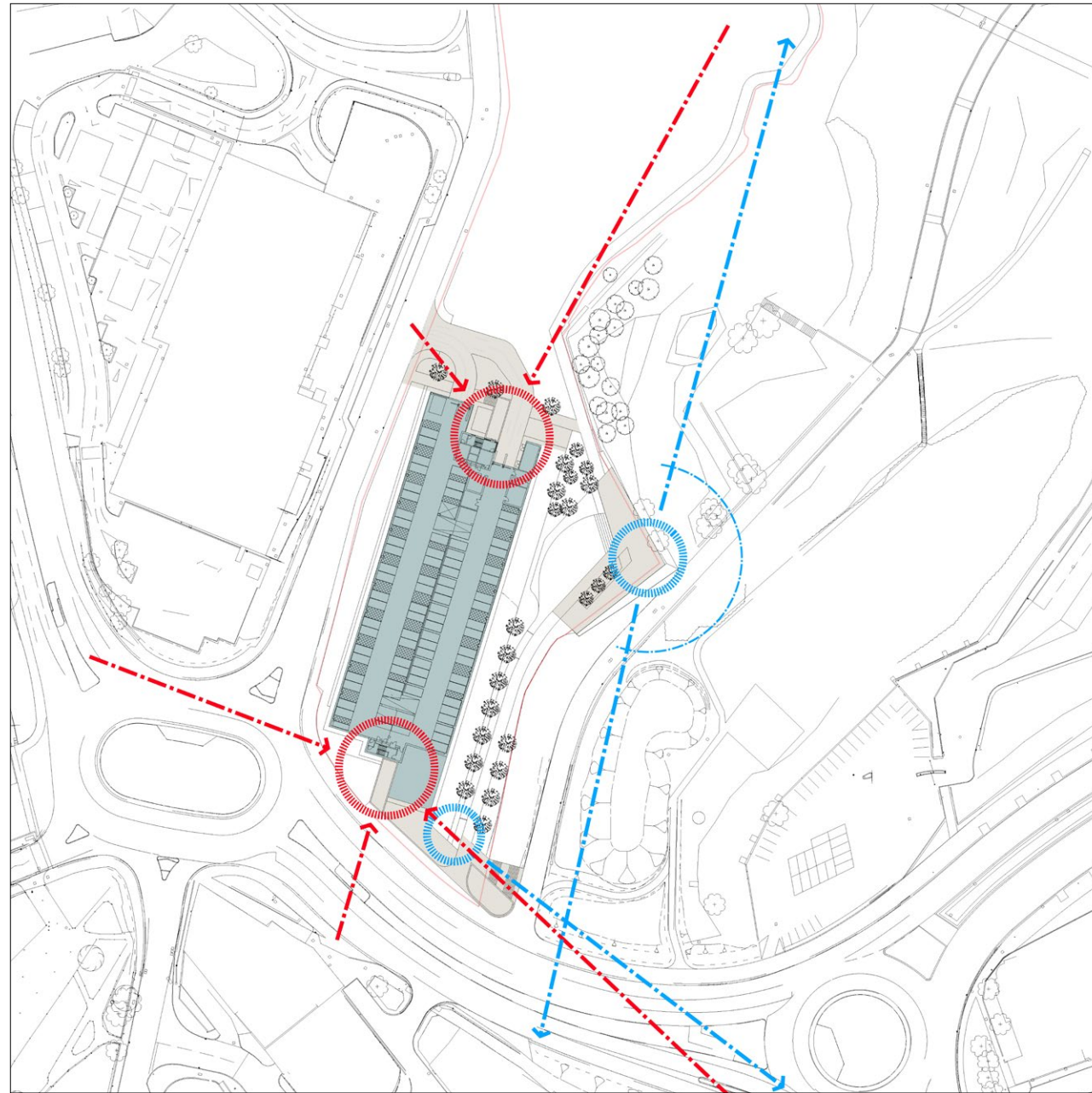
- **Legibility**
Good way-finding and landscape design to work hand in hand so it will be easy and intuitive for the public to both access the MSCP and the Escarpment Walk that connects with the wider Riverside Sunderland setting
- **Functionality**
Create sense of wellbeing, safe and uncluttered space
- **Sensory**
Design forms and materials inspired by light, movement and views at the head to Galley's Gill & Riverside Park
- **Environmental Resilience**
Integrate site wide biodiversity features, sustainable water management, positively use the microclimate to create more comfortable environments and sustainably sourced materials (ideally locally and natural)



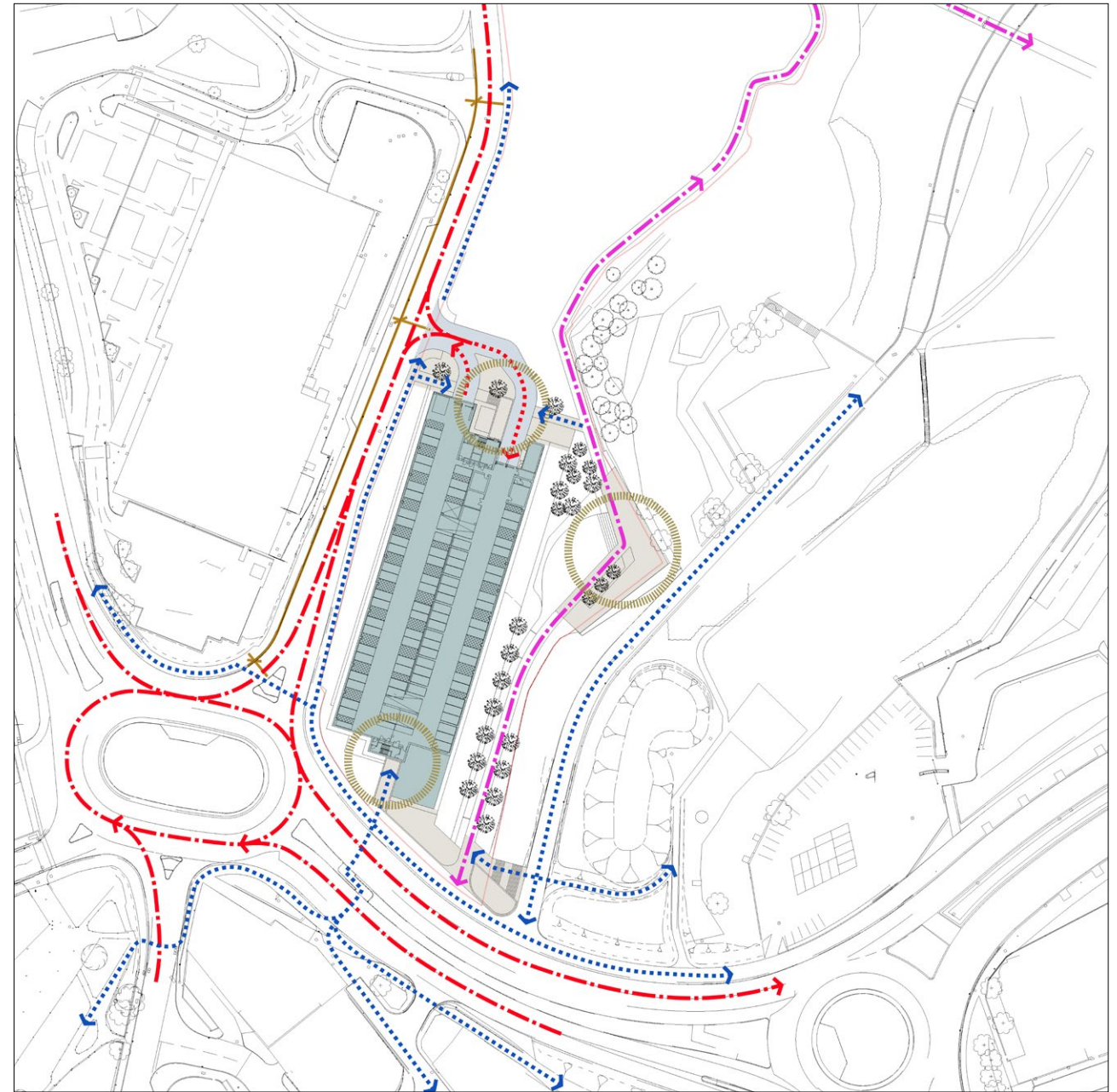
Illustrative masterplan by One Environments

Landscape Strategy | Spatial Arrangement

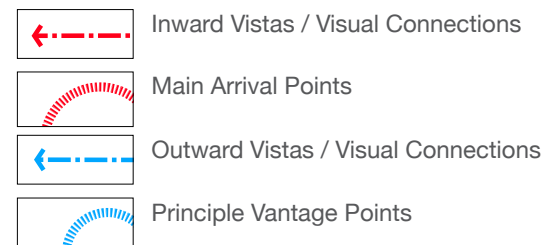
Visual Connectivity



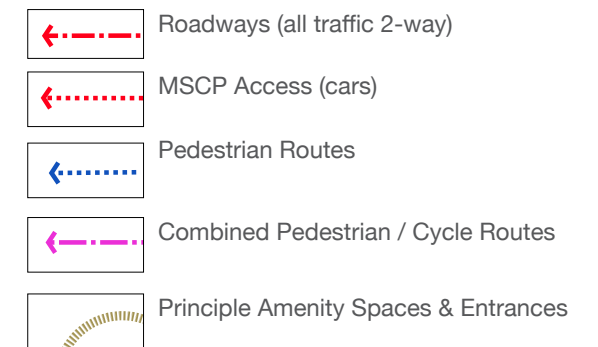
Physical Connectivity



- Creating principle entrances to both the north and the south;
- Capitalising on the elevated position to create a publicly accessible panoramic viewing terrace and views toward Sunderland Minster;
- Creating strong vistas and visual connections from 360 degree arrival

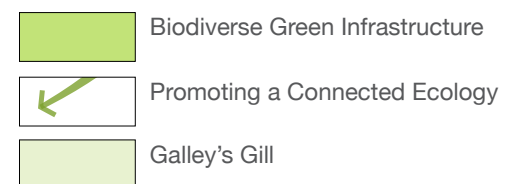


- Meeting SCC highway design standards;
- Creating legible and highly visible car access to MSCP, cycleway and walkways for all users;
- Providing segregated pedestrian access to MSCP and connections to wider network;
- Create alternative, scenic routes and network of pocket parks and public amenity





- Emphasising 'Vitamin N' – Time In Nature
- Exploiting all opportunities for on-site 'net biodiversity gain'
- Maximising potential to connect into the borrowed wider landscape of Galley's Gill;
- Creating a green' street edge forging connections with Galley's Gill and the southern edge of Riverside Sunderland



Landscape Masterplan

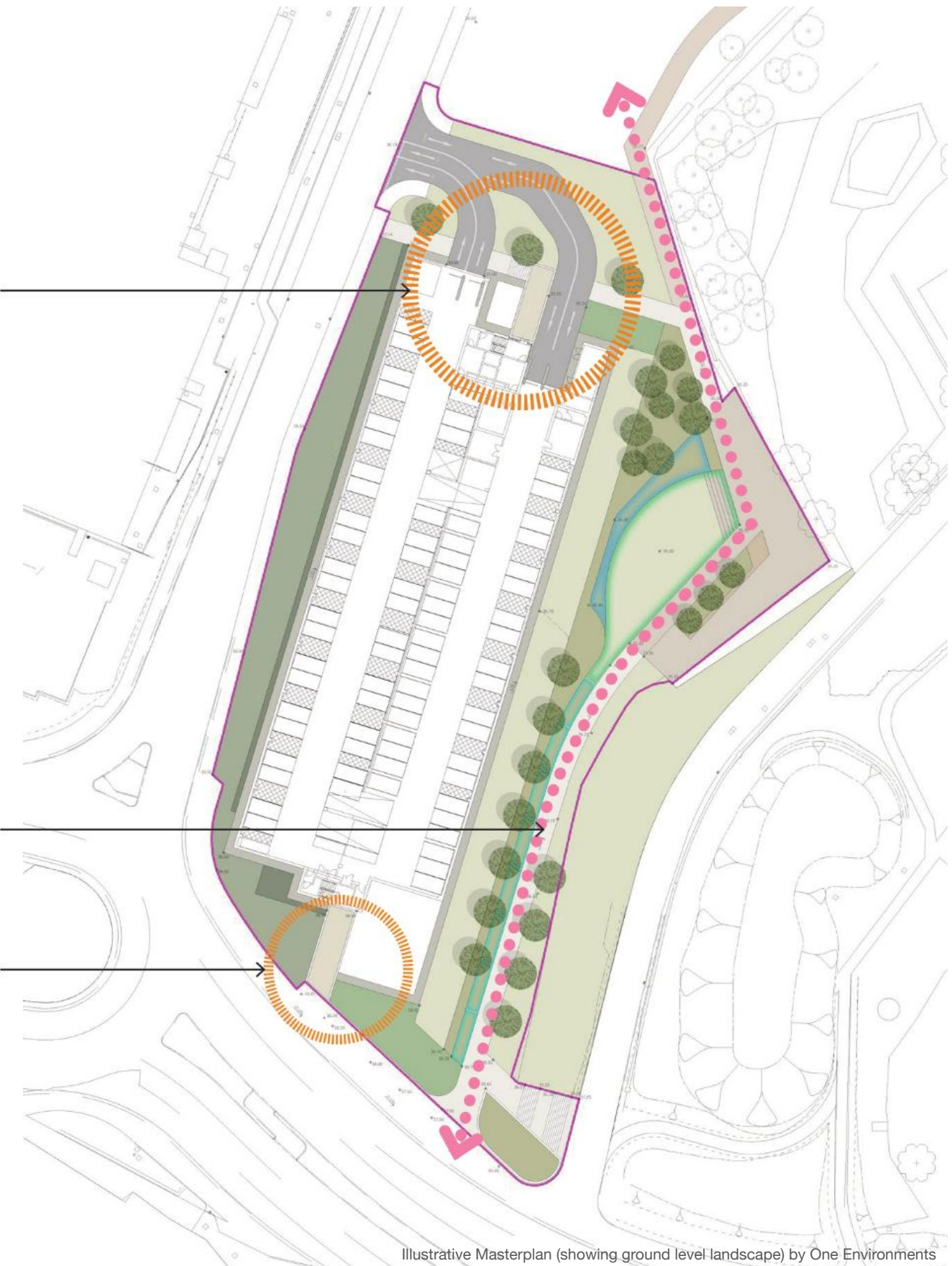
The Site Landscape is to comprise three principle landscape character zones, all closely connected visually and open physically to the surrounding environment:

- Northern Entrance (cars & pedestrians)
- Southern Entrance (pedestrians only)
- Escarpment Walk (pedestrians & cycles)

Northern Entrance (Cars & Pedestrians)

Escarpment Walk (pedestrians & cycles)

Southern Entrance (pedestrians)



Illustrative Masterplan (showing ground level landscape) by One Environments

Landscape Masterplan | Northern Entrance

- Creation of clearly defined and legible entry & exit lanes for cars
- Creation of a clearly defined pedestrian pathway, segregated from the roadway to access the MSCP from both Farringdon Row and the Escarpment Walk
- Use of a restrained and structured paving palette to assist natural wayfinding
- Provision of a stepped connection between Farringdon Row and the Escarpment Walk compliant with Building Regulations and DDA best practice
- Provision of a species rich grassland mix to provide a seasonally rich and biodiverse setting
- Arrangement of trees flank the main walkway across the MSCP entrance to assist natural wayfinding, provide structure, seasonal interest and greenery at a height, humanising the scale of the setting
- Hard surfacing designed to complement the wider Riverside Sunderland palette and of a permeable nature to support the sustainable drainage strategy



Landscape Masterplan | Southern Entrance

- Creation of clearly defined and level / accessible pathways from Silksworth Row - one leading to the southern pedestrian entrance to the MSCP, the other accessing the Escarpment Walk
- Use of a restrained and structured paving palette to assist natural wayfinding
- Carefully planned and bio-diverse planting designed to complement the building's form & scale and provide a sensorily rich environment for pedestrians
- Species rich grassland to the embankment along the east of the building both provides a seasonally rich and biodiverse backdrop to the Escarpment Walk and complements the existing retained designated 'priority grassland' to the edge of Galley's Gill Park
- Arrangement of trees flank the Escarpment Walk to the east of the MSCP to assist wayfinding, provide structure, seasonal interest and greenery at a height, humanising the scale of the landscape
- Hard surfacing designed to complement the wider Riverside Sunderland palette and of a permeable nature to support the sustainable drainage strategy



Landscape Masterplan | Escarpment Walk

- Creation of a fully accessible and scenic 3m wide shared footpath / cycleway along the edge of Galley's Gill escarpment connecting into the wider Riverside Sunderland masterplan and Cityscape
- Scenic route flanked by bioretention planting, swales and ribbons of ornamental grasses that focus on ecological enhancement and a visible, habitat rich water management strategy
- Potential for incorporation of a water attenuation basin fed via a vegetated swale that flanks the southern section of the Escarpment Walk. The basin is illustrated with a sculpted shelf along its western edge to create a bioretention planter and colourful backdrop. The attenuation basin could also be designed with flexibility in mind to provide valuable amenity green space during prolonged dry periods, accessed via integrated steps & seating terraces
- Benefitting from the elevated position and existing random coursed stone walling, creation of a feature 'promontory' with seating and ecologically rich planting provides a commanding panoramic view across Galley's Gill and the wider Cityscape
- Retention and safeguarding of existing designated 'priority grassland' to the southwestern edge of Galley's Gill
- Species rich grassland to the embankment along the east of the building both provides a seasonally rich and biodiverse backdrop to the Escarpment Walk and complements the existing retained 'priority grassland'
- Manipulation of levels to provide accessible connections between the Escarpment Walk and the pedestrian entrances to the MSCP



Planting Strategy

The planting will be contemporary in character and designed to respond to both the strategic aims and objectives outlined in this report and serve to:

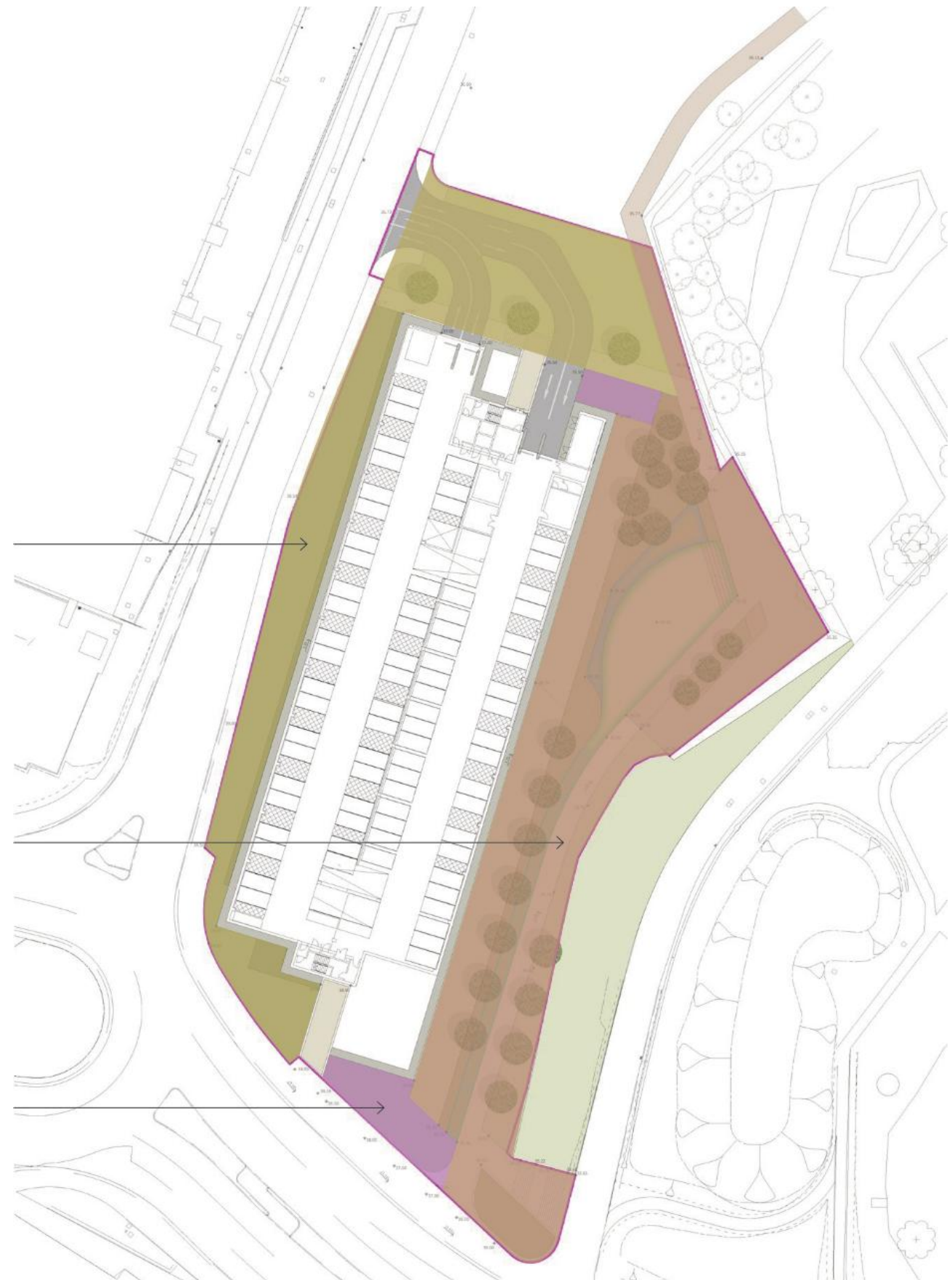
- Enhance the visual amenity and reflect the character of the respective landscape typologies and help to create a positive microclimate for users
- Utilise seasonal, colourful and sensory rich planting to create attractive year round setting in contrasting and textural rich designs that respond effectively to the different ecologies around the building i.e. shade, damp, dry, bright etc.
- Serve to define principle entrances to the MSCP for car users and pedestrians alike
- Enhance the local bio-diversity, encourage wildlife populations, water management, sensitivities to local protected habitats.
- Support the water management strategy through maximising opportunities for planting to provide surface water attenuation, conveyance and retention

Tree species will be selected for their suitability in the maritime environment and scale in the context of existing mature trees within the adjacent park. This creates an aesthetic which is consistent with its surroundings and enhances visual impact of the development and the streetscape.

Infrastructure:
A Restrained & Unifying Palette

Escarpment Walk:
An Ecological Haven

Primary Approaches:
A Sensory Rich Arrival



Planting Strategy

Primary Approaches - South



Primary Approaches - North



Infrastructure



Escarpment Walk



1.0 Introduction

This document has been prepared to summarise and confirm the design principles currently used to develop the scheme.

At present there are two reference guides used to determine the functionality of the car park, the industry standard, Institution of Structural Engineers Design recommendations for multi storey and underground car parks (2011) and NCP Client Design Guide for Multi Storey Car Parks (2019). The documents do differ in approach to the design of key elements of a multi storey car park and we have identified the current design approach taken for each element against these guides.

This document is to be reviewed and all elements confirmed by the client

2.0 Parking Numbers

Number of commercial parking bays.	500
Number of residential parking bays.	156
Number of parking bays for adjacent Vaux development.	94
Total bays	750

3.0 Parking Bays

	NCP Requirement	IStructE Guidance	Proposed Approach
Standard bays	5.0 x 2.5m.	4.8 x 2.4m.	4.8 x 2.4m
Accessible bays	5.0 x 3.6m, 6% of total bays.	4.8 x 3.6m, 6% of total bays.	4.8 x 3.6m, 6% of total bays.
Parent and child bays	5.0 x 3.2m, 3% of total bays.	4.8 x 3.2m, no percentage given.	4.8 x 3.2m
Projection into bays	*Clear span between column faces of 7.5m to achieve three equal parking bays of 2.5m wide.	Columns project up to 200mm into the bay and are in the recommended setback zone of 600 to 800mm from the aisle.	Columns clear of parking bays.
EV bay provision	Six bays	Design allows for 20%. Additional 20% factored into design	Design to allow for max 40%

*Note NCP design guidance stipulates parking spaces shall be clear of any obstructions (such as downpipes, columns, impact barrier and feet / base plate).

4.0 Car Park Entrance

	NCP Requirements	IStructE Guidance	Proposed Approach
Number of entry and exit lanes	Two entry and three exit lanes based upon car park capacity between 401 to 700 spaces.	Number not specified in guidance, one entry and exit lane designed.	Two entry and exit lanes.
Control equipment	Vehicle must pass through parking control equipment to access bays.	Lifting arm or rising step. Number plate recognition and barrier allowed for in current design proposals.	Lifting arm barriers only.
Entrance reservoir	Minimum 2.8m between kerbs.	2.5m between kerbs.	2.8m between kerbs.
Reservoir space	Minimum two cars per lane from the highway crossover to the entrance equipment barrier.	Not defined.	Minimum 10m (Two cars) per lane from the highway crossover to entrance equipment barrier.
Entrance gradient	Must have a flat and level surface at parking control location.	Between 1:20 and 1:40 recommended. 1:20 in current design.	Max 1:20.
Emergency 'late pay' bays	Two emergency parking bays near the exit for customers forgotten to pay.	Management issue, not a design standard.	Not included in design.

5.0 Internal Roadways and Vehicular Ramps

	NCP Requirements	IStructE Guidance	Proposed Approach
Width of aisles	Width of aisles with one way flow for 90° parking shall not be less than 6m (excluding pedestrian walkways or disabled hatched access areas).	6m aisle width for one way circulation zone and 90° parking with and aisle width of 6m (including designated walkways but excluding disabled hatched areas).	6.0m one way aisles including designated walkways.
Ramp gradients	Gradients for long ramps shall be no steeper than 1 in 10 and contain 3m transition zones. Steeper ramp will need to satisfy NCP using a Design Risk Assessment.	Main ramp 1:8 with a 3m transition at 1:10.	Designed to IStructE guidance
Ramp widths	Width of ramps with one way flow shall be a minimum of 3.9m between kerbs and the kerbs to be a minimum of 450mm wide. Kerbs shall be 100mm high and painted with non slip yellow paint.	Main ramp Width: 3,215mm Kerb: 300mm	Designed to IStructE guidance. Kerbs 100mm high non slip yellow paint finish.

6.0 Pedestrian Routes

	NCP Requirements	IStructE Guidance	Proposed Approach
Pedestrian walkway width.	1.2m wide outside of roadways.	1m wide pedestrian route hatched within 6m wide roadways.	To IStructE Guidance.

7.0 Internal Height

Minimum headroom generally.	The minimum clear headroom 2.2m.	2,200mm minimum generally with a 2,100mm operational height.	Minimum 2.2m clear.
Minimum headroom accessible bays.	To accommodate disabled vehicles the clear headroom should be uplifted to 2.6m in accordance with BS8300.	2,200mm minimum, MEP services coordination ongoing and may affect areas above carparking bays.	2,600mm clear localised to disabled vehicle bays subject to coordinated review.

8.0 Accommodation

Client to confirm car park staff accommodation (if any) and required numbers and clear internal sizes. Currently a provision has been made to include a ground level office and staff rest plus a upper level office.

9.0 Drainage

	NCP Requirements	IStructE Guidance	Proposed Approach
Falls to Car Park	Parking floors and roofs to be graded with cross falls to outlet gullies gradient 1 in 60 (minimum).	Parking floors and roofs to be graded with cross falls to outlet gullies gradient 1 in 60 (minimum).	Parking floors and roofs to be graded 1:60 (minimum).
Driven rainfall	Provision shall be made on all surfaces open to rainfall, (including driven rainfall), for positive collection via trapped gullies into collection system.		Trapped gullies to external exposed areas.
Sprinklers to car park	Due allowance shall be considered in the design of the drainage system should a sprinkler system be required.	Not referred to in guidance	Requirement to be confirmed.

10.0 Roof Construction

Client to confirm if roof covering is required over uppermost parking deck.

11.0 M & E Comments

Client to confirm requirements for cleaning equipment, spare electric and water storage capacity and any other M&E requirements.